ITRI

INFORMATIONAL TEXT
READING INVENTORY

Grade 4

Teacher Guide

Developed by the Center for Innovation in Assessment in conjunction with the Indiana Department of Education

What's In This Booklet

The Informational Text Reading Inventory (ITRI) was created when the Center for Innovation in Assessment (CIA) observed that students in grade four experience a significant drop in performance in all of their subject areas. CIA researched solutions and identified the critical issue as the students' struggle to apply the reading skills they have learned in earlier grades to their expository textbooks. In grade four, students are expected to read to learn at a far greater extent than in earlier grades. ITRI materials teach students the reading skills they need to understand their content area textbooks.

This booklet contains all the information teachers need to use the ITRI materials, including assessments, lessons, answer keys, student scoring sheets, and a survey of the scientifically-based reading research that is foundational to ITRI.

Because all ITRI content comes from *Indiana's Academic Standards* for grade four science, social studies, and English/language arts (E/LA), ITRI materials will enhance the subject matter teachers already teach. Students will always learn the reading skills within the context of their content area curriculum.

For a detailed list of all items, please go to the Table of Contents on page iii.

Table of Contents

Student Materials Follow:

About the Informational Text Reading Inventory (ITRI)

How ITRI Works

ITRI will help students learn how to read their content area textbooks better. It teaches the specific reading skills identified by the National Reading Panel as critical to successful comprehension of content area textbooks. ITRI's research-based materials will:

- teach *Indiana's Academic Standards* for English/language arts, Standard 2: Reading Informational Texts.
- teach students an array of general study skills that they can apply to any textbook or content area.
- increase student ability, confidence, and performance in science and social studies, as well as English/language arts.
- identify class and student strengths/weaknesses in textbook reading.
- reinforce the critical content identified in *Indiana's Academic Standards* for science and social studies.

The ITRI lessons were written and designed to model Indiana's adopted science and social studies textbooks. Because the lessons model the textbook syntactically, conceptually, and graphically, and because textbooks are not perfect, the ITRI lessons also include:

- grammatically incorrect phrases occasionally (And then…).
- graphics that do not always illustrate the topic at hand.
- vocabulary words that are sometimes used before they are defined.

These features were included not to trick or confuse students, but to help students learn to negotiate the challenges they encounter in their textbooks.

For an outline of the titles, subject matter, or the standards indicators incorporated in each lesson, please see Appendices C and D.

Three Components of ITRI

ITRI allows teachers to constantly gather data on how students are performing. ITRI has three distinct components:

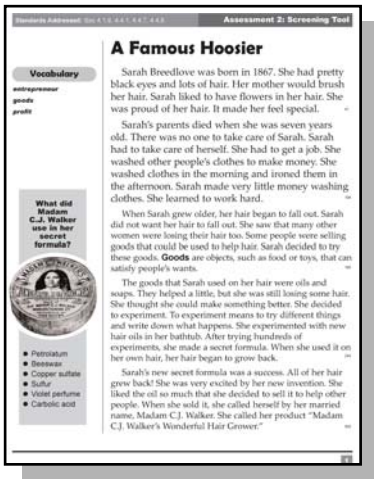
1. **Diagnostic Assessment:** ITRI begins with an initial assessment, which identifies student reading ability in eight critical skill areas.
2. **Lessons:** ITRI lessons model how proficient readers read. The lessons emphasize eight critical reading skill areas and eight study skills.
3. **Follow-Up Assessment :** ITRI ends with a final assessment, which allows the teacher to quantify reading improvement and to identify students who are continuing to have difficulty.

Overview of ITRI Assessments

There are two ITRI assessments. The **Diagnostic Assessment** is used to obtain baseline data about how well students read their textbooks before they complete the ITRI lessons. The **Follow-Up Assessment** is used after the completion of the ITRI lessons to monitor student achievement. Each assessment tests the following eight reading skill areas:

1. Vocabulary
2. Difficult Words in Context
3. Graphics
4. Skimming & Predicting
5. Cause & Effect
6. Main Idea & Details
7. Sequence
8. Compare & Contrast

1 Students Take Timed Reading Tool.


Assessment 2: Screening Tool

A Famous Hoosier

Vocabulary

entrepreneur
goods
profit

Sarah Breedlove was born in 1867. She had pretty black eyes and lots of hair. Her mother would brush her hair. Sarah liked to have flowers in her hair. She was proud of her hair. It made her feel special.

Sarah's parents died when she was seven years old. There was no one to take care of Sarah. Sarah had to take care of herself. She had to get a job. She washed other people's clothes to make money. She washed clothes in the morning and ironed them in the afternoon. Sarah made very little money washing clothes. She learned to work hard.

When Sarah grew older, her hair began to fall out. Sarah did not want her hair to fall out. She saw that many other women were losing their hair too. Some people were selling goods that could be used to help hair. Sarah decided to try these goods. **Goods** are objects, such as food or toys, that can satisfy people's wants.

The goods that Sarah used on her hair were oils and soaps. They helped a little, but she was still losing some hair. She thought she could make something better. She decided to experiment. To experiment means to try different things and write down what happens. She experimented with new hair oils in her bathtub. After trying hundreds of experiments, she made a secret formula. When she used it on her own hair, her hair began to grow back.

Sarah's new secret formula was a success. All of her hair grew back! She was very excited by her new invention. She liked the oil so much that she decided to sell it to help other people. When she sold it, she called herself by her married name, Madam C.J. Walker. She called her product "Madam C.J. Walker's Wonderful Hair Grower."

What did Madam C.J. Walker use in her secret formula?

- Petrolatum
- Beeswax
- Copper sulfate
- Sulfur
- Violet perfume
- Carbolic acid

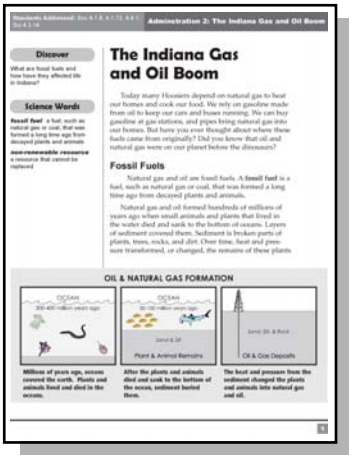
This tool assesses reading speed in addition to reading comprehension. Students are given five minutes in which to read the passage. They then answer eight multiple-choice questions without referring back to the text.

This tool will take approximately 20 minutes to complete.

Note: Students who are not reading at grade level, as indicated by this tool, will need assistance in completing the ITRI lessons. Teachers should arrange for these students to complete the lessons in small groups with the assistance of a teacher or classroom assistant.

2 Students Take Science and Social Studies Lesson Tools.

The science and social studies lesson tools test student comprehension according to the structure of textbook passages. Students read three pages of material and answer eight multiple-choice questions. Students may review the material in order to answer questions.


Administration 2: The Indiana Gas and Oil Boom

Discover

Science Words

fossil fuel a fuel, such as natural gas or coal, that was formed a long time ago from decayed plants and animals

nonrenewable resource a resource that cannot be replaced

The Indiana Gas and Oil Boom

Today many Hoosiers depend on natural gas to heat our homes and cook our food. We rely on gasoline made from oil to keep our cars and buses running. We can buy gasoline at gas stations, and pipes bring natural gas into our homes. But have you ever thought about where these fuels came from originally? Did you know that oil and natural gas were on our planet before the dinosaurs?

Fossil Fuels

Natural gas and oil are fossil fuels. A **fossil fuel** is a fuel, such as natural gas or coal, that was formed a long time ago from decayed plants and animals.

Natural gas and oil formed hundreds of millions of years ago when small animals and plants that lived in the water died and sank to the bottom of oceans. Layers of sediment covered them. Sediment is broken parts of plants, trees, rocks, and dirt. Over time, heat and pressure transformed, or changed, the remains of these plants.

OIL & NATURAL GAS FORMATION

OCEAN

Plant & Animal Remains

Oil & Gas Deposits

Millions of years ago, oceans covered the earth. Plants and animals lived and died in the oceans.

After the plants and animals died and sank to the bottom of the ocean, sediment buried them.

The heat and pressure from the sediment changed the plants and animals into natural gas and oil.


Assessment 2: Social Studies Format

Vocabulary:

barter to trade

currency anything that is used as a means of exchange

goods objects, such as food or toys, that can satisfy people's wants

Main Idea

Throughout history, many different things have been used as money in Indiana.

Money in Indiana

Today when you buy something in Indiana, you pay for it with dollars and cents. But this was not always the way that people paid for things in Indiana.

Bartering Among American Indians

The first people to live in Indiana were American Indians. American Indians did not use money. Instead, American Indians bartered with each other for the items that they needed. To **barter** means to trade. Bartering was a very important part of life for American Indians. American Indians who lived in what is now Indiana were bartering with each other more than a thousand years ago! The earliest inhabitants of Indiana traded corn and other goods with each other. **Goods** are objects, such as food or toys, that can satisfy people's wants. Bartering can be a great way of paying for things, but sometimes it is hard to find the right person to barter with. Both people must have what the other wants, and both must agree that the two things to be traded are of equal value. Otherwise, the trade would not be fair.

Each tool will take approximately 20 minutes to complete.

Overview of ITRI Assessments

3 Teachers Score Assessment and Collect Data

There are 24 questions total in each assessment. Each of the eight reading skill areas is assessed by three multiple-choice questions. In order to simplify scoring, reading skill areas are always assessed in the same order (so question #1 will always assess Vocabulary, question #2 will always assess Difficult Words in Context, etc.). A copy of the assessment scoring sheet is included as Appendix F.

Scoring Sheet: ITRI Assessments

CLASS Total		26	21	23	23	24	25	23	19
CLASS Average		2.6	2.1	2.3	2.3	2.4	2.5	2.3	1.9

		#1	#2	#3	#4	#5	#6	#7	#8
	Multiple Choice Questions	Conceptual Vocabulary	Difficult Words	Graphics	Skimming and Predicting	Cause and Effect	Main Idea and Details	Sequence	Compare and Contrast
Name									
Carlos	Screen Tool	1	1	1	0	1	1	1	0
	Soc. Tool	1	1	0	1	1	1	0	1
	Sci. Tool	0	1	1	1	1	1	1	1
	Total	2	3	2	2	3	3	2	2
Daryn	Screen Tool	1	0	0	1	0	1	1	0
	Soc. Tool	1	1	1	0	0	1	1	1
	Sci. Tool	1	0	1	1	1	1	1	0
	Total	3	1	2	2	1	3	3	1
Joon	Screen Tool	1	1	1	0	0	1	1	1
	Soc. Tool	1	1	1	0	1	1	1	0
	Sci. Tool	1	1	1	1	1	1	0	1
	Total	3	3	3	1	2	3	2	2
Josh	Screen Tool	1	1	1	0	0	0	1	1
	Soc. Tool	0	0	1	1	1	1	1	0
	Sci. Tool	1	1	1	1	1	1	1	0
	Total	2	2	3	2	2	2	3	1
Justin	Screen Tool	1	1	1	1	1	0	0	1
	Soc. Tool	1	1	1	1	1	1	1	1
	Sci. Tool	1	0	0	1	1	1	1	1
	Total	3	2	2	3	3	2	2	3
Kelly	Screen Tool	1	0	0	1	1	1	1	0
	Soc. Tool	1	1	1	1	1	1	1	0
	Sci. Tool	1	0	1	1	1	1	1	0
	Total	3	1	2	3	3	3	3	0
Kyanna	Screen Tool	1	1	1	0	0	1	1	0
	Soc. Tool	0	1	1	1	1	1	1	1
	Sci. Tool	0	1	1	0	1	1	1	1
	Total	1	3	3	1	2	3	3	2
Nick	Screen Tool	1	1	1	1	1	1	1	1
	Soc. Tool	1	1	1	1	1	1	0	1
	Sci. Tool	1	0	1	1	1	0	1	1
	Total	3	2	3	3	3	2	2	3
Wendi	Screen Tool	1	1	0	1	1	1	0	1
	Soc. Tool	1	1	1	1	1	1	0	1
	Sci. Tool	1	1	1	1	1	1	1	1
	Total	3	3	2	3	3	3	1	3
Zack	Screen Tool	1	0	0	1	0	0	1	0
	Soc. Tool	1	1	0	1	1	0	1	1
	Sci. Tool	1	0	1	1	1	1	0	1
	Total	3	1	1	3	2	1	2	2

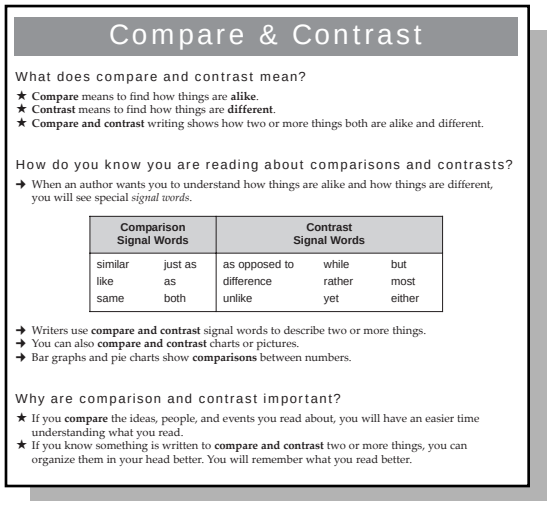
Specific instructions for administering and scoring the Diagnostic and Follow-Up Assessments can be found on pages 9-12.

Overview of ITRI Lessons

There are eight sets of ITRI lessons. Each set contains a Reading Skill Introduction, a study skill lesson, a science lesson, and a social studies lesson. Each set focuses on one of the eight reading skill areas noted on page 2.

1 Students Read the Reading Skill Introduction.

The Reading Skill Introduction prepares students for what they are to learn and helps them answer the lesson's questions. Teachers may want to model certain strategies, make overheads of the Reading Skill Introductions, and pace student learning as appropriate to student ability.



Compare & Contrast

What does compare and contrast mean?

★ **Compare** means to find how things are **alike**.
★ **Contrast** means to find how things are **different**.
★ **Compare and contrast** writing shows how two or more things both are alike and different.

How do you know you are reading about comparisons and contrasts?

➜ When an author wants you to understand how things are alike and how things are different, you will see special *signal words*.

Comparison Signal Words		Contrast Signal Words		
similar	just as	as opposed to	while	but
like	as	difference	rather	most
same	both	unlike	yet	either

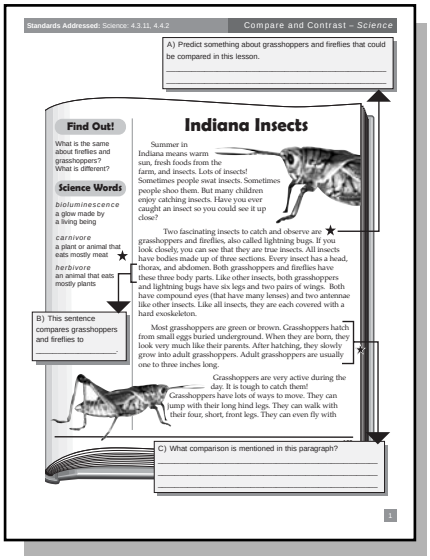
➜ Writers use **compare and contrast** signal words to describe two or more things.
➜ You can also **compare and contrast** charts or pictures.
➜ Bar graphs and pie charts show **comparisons** between numbers.

Why are comparison and contrast important?

★ If you **compare** the ideas, people, and events you read about, you will have an easier time understanding what you read.
★ If you know something is written to **compare and contrast** two or more things, you can organize them in your head better. You will remember what you read better.

2 Students Complete an ITRI Lesson.

Each lesson contains Guided Reading Boxes that ask students to answer questions as they read. All questions relate to the particular reading skill area and to general comprehension. Students also complete review questions at the end of the lesson.



Standards Addressed: Science: 4.3.11; 4.4.2 — Compare and Contrast – *Science*

A) Predict something about grasshoppers and fireflies that could be compared in this lesson.

Find Out!

What is the same about fireflies and grasshoppers? What is different?

Science Words

bioluminescence a glow made by a living being

carnivore a plant or animal that eats mostly meat

herbivore an animal that eats mostly plants

Indiana Insects

Summer in Indiana means warm sun, fresh foods from the farm, and insects. Lots of insects! Sometimes people swat insects. Sometimes people shoo them. But many children enjoy catching insects. Have you ever caught an insect so you could see it up close?

Two fascinating insects to catch and observe are grasshoppers and fireflies, also called lightning bugs. If you look closely, you can see that they are true insects. All insects have bodies made up of three sections. Every insect has a head, thorax, and abdomen. Both grasshoppers and fireflies have these three body parts. Like other insects, both grasshoppers and lightning bugs have six legs and two pairs of wings. Both have compound eyes (that have many lenses) and two antennae like other insects. Like all insects, they are each covered with a hard exoskeleton.

Most grasshoppers are green or brown. Grasshoppers hatch from small eggs buried underground. When they are born, they look very much like their parents. After hatching, they slowly grow into adult grasshoppers. Adult grasshoppers are usually one to three inches long.

Grasshoppers are very active during the day. It is tough to catch them! Grasshoppers have lots of ways to move. They can jump with their long hind legs. They can walk with their four, short, front legs. They can even fly with

B) This sentence compares grasshoppers and fireflies to _____

C) What comparison is mentioned in this paragraph?

1

Each lesson will take approximately 20-30 minutes to complete.

Although teachers are encouraged to use ITRI lessons as they fit into existing curriculum, students will receive the maximum benefit when the three lessons for each skill area are completed in order and within five days.

Overview of ITRI Lessons

3 Teachers Lead an All-Class Discussion and Grading Session.

Teachers facilitate the transfer of learning by engaging students in a discussion of their answers. Students score their own lessons. Each lesson has 20 possible points.

Compare & Contrast Lesson B: *Indiana Insects* (Sci)

Think About! Discussion Points Following the Lesson

- Look at Guided Reading Box A. How did you make your prediction? *(Answers will vary. Students should have looked at headings, graphics, bolded vocabulary words, etc.)*
- Look at Guided Reading Box D: How can something as simple as two words be compared? *(You can look back at the paragraph and the definitions to see what the meanings have in common.) Talk about root words and give additional examples (hydrosphere, atmosphere, lithosphere, biosphere; antonym, synonym; etc.).*

Each in-class discussion will take approximately 15-20 minutes to complete.

4 Teachers Review Student Answers.

The way in which students answered questions informs teachers of each student's skill level and reading ability.

Lesson Scoring Sheet

Skill Area: Main Idea and Details

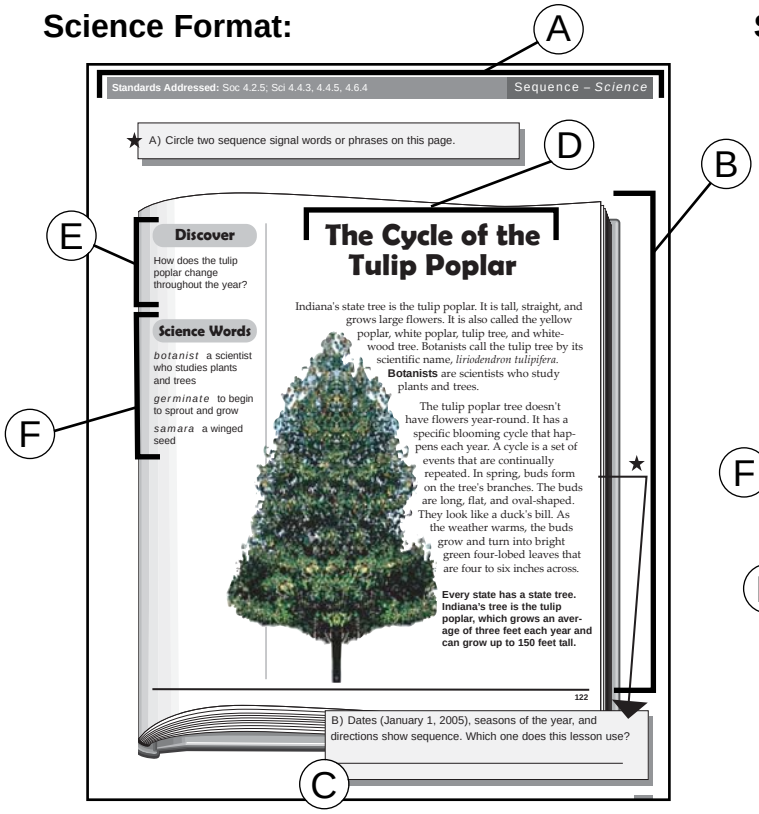
Student Name	West Baden Study Skill	Saltwater Science	Tippecanoe Social Studies
Carlos	18/20	17/20	17/20
Daryn	16/20	17/20	15/20
Joon	19/20	20/20	18/20
Josh	13/20	15/20	14/20
Justin	18/20	17/20	18/20
Kelly	16/20	18/20	18/20
Kyanna	15/20	17/20	16/20
Nick	19/20	19/20	19/20
Wendi	20/20	19/20	19/20
Zack	16/20	17/20	18/20

Teachers use data to identify those students who may benefit from Additional Practice or Extension activities.

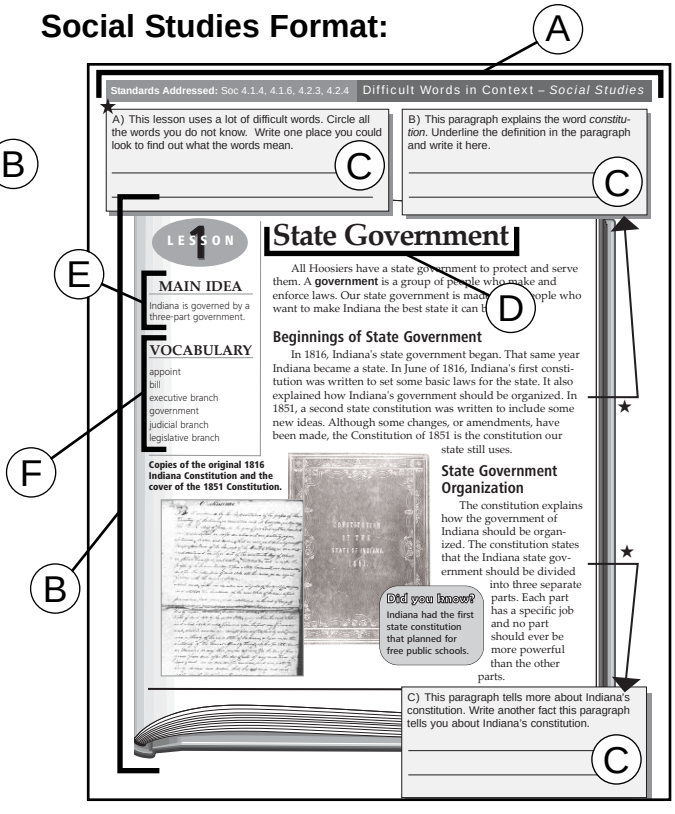
Key to the Lesson Layout

These pages have been reproduced from the ITRI Lessons. See page 7 of this document for a description of each lettered item below.

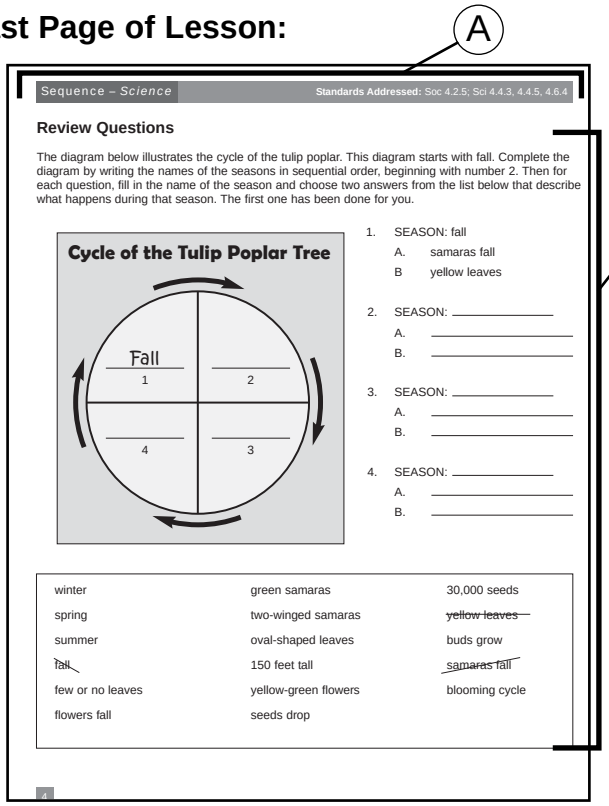
Science Format:



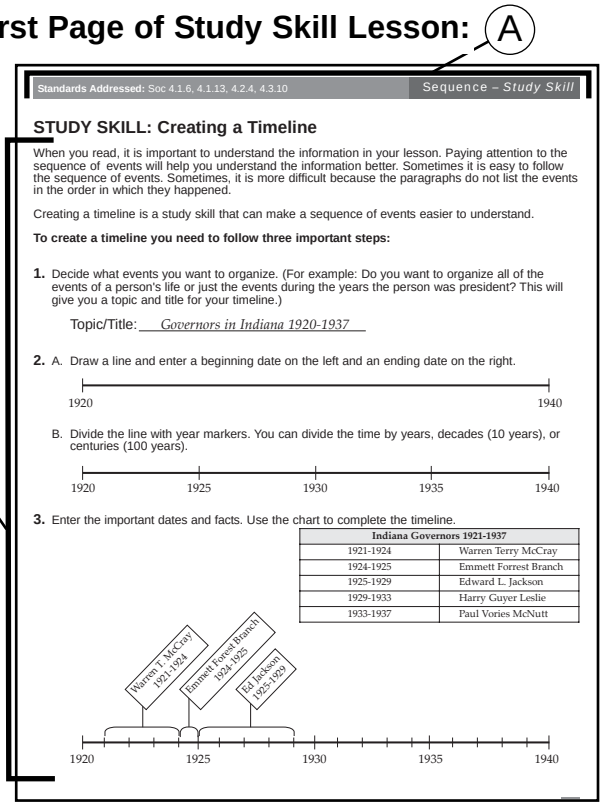
Social Studies Format:



Last Page of Lesson:



First Page of Study Skill Lesson:



Key to the Lesson Layout

Below is a list of elements in the ITRI lesson layout corresponding to the lesson pages reproduced on the previous page.

Ⓐ **Heading Bar:** The heading bar is a map to the standards and reading skills. The bar lists:

- the specific social studies and/or science standards indicators addressed in the lesson
- the English/language arts reading skill area that is the focus of the lesson (i.e., Cause & Effect, Main Idea & Details, etc.)
- the content-area design of the lesson (science, social studies, or study skill format)

Ⓑ **Textbook Page:** The look and layout of each textbook page resembles a page from either a social studies or science textbook.

Ⓒ **Guided Reading Box:** These boxes appear outside or on top of the textbook pages and model the strategies that proficient readers use. The boxes contain reading skill questions. Stars are used to direct the students to the relevant text. These boxes focus on the particular reading skill highlighted by the lesson.

Ⓓ **Lesson Title:** The title of each lesson is listed in bold, oversized print on the student page. The title page in some science lessons may be preceded by an experiment. Study skill lessons are preceded by a study skill introduction page (see description H below).

Ⓔ **Summary:** The lesson summary appears in the left-hand side bar column of the page. The summary is listed either as a *Main Idea* in social studies formatted texts or as a *Discover* question in science formatted texts. In study skill lessons, the format will follow either science or social studies.

Ⓕ **Vocabulary:** Words that are in bold throughout the lesson are listed in the left-hand column of the first page of the lesson. These are vocabulary words that the student is expected to learn by the completion of the lesson.

- **Science** formatted lessons: list and define vocabulary words
- **Social Studies** formatted lessons: only list the vocabulary words
- **Study Skill** lessons will follow either the science or social studies format; This design parallels existing textbook designs.

Ⓖ **Review Questions:** These questions require students to use the highlighted reading skill and to demonstrate comprehension of the lesson.

Ⓗ **Study Skill Introductions:** Lessons that have a study skill format will have an introduction page with explanations of the specific study skill (creating graphic organizers, making a timeline, etc.). Students should read the introduction to the study skill before proceeding to the lesson itself. Teachers may want to model the study skill prior to the lesson to ensure student success.

Key to the Teacher Manual Layout

First Two Pages of Each Lesson

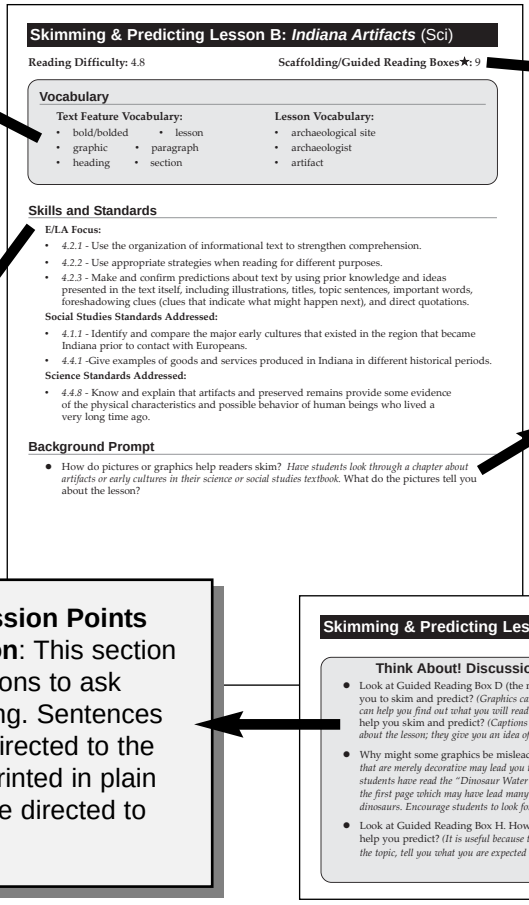
Vocabulary: This section lists all lesson vocabulary and text feature vocabulary, such as *paragraph* or *heading*. (Appendix E contains text feature definitions).

Skills and Standards: This section lists Indiana's Standards in E/LA, social studies, and science addressed in the lesson.

Reading Difficulty and Guided Reading Boxes: This section identifies the reading level (calculated using the Harris-Jacobson Method) and the number of Guided Reading Boxes in the lesson.

Background Prompt: This section activates student thinking about the lesson reading skill and content.

Think About: Discussion Points Following the Lesson: This section lists the critical questions to ask students during scoring. Sentences printed in italics are directed to the teacher. Sentences printed in plain text are intended to be directed to the students.



Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

Reading Difficulty: 4.8 **Scaffolding/Guided Reading Boxes★:** 9

Vocabulary

Text Feature Vocabulary:
- bold/bolded
- graphic
- heading
- lesson
- paragraph
- section

Lesson Vocabulary:
- archaeological site
- archaeologist
- artifact

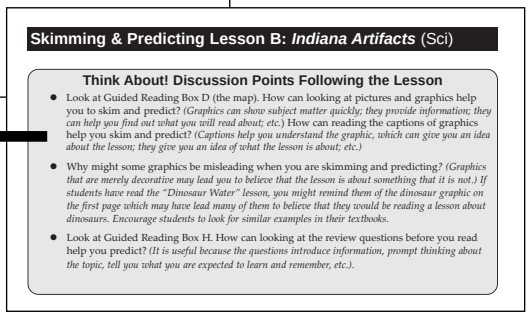
Skills and Standards

E/LA Focus:
- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:
- *4.1.1* - Identify and compare the major early cultures that existed in the region that became Indiana prior to contact with Europeans.
- *4.4.1* -Give examples of goods and services produced in Indiana in different historical periods.

Science Standards Addressed:
- *4.4.8* - Know and explain that artifacts and preserved remains provide some evidence of the physical characteristics and possible behavior of human beings who lived a very long time ago.

Background Prompt
- How do pictures or graphics help readers skim? *Have students look through a chapter about artifacts or early cultures in their science or social studies textbook.* What do the pictures tell you about the lesson?



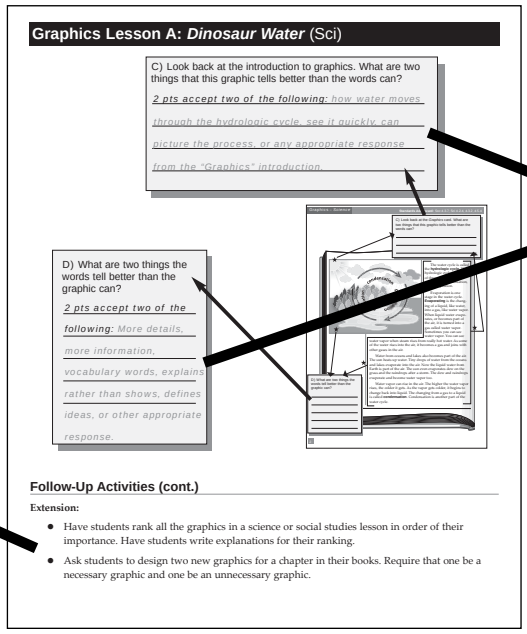
Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

Think About! Discussion Points Following the Lesson
- Look at Guided Reading Box D (the map). How can looking at pictures and graphics help you to skim and predict? *(Graphics can show subject matter quickly; they provide information; they can help you find out what you will read about; etc.)* How can reading the captions of graphics help you skim and predict? *(Captions help you understand the graphic, which can give you an idea about the lesson; they give you an idea of what the lesson is about; etc.)*
- Why might some graphics be misleading when you are skimming and predicting? *(Graphics that are merely decorative may lead you to believe that the lesson is about something that it is not.) If students have read the "Dinosaur Water" lesson, you might remind them of the dinosaur graphic on the first page which may have lead many of them to believe that they would be reading a lesson about dinosaurs. Encourage students to look for similar examples in their textbooks.*
- Look at Guided Reading Box H. How can looking at the review questions before you read help you predict? *(It is useful because the questions introduce information, prompt thinking about the topic, tell you what you are expected to learn and remember, etc.).*

Subsequent Pages of Each Lesson

Follow-Up Activities and Cross-Curricular Ties: The Follow-up Activities section includes Additional Practice activities for students who need more practice and Extension activities for students who need to be challenged. The Cross-Curricular Ties section includes activities that incorporate additional Indiana Standards across the curriculum.

Answer Key: The Answer Key lists all correct answers for each item students complete in the lesson. Use answers during Think About! Discussion Points Following the Lesson.



Graphics Lesson A: *Dinosaur Water* (Sci)

C) Look back at the introduction to graphics. What are two things that this graphic tells better than the words can?

2 pts accept two of the following: how water moves through the hydrologic cycle, see it quickly, can picture the process, or any appropriate response from the "Graphics" introduction

D) What are two things the words tell better than the graphic can?

2 pts accept two of the following: More details, more information, vocabulary words, explains rather than shows, defines ideas, or other appropriate response.

Follow-Up Activities (cont.)

Extension:
- Have students rank all the graphics in a science or social studies lesson in order of their importance. Have students write explanations for their ranking.
- Ask students to design two new graphics for a chapter in their books. Require that one be a necessary graphic and one be an unnecessary graphic.

Administering the Timed Reading Tool

NOTE: The intent of these assessment tools is to gather accurate baseline or follow-up data. Teachers should **not** help students read or offer suggestions on how to figure out answers. Teachers should only encourage students to do their best.

- **Diagnostic Assessment: The Coffins**
- **Follow-Up Assessment: A Famous Hoosier**

Say: This is a tool that will help me know how well you read your textbooks. When I tell you to begin you will have five minutes to read the passage. This is not a test of how *fast* you read. Although you need to read quickly, it is more important to read carefully. Pay close attention to everything that is on the page. When the five minutes are up, you will be asked to answer some questions about what you have read. You will not be able to look back at the passage when you are answering the questions.

Distribute passage portion of the tool, and tell students to begin.

*Allow the students **five minutes** to read the passage.*

Say: Circle the last word that you read and then put your pencil down.

Collect the passages.

Distribute the question portion of the tool.

Say: Put your name on the top of the page. You will now have as much time as you need to complete the eight questions that ask about the passage you just read. If you do not know an answer, choose the one that seems most correct. You may begin.

Give the students as much time as they need to complete the eight questions.

Administering the Science and Social Studies Tools

NOTE: The intent of these tools is to gather accurate baseline and follow-up data. Teachers should **not** help students read or offer suggestions on how to figure out answers. Teachers should only encourage students to do their best.

Use the directions for both the social studies and science tools in both assessments.

- **Diagnostic Assessment: Earth and Sun System (science), American Indian Tribes (social studies)**
- **Follow-Up Assessment: The Indiana Gas and Oil Boom (science), Money in Indiana (social studies)**

Distribute the tool to students.

Say: This is a tool that will help me know how well you read your science and social studies textbooks. When I tell you to begin you will have as long as you need to read the lesson and answer the questions. Remember to take your time and read carefully. Pay close attention to everything on the page. When you are done reading the passage, answer the questions on the next page. There are eight questions total. Do your best to answer the questions correctly. You may look back at the lesson as you work. If you do not know an answer, choose the one that seems the most correct.

Write your name at the top of the lesson. You may now begin.

Give the students as much time as they need to read the lesson and complete the questions.

Answer Key: Diagnostic Assessment

Timed Reading Tool: The Coffins

Diagnostic Assessment: Timed Reading Tool — **Standards Addressed:** Soc 3.1.4, 3.1.6

Review Questions

1. In this lesson *Quaker* means a person who _____.
   - ○ moves to a new state
   - ○ wears old-fashioned clothes
   - ● joins the Society of Friends
   - ○ owns a lot of slaves
2. A free state is a state that _____.
   - ○ gives away land for free
   - ○ allows Quakers
   - ● does not allow slavery
   - ○ makes free trade goods
3. One trick the Coffins used to hide slaves was to _____.
   - ○ hide them under quilts
   - ○ dress them like Quakers
   - ● push a bed in front of a door
   - ○ cover all of the upstairs windows
4. Which of the following was a bolded vocabulary word in this lesson?
   - ○ manufactured
   - ● fugitive slaves
   - ○ abolitionist
   - ○ free labor
5. Many Quakers moved to Indiana because _____.
   - ● it was a free state
   - ○ it had good transportation
   - ○ they liked Indians
   - ○ they wanted to own slaves
6. What was the main idea of this lesson?
   - ○ Quakers believe that all people are equal.
   - ○ Today the Levi Coffin house is a historical building.
   - ○ Abolitionists are people who are against slavery.
   - ● Levi and Catharine Coffin helped many slaves escape.
7. What happened last? Levi Coffin _____.
   - ● lived in Cincinnati
   - ○ moved to Indiana
   - ○ lived in North Carolina
   - ○ became part of the Underground Railroad
8. One thing that was different about the Coffins' lives after they left Indiana and moved to Ohio was that they _____.
   - ○ were Quakers
   - ○ were abolitionists
   - ○ helped slaves escape
   - ● sold free labor goods

4

Science Tool: Earth and Sun System

Diagnostic Assessment: Science Format — **Standards Addressed:** Soc 3.3.4; Sci 3.3.1

Review Questions

Name:_____

1. *Revolve* means to _____.
   - ○ spin around something backwards
   - ○ move very fast in a straight line
   - ○ spin all the way around
   - ● move in a circle around something
2. *Tilt* means to _____.
   - ○ lie down
   - ○ revolve around
   - ● lean to one side
   - ○ be straight up and down
3. Another name for the North Star is _____.
   - ○ Axis
   - ● Polaris
   - ○ The sun
   - ○ North Pole
4. If you were skimming this lesson, you would find the definitions of new vocabulary under _____.
   - ○ the title
   - ○ *Discover*
   - ○ the headings
   - ● *Science Words*
5. When Indiana tilts away from the sun, what is the season?
   - ○ fall
   - ● winter
   - ○ spring
   - ○ summer
6. What is the main idea of this lesson?
   - ● Earth rotates and revolves to create days and seasons.
   - ○ Earth uses Polaris to create days and seasons.
   - ○ Earth rotates on its axis every 24 hours of every day.
   - ○ Earth uses more than 365 days to revolve around the sun.
7. Which of the following best describes how the northern half of the Earth is tilting when it is fall in Indiana?
   - ○ tilting closer to the sun
   - ○ tilting farthest from the sun
   - ○ beginning to tilt close to the sun
   - ● beginning to tilt away from the sun
8. One difference between Japan and Indiana is that _____.
   - ○ only Indiana experiences seasons
   - ● they are on opposite sides of Earth
   - ○ Japan doesn't have daytime
   - ○ the North Star points to Indiana

4

Social Studies Tool: American Indian Tribes

Diagnostic Assessment: Social Studies Format — **Standards Addressed:** Soc 3.1.1, 3.4.3, 3.5.4

Review Questions

Name:_____

1. A wigwam is a home that is _____.
   - ○ easy to carry
   - ○ built by the Sioux
   - ● shaped like a dome
   - ○ covered with mud or clay
2. Kachinas are a kind of _____.
   - ● doll
   - ○ home
   - ○ blanket
   - ○ clothing
3. Which two tribes lived closest together?
   - ○ the Abenaki and the Hopi
   - ○ the Sioux and the Iroquois
   - ○ the Sioux and the Cherokee
   - ● the Abenaki and the Iroquois
4. If a section about the Navajo Indians were added to the lesson, what information would you expect to find there?
   - ○ the number of Navajo living in the United States today
   - ● what foods the Navajo hunted and planted
   - ○ what traditional Navajo clothing looks like
   - ○ what games Navajo children play
5. Why were the Sioux nomads?
   - ○ Their families were large.
   - ● They depended on buffalo.
   - ○ They wanted to start farming.
   - ○ Their tepees were easy to carry.
6. This lesson is mostly about _____.
   - ○ American Indian homes
   - ● how American Indians used to live
   - ○ how the Pilgrims changed America
   - ○ American Indians of the northeastern United States
7. When the Sioux made their tepees, they set up poles. What did they do next?
   - ○ covered the poles with dried grass
   - ○ unrolled a blanket under the poles
   - ○ bent young trees around the poles
   - ● wrapped the poles in buffalo hide
8. Which three tribes rode in boats?
   - ● Cherokee, Abenaki, and Iroquois
   - ○ Sioux, Cherokee, and Abenaki
   - ○ Hopi, Iroquois, and Cherokee
   - ○ Abenaki, Hopi, and Sioux

4

Answer Key: Follow-Up Assessment

Timed Reading Tool: A Famous Hoosier

Standards Addressed: Soc 4.1.9, 4.4.1, 4.4.7, 4.4.8 — Follow-up Assessment: Timed Reading Tool

Review Questions

Name:_____

1. In this lesson, *goods* means objects that _____.
   - ● satisfy people's wants
   - ○ fulfill people's dreams
   - ○ are made by philanthropists
   - ○ are made by entrepreneurs

2. A philanthropist is someone who _____.
   - ○ is an entrepreneur
   - ○ produces a product
   - ○ takes a risk to start a business
   - ● gives money to help other people

3. Which two ingredients does the picture say were in Madam Walker's secret formula?
   - ○ lotion and soap
   - ○ powder and black dye
   - ○ vegetable oil and cream
   - ● beeswax and violet perfume

4. Which of the following was a bolded vocabulary word in this lesson?
   - ● profit
   - ○ revenue
   - ○ philanthropist
   - ○ Madam C.J. Walker

5. Sarah decided to try hair care products because she _____.
   - ● was losing her hair
   - ○ wanted her hair to curl
   - ○ liked her hair to smell nice
   - ○ wanted to straighten her hair

6. What was the main idea of this lesson?
   - ○ A secret formula can help hair grow and can make a lot of money.
   - ● Madam C.J. Walker was a famous Hoosier entrepreneur.
   - ○ Hoosiers can be on stamps if they're famous.
   - ○ People must experiment to make a profit.

7. After Madam C.J. Walker sold a lot of hair oil, she _____.
   - ● built a factory in Indiana
   - ○ took a job washing clothes
   - ○ got married to C.J. Walker
   - ○ sold her secret to her partner

8. What was one thing that was the same about Madam C.J. Walker's life when she was a little girl and when she was an adult?
   - ● She worked hard.
   - ○ She was a philanthropist.
   - ○ She travelled the country.
   - ○ She gave speeches about her life.

3

Science Tool: The Indiana Gas and Oil Boom

Follow-up Assessment: Science Format — **Standards Addressed:** Soc 4.1.9, 4.1.13, 4.4.1; Sci 4.3.14

Review Questions

1. Fuel created long ago from decayed plants and animals is called _____.
   - ● fossil fuel
   - ○ ocean fuel
   - ○ future fuel
   - ○ renewable fuel

2. In this lesson *boom* means _____.
   - ○ a factory
   - ○ a loud noise
   - ○ a kind of fossil fuel
   - ● a time of rapid growth

3. Indiana's oil reached its peak production in _____.
   - ○ 1862
   - ○ 1886
   - ○ 1925
   - ● 1956

4. If you were skimming this lesson, you would find the definitions of new vocabulary under _____.
   - ○ the title
   - ○ *Discover*
   - ○ the headings
   - ● *Science Words*

5. What was one result of the Indiana gas boom?
   - ○ Fossil fuels became renewable in Indiana.
   - ● People and industries moved to Indiana.
   - ○ Natural gas was discovered in Indiana.
   - ○ More people drove cars in Indiana.

6. What is the main idea of the last paragraph in this lesson?
   - ○ Indiana is a top producer of natural gas and oil.
   - ○ People should use oil more than natural gas.
   - ○ Oil is better than natural gas because there is more of it.
   - ● Waste and limited resources ended the gas and oil boom.

7. What happened first?
   - ● Oil wells were drilled in Indiana.
   - ○ Indiana used more gas than it produced.
   - ○ Natural gas was discovered in Delaware county.
   - ○ Increased natural gas production began in east central Indiana.

8. What is one thing that Indiana's natural gas and oil have in common?
   - ○ Both began to form in Indiana in the early 1800s.
   - ○ Both are renewable resources that won't run out.
   - ● Both were discovered in Trenton Field in the 1800s.
   - ○ Both were found in southwest Indiana in the 1900s.

4

Social Studies Tool: Money in Indiana

Follow-up Assessment: Social Studies Format — **Standards Addressed:** Soc 4.4.1, 4.4.3, 4.4.6

Review Questions

1. Which of the following is the best definition of *currency*?
   - ○ paper money printed by banks
   - ○ something that is up to date
   - ● anything used in exchange
   - ○ animal skin used in trade

2. What is a pelt?
   - ○ a beaver
   - ○ a banknote
   - ● skin of an animal
   - ○ coin made of gold

3. How many combs was one beaver pelt worth?
   - ○ 1
   - ● 6
   - ○ 8
   - ○ 10

4. Under which heading would you expect to find information about the money that we use in Indiana today?
   - ○ Beaver Pelts: From Bartering to Currency
   - ○ Bartering Among American Indians
   - ● The Growth of Paper Money
   - ○ Vocabulary and Main Idea

5. Banks were started in Indiana because people needed _____.
   - ○ places to meet
   - ○ new businesses
   - ● reliable currency
   - ○ good employment

6. This lesson is mostly about _____.
   - ○ bartering
   - ○ beaver pelts
   - ● currency used in Indiana
   - ○ the invention of paper money

7. What happened first?
   - ○ The dollar bills with Indiana scenes were designed.
   - ○ The dollar bills we use today were designed.
   - ○ American Indians bartered with Europeans.
   - ● American Indians bartered with each other.

8. What is one thing that beaver pelts and Indiana banknotes have in common?
   - ○ Both are easy to carry.
   - ● Both are forms of currency.
   - ○ Both had been used to barter.
   - ○ Both were made by Indiana banks.

4

Vocabulary Lesson A: *Popcorn* (Study Skill)

Reading Level: 4.6 **Scaffolding/Guided Reading Boxes★:** 4

Vocabulary

Text Feature Vocabulary:

- bolded
- concept map
- graphic
- graphic organizer
- vocabulary

Lesson Vocabulary:

- energy
- heat
- pressure

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.
- *4.4.5* - Give examples of Indiana's role in world trade.

Science Standards Addressed:

- *4.4.4* - Observe and describe that some source of energy is needed for all organisms to stay alive and grow.

Background Prompt

- Do you like to eat popcorn? What do you know about popcorn? How do you think popcorn pops? *Write student answers on the board. You may wish to return to these answers after the lesson to see if students can clarify or add to them.*

Vocabulary Lesson A: *Popcorn* (Study Skill)

Think About! Discussion Points Following the Lesson

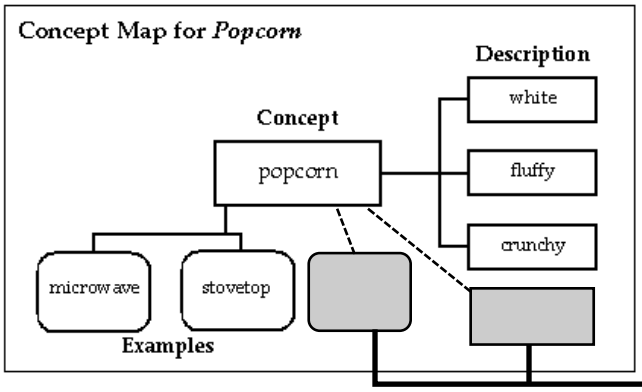
- Look at your concept map in Guided Reading Box D. What examples did you include in your concept map? *(Answers will vary.)* Where did you find the examples? *(Answers will vary.)* Did you include examples from your own lives? *(Examples might include pressure in tires, people working under pressure, etc.) Explain that connecting words to their own lives is a good way to remember words.* What other places could you look to find out more about a vocabulary word? *(You could look in a dictionary or glossary; you could ask a teacher, friend, parent; etc.)*
- How could concept maps be useful for studying for tests and remembering important words? How are concept maps similar to other graphic organizers you have used? *(They help organize information; they help visual learners; etc.)* How are they different? *(They are specific to vocabulary.)* When would you use a concept map instead of another kind of graphic organizer? *(Use a concept map to to figure out what complicated vocabulary terms mean.)*
- Look at Guided Reading Box B: "Kinds of Energy." Can you think why important information about a concept only appears in the illustration? *(It saves space; it is easier to present/understand that way; etc.)* Open your science/social studies] book and skim any chapter. Can you find an example of a graphic that shows important information? *(Answers will vary. Have students discuss the examples that they found.)*

Vocabulary Lesson A: *Popcorn* (Study Skill)

Standards Addressed: Soc 4.4.1, 4.4.5; Sci 4.4.4 — **Vocabulary – *Study Skill***

STUDY SKILL: Concept Map

Look at this concept map. A concept map is a picture of a big idea, or concept. Concept maps help you think about and remember big ideas.



1. Use the concept map to help you complete the sentences below.

This concept map is about *popcorn*. Two ways to cook popcorn are *microwave* and *stovetop*. The concept map describes popcorn. It says it is: *white* and *fluffy* and *crunchy*.

2. Think of another fact about popcorn. Write your idea in the correct place on the concept map.

In this lesson, you will learn how to draw your own concept maps. When you create your own concept map, it will answer questions. Not every concept map will look the same, but a concept map may answer:

- What is the concept? (popcorn)
- How can it be described? (crunchy, white)
- What are some examples of it? (microwave, stovetop)
- How do we use it?
- What can we compare it to?

1

2 pts: one for the fact and one for drawing it correctly on the graphic organizer *Acceptable answers for "what it means or is like" include: it tastes good; people eat it; it is a healthful snack; or any other appropriate response. Acceptable answers for "Examples" include caramel corn, black corn, red corn, or any other appropriate response.*

6 pts: one point for correct each answer.

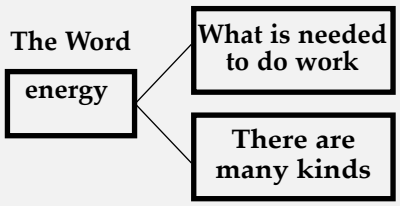
Follow-Up Activities

Additional Practice:

- Students often have difficulty knowing what to include and what to leave out. Create a generic concept map for them to complete. Have students practice making a concept map for vocabulary words in the next science or social studies lesson.
- If students continue to struggle, have them practice by making a concept map for a more familiar term.

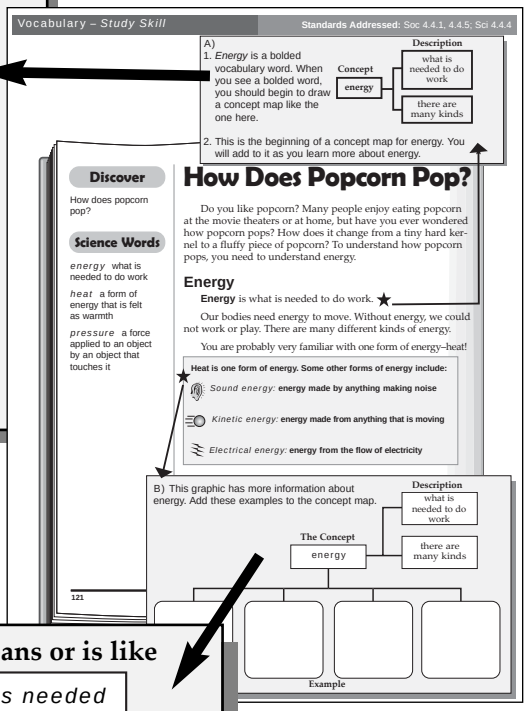
Vocabulary Lesson A: *Popcorn* (Study Skill)

A) 1. The vocabulary word *energy* is in bold. When you see a bold word, you should begin to draw a graphic organizer like the one here.



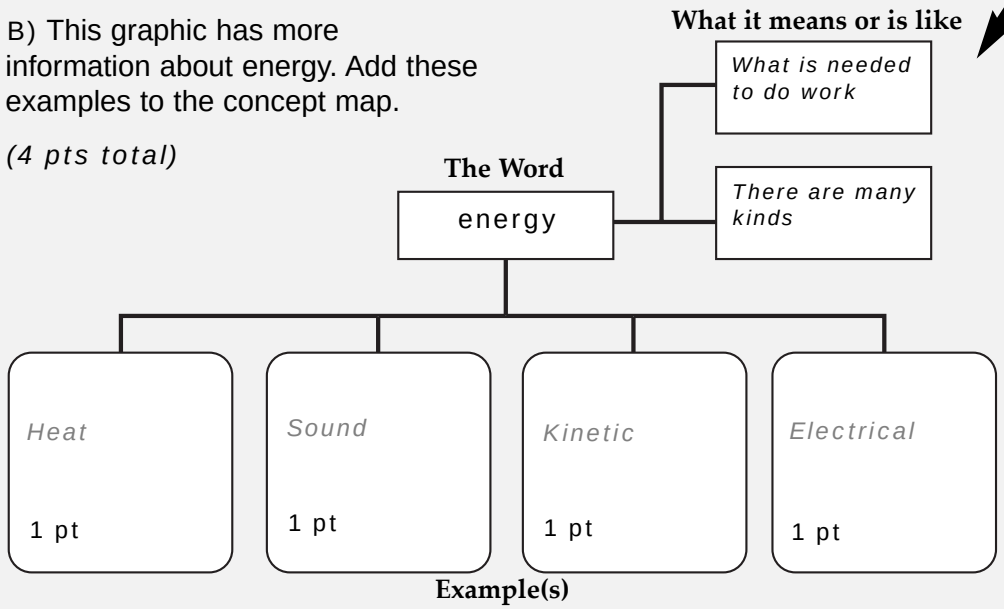
2. This is the beginning of a *graphic organizer* for energy. Copy this on another sheet of paper correctly.

(no points)



B) This graphic has more information about energy. Add these examples to the concept map.

(4 pts total)

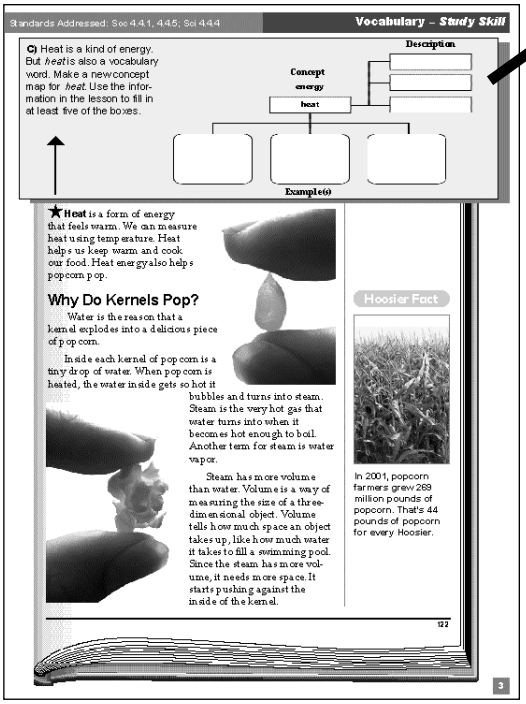


Follow-Up Activities (cont.)

Extension:

- Students often have difficulty knowing what to include and what to leave out. Have students practice making a concept map for an important concept in a current or past science or social studies lesson. Have them discuss how they decided which information was most/least important.
- Introduce students to more detailed kinds of concept maps. Have them design their own concept maps for vocabulary words from their science and social studies textbooks. Encourage them to be creative in designing and completing these concept maps. Post completed work in the classroom.

Vocabulary Lesson A: *Popcorn* (Study Skill)


Standards Addressed: Soc 4.4.1, 4.4.5; Sci 4.4.4

Vocabulary – *Study Skill*

C) Heat is a kind of energy. But *heat* is also a vocabulary word. Make a new concept map for *heat*. Use the information in the lesson to fill in at least five of the boxes.

Description

Concept

energy

heat

Example(s)

★**Heat** is a form of energy that feels warm. We can measure heat using temperature. Heat helps us keep warm and cook our food. Heat energy also helps popcorn pop.

Why Do Kernels Pop?

Water is the reason that a kernel explodes into a delicious piece of popcorn.

Inside each kernel of popcorn is a tiny drop of water. When popcorn is heated, the water inside gets so hot it bubbles and turns into steam. Steam is the very hot gas that water turns into when it becomes hot enough to boil. Another term for steam is water vapor.

Steam has more volume than water. Volume is a way of measuring the size of a three-dimensional object. Volume tells how much space an object takes up, like how much water it takes to fill a swimming pool. Since the steam has more volume, it needs more space. It starts pushing against the inside of the kernel.

Hoosier Fact

In 2001, popcorn farmers grew 269 million pounds of popcorn. That's 44 pounds of popcorn for every Hoosier.

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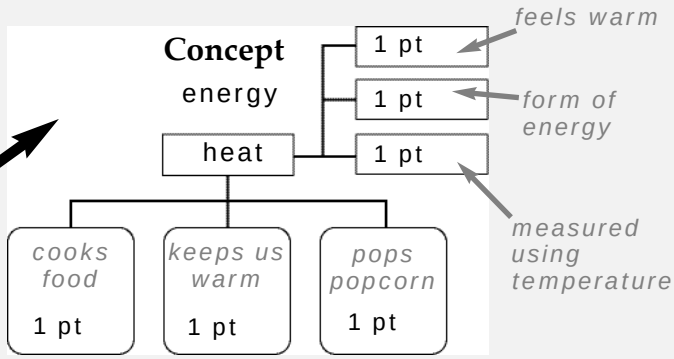
3

C) Heat is a kind of energy. But *heat* is also a vocabulary word. Make a new concept map for *heat*. Use the information in the lesson to fill in at least five of the boxes below.

5 pts total (6 possible correct answers)



Cross-Curricular Ties

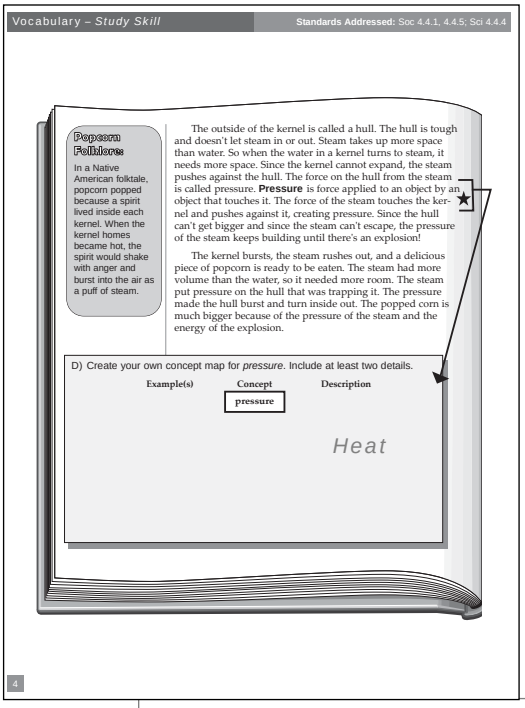
- *Math 4.5.8* - Use volume and capacity as different ways of measuring the space inside a shape.

Suggested Activity: Determine how many unpopped kernels of popcorn fit in a container. Compare this to the amount of popped corn that fits into the same container.

- Soc *4.3.5* - Map the physical regions of Indiana and identify major natural resources and crop regions.
- *Soc 4.3.10* - Read and interpret thematic maps–such as transportation, population, and products–to acquire information about Indiana in the present and the past.

Suggested Activity: Have students locate or create maps of the popcorn-producing areas of Indiana.

Vocabulary Lesson A: *Popcorn* (Study Skill)



Vocabulary – *Study Skill*

Standards Addressed: Soc 4.4.1, 4.4.5; Sci 4.4.4

Popcorn Folklore

In a Native American folktale, popcorn popped because a spirit lived inside each kernel. When the kernel homes became hot, the spirit would shake with anger and burst into the air as a puff of steam.

The outside of the kernel is called a hull. The hull is tough and doesn't let steam in or out. Steam takes up more space than water. So when the water in a kernel turns to steam, it needs more space. Since the kernel cannot expand, the steam pushes against the hull. The force on the hull from the steam is called pressure. **Pressure** is force applied to an object by an object that touches it. The force of the steam touches the kernel and pushes against it, creating pressure. Since the hull can't get bigger and since the steam can't escape, the pressure of the steam keeps building until there's an explosion!

The kernel bursts, the steam rushes out, and a delicious piece of popcorn is ready to be eaten. The steam had more volume than the water, so it needed more room. The steam put pressure on the hull that was trapping it. The pressure made the hull burst and turn inside out. The popped corn is much bigger because of the pressure of the steam and the energy of the explosion.

D) Create your own concept map for *pressure*. Include at least two details.

Example(s) | Concept: pressure | Description

Heat

4

Create your own concept map for *pressure*.

Example(s) | **The Word: pressure** | **What it means or is like**

3 pts total: Award 1pt for creating the graphic organizer correctly, 2 pts for completing two boxes correctly (1 pts each). Accept any reasonable answer.

D) Create your own concept map for *pressure*. Include at least two details.

What it means or is like

Force applied to an object

The Word

pressure

steam pushing the kernel and hull

Example(s)

Vocabulary Lesson B: *The Indiana Dunes* (Sci)

Reading Difficulty: 3.9 **Scaffolding/Guided Reading Boxes★:** 7

Vocabulary

Text Feature Vocabulary:

- definition
- graphic

Lesson Vocabulary:

- dune
- erosion
- weathering

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.5* - Compare and contrast information on the same topic after reading several passages or articles.

Social Studies Standards Addressed:

- *4.2.5* - Explain that Indiana is one of 50 states in the United States and that other countries are also made up of smaller units, such as states, provinces, or territories.
- *4.3.5* - Map the physical regions of Indiana, and identify major natural resources and crop regions.

Science Standards Addressed:

- *4.3.2* - Begin to investigate and explain that air is a substance that surrounds us and takes up space, and whose movements we feel as wind.
- *4.3.5* - Describe how waves, wind, water, and glacial ice shape and reshape Earth's land surface by the erosion of rock and soil in some areas and depositing them in other areas.
- *4.3.7* - Explain that smaller rocks come from the breakage and weathering of bedrock and larger rocks and that soil is made partly from weathered rock, partly from plant remains, and also contains many living organisms.

Background Prompt

- Have you ever visited the beach? What was it like? Where else have you seen sand? Where do you think sand comes from?

OR

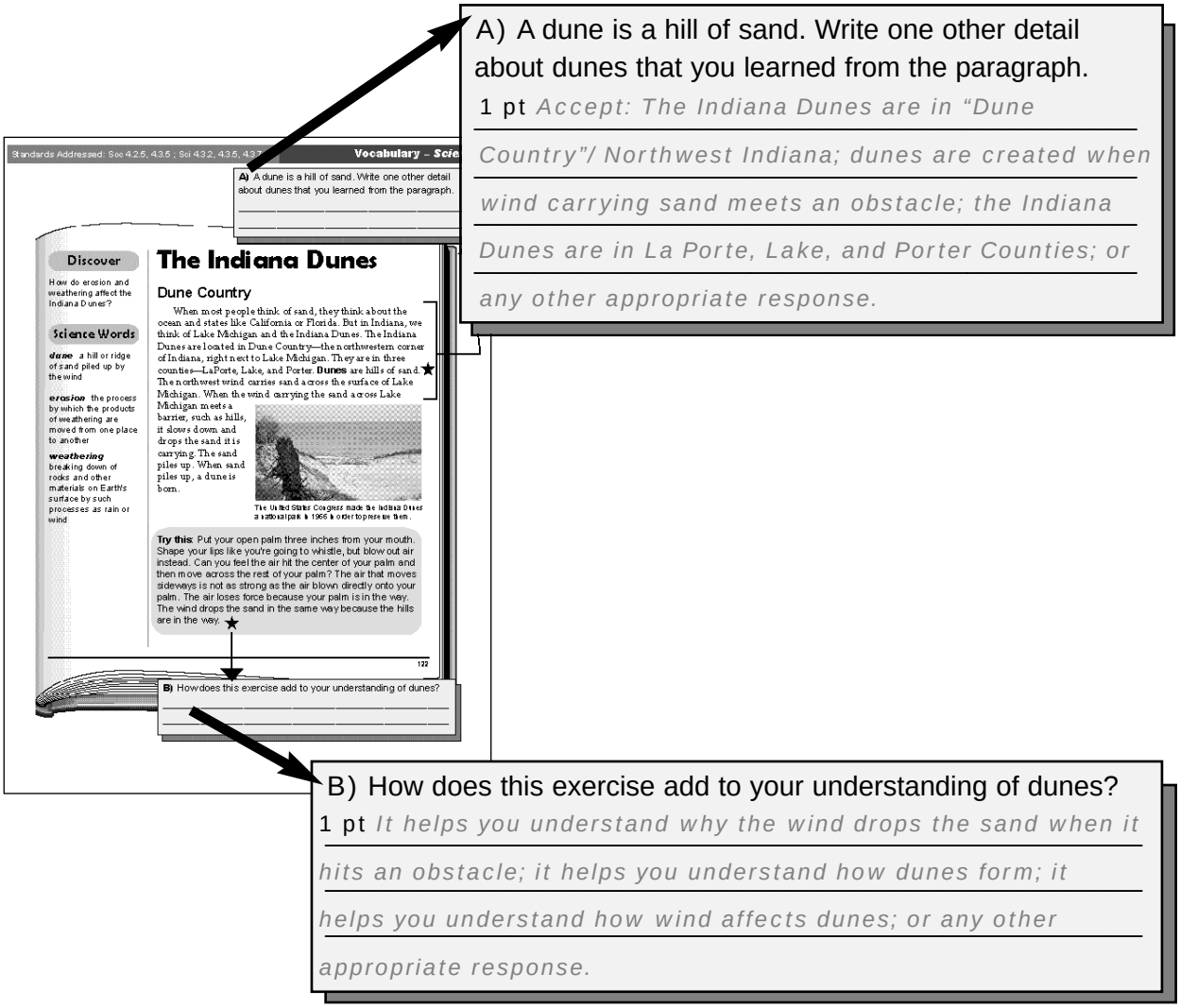
- *Write the words* erosion, weathering *and* dune *on the board. Ask students to hypothesize what the words might mean. Point out, for example, that weathering contains the word* weather. *Ask if students can guess what weathering means. After the lesson, return to these hypotheses and evaluate them.*

Vocabulary Lesson B: *The Indiana Dunes* (Sci)

Think About! Discussion Points Following the Lesson

- *Weathering* is a vocabulary word, but it is also part of the definition for another vocabulary word? Which one? *(erosion) Point out that sometimes difficult and unfamiliar words are used to define social studies and science vocabulary words.* Where can you go to find out what difficult words mean? *(Look in a glossary, dictionary, etc)*
- What strategies did the lesson teach you to help you understand the differences between tough vocabulary words? (*You can make a chart, draw a picture, etc.) If students have difficulty answering, have them go through the Guided Reading Boxes.*
- *Explain that in science and social studies textbooks, more information about a vocabulary word is sometimes in a graphic, such as the weathering graphic on page 2.* Look at Guided Reading Box B. Why would a graphic be useful for explaining a vocabulary word? *(It makes it easy to see the concept or idea; it shows the whole picture; it shows how something works; it provides additional details that you can add to the definition from the text; it gets your attention; etc.)*

Vocabulary Lesson B: *The Indiana Dunes* (Sci)



Follow-Up Activities

Additional Practice:

- If students have difficulty understanding vocabulary concepts, ask them to draw a picture of the definition. If students are confident, have them draw their pictures on the chalkboard or share with a small group. Then give students additional vocabulary terms to draw. Have them either explain their pictures or trade papers to guess which vocabulary word is represented by the drawing.
- If vocabulary terms lend themselves to compare/contrast, have students choose terms from Science textbooks and create charts similar to Review Questions #1 and #2 to use as study guides when they read.

Vocabulary Lesson B: *The Indiana Dunes* (Sci)

C) How do these graphics add to the definition of *weathering*?

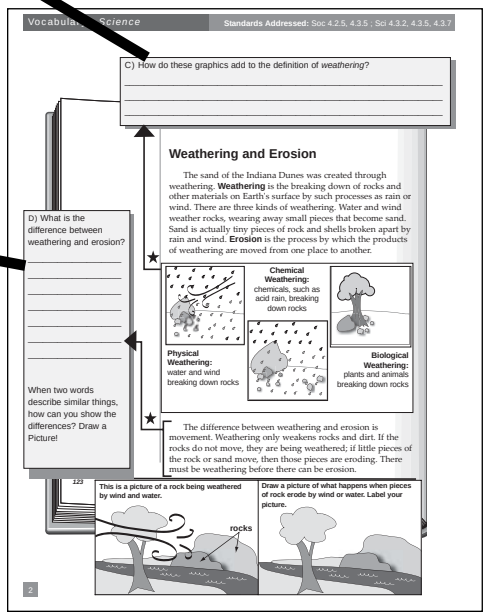
1 pt They give more information about the vocabulary word; they show how weathering works; they show there three kinds of weathering; or any other appropriate response.

D) What is the difference between weathering and erosion?

1 pt Accept: Movement; erosion moves the products of weathering; there cannot be erosion without weathering; or any other appropriate response.

When two words describe similar things, how can you show the differences? Draw a Picture!

1 pt Accept any reasonable pictorial representation of "rock being eroded." Picture should indicate movement.
1 pt for labeling the picture appropriately

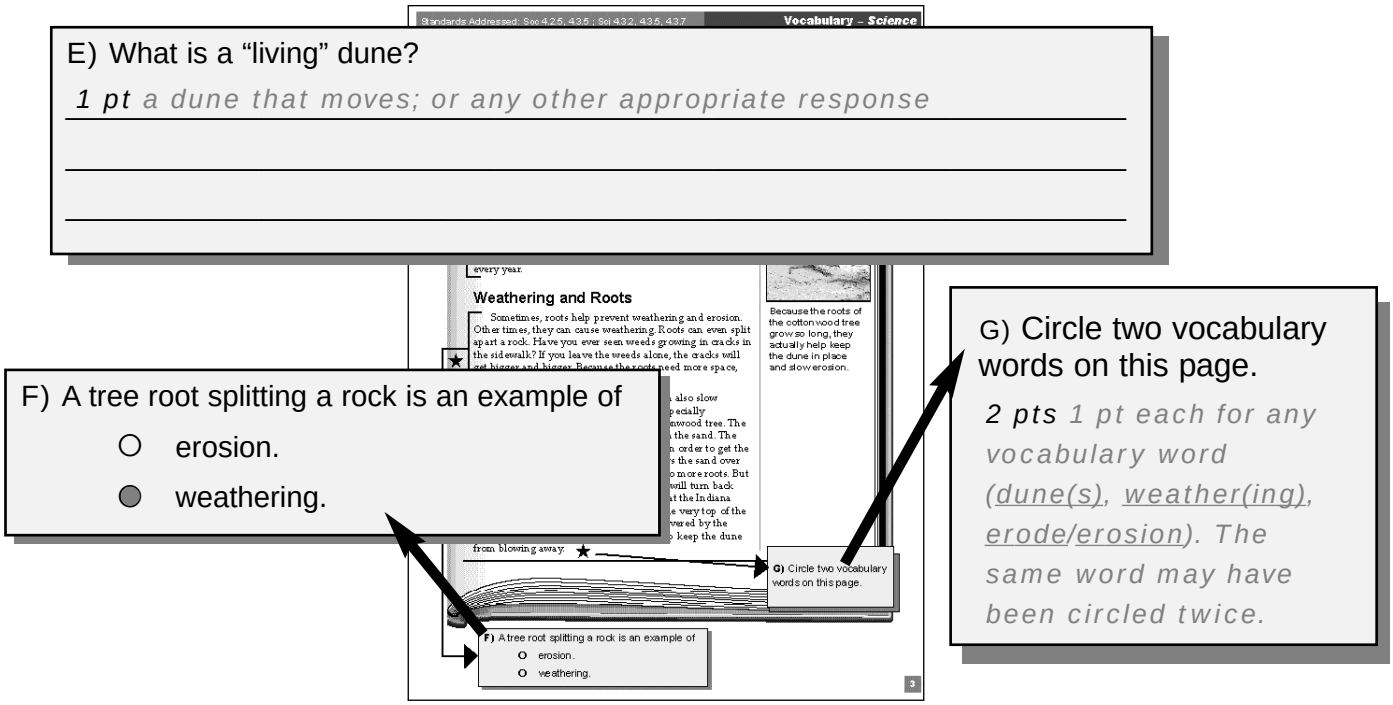


Follow-Up Activities (cont.)

Extension:

- Ask students to think about the *vocabulary* card that they read before they began this lesson. Using Guided Reading Box B and the Review Questions charts, ask students to create a definition of social studies and science vocabulary words. Ask students to draw a picture of conceptual vocabulary words and/or create a chart to compare and contrast different vocabulary words.
- Have students create graphics to illustrate vocabulary words from a recent science or social studies lesson. Have them trade papers and try to figure out what vocabulary word is being depicted (this could also be done as a large group activity with each student presenting his or her illustration for the class to figure out). After the activity, have students label the illustrations with the correct vocabulary words, and post them in the classroom.

Vocabulary Lesson B: *The Indiana Dunes* (Sci)



Cross-Curricular Ties

- *Sci 4.2.4* - Use numerical data to describe and compare objects and events.

Suggested Activity: Create a mound of sand in the corner of a playground and one at the corner of the school building. Measure the mound's height, circumference, etc. After a week, compare how the piles of sand have changed by taking these measurements again.

- *Sci 4.1.2* - Recognize and describe that results of scientific investigations are seldom exactly the same. If differences occur, such as a large variation in the measurement of plant growth, propose reasons for why these differences exist, using recorded information about investigations.
- *Sci 4.2.7* - Identify better reasons for believing something than "Everybody knows that…" or "I just know," and discount such reasons when given by others.
- *Sci 4.6.3* - Recognize that and describe how changes made to a model can help predict how the real thing can be altered.

Suggested Activity: Have students write statements about the differences or similarities between the two sand mounds (above) and give reasons, supported by facts, for how and why they may have changed or not changed over the course of the week. Allow students to make changes to the mounds' locations or structures and repeat the experiment. Discuss how this model could reflect what might happen to a real sand dune.

Vocabulary Lesson B: *The Indiana Dunes* (Sci)

Vocabulary – *Science* **Standards Addressed:** Soc 4.2.5, 4.3.5 ; Sci 4.3.2, 4.3.5, 4.3.7

Review Questions

Charts can help you compare difficult words and concepts.

1. Complete the chart below by filling in the empty boxes to describe how weathering and erosion can change rocks.

1 pt each for a total of 3 pts

Rocks	Weathering	Erosion
Water		Carries sand and small pieces away.
Wind	Blows against the rock and weakens it.	
Roots		Slows down erosion by keeping the earth in place.

2. Now complete the chart below to show the similarities and differences between how different kinds of weathering affect rocks.

1 pt each for total of 3 pts

	Physical Weathering	Chemical Weathering	Biological Weathering
Who or what does it?	*wind and rain*	Acid Rain, Chemicals	*plants and animals*
Does it carry anything away?	No	*No*	No

3. Look at the three types of weathering on page 2. Now draw examples of weathering and erosion in the boxes below. Label your pictures to explain your work.

Draw a picture of roots *weathering* the sidewalk. Be sure to label your picture.

1 pt The picture should show a root growing in the middle of a rock.

1 pt The picture should be appropriately labeled.

Draw a picture of wind *eroding* a sand dune. Be sure to label your picture.

1 pt The picture should show wind blowing against the dune and picking up or carrying pieces of sand.

1 pt The picture should be appropriately labeled.

4

1. Water washes against the rock or rain falls on the rock and weakens it.

2. Carries sand and small pieces of rock away.

3. Roots grow, weakening the rock and pushing it apart.

Vocabulary Lesson C: *Our Planet Earth* (Sci)

Reading Difficulty: 4.3 **Scaffolding/Guided Reading Boxes★:** 9

Vocabulary

Text Feature Vocabulary:

- definition

Lesson Vocabulary:

- atmosphere
- biosphere
- hydrosphere
- lithosphere

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:

- *4.3.7* - Describe Earth's atmosphere, lithosphere, hydrosphere, and biosphere and explain how these systems affect life in Indiana.

Science Standards Addressed:

- *4.3.2* - Begin to investigate and explain that air is a substance that surrounds us, and takes up space, and whose movements we feel as wind.

Background Prompt

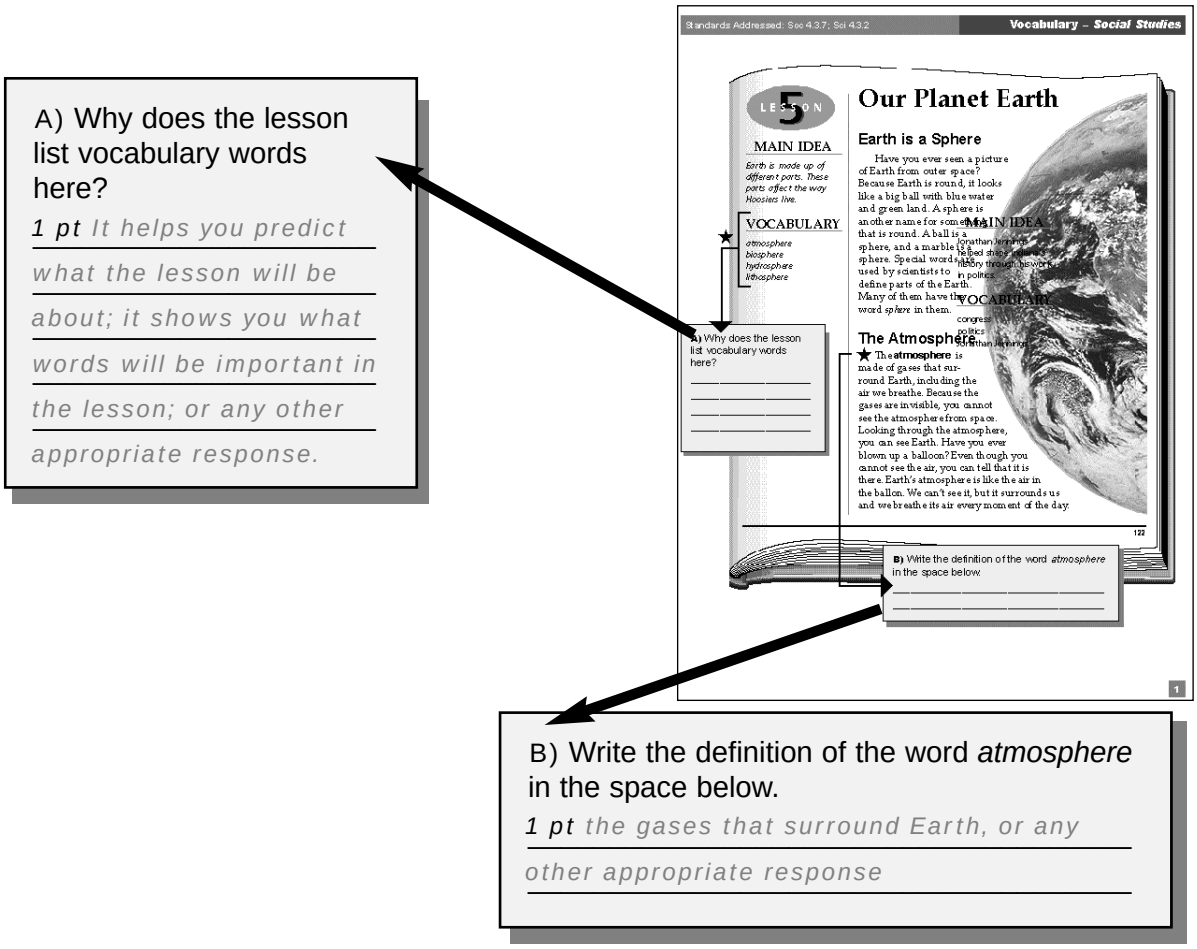
- What do you know about the atmosphere? Where have you heard the word? What do you think it means? What do you think of when you hear it? *You may wish to return to these answers after the lesson to see if students can clarify or add to them.*

Vocabulary Lesson C: *Our Planet Earth* (Sci)

Think About! Discussion Points Following the Lesson

- *Explain that* a *root word has meaning by itself, but you can add prefixes and suffixes to it to create new words.* Look at the Review Questions. How can words have the same root word, but mean different things? *(They use different prefixes, suffixes, etc.)* Can you think of other words that you can make using root words? *(If students get stuck, give examples: geo (Earth); geography, geode, etc.; ped (foot): pedal, pedestrian, etc.)*
- What are some strategies that this lesson teaches you to help you learn vocabulary words? *(Strategies include underlining, breaking words into parts, putting root words together, using a dictionary and glossary, looking at pictures, etc.) If students need help, have them return to the text and identify the strategies used in the Guided Reading Boxes and Review Questions. Remind students that they cannot underline in their textbooks, but they can copy new words onto another sheet of paper.*
- Look at the "Spheres of the Earth" illustration on page two. What are some ways that an illustration can add to the meaning of the lesson? *(It helps you see the whole picture, picture the vocabulary word, or see the process; it adds information, etc.)*

Vocabulary Lesson C: *Our Planet Earth* (Sci)



Follow-Up Activities

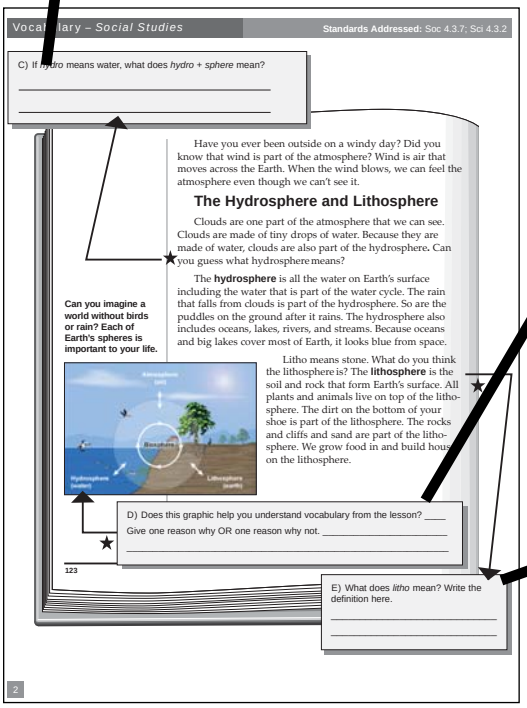
Additional Practice:

- Before reading a new chapter, ask students to skim the lesson for words they might need to know to learn about the subject matter. For example, if the lesson is about space, students may guess that they will need to know the words *planet*, *stars*, etc. They may not guess harder vocabulary words such as *rotation*, etc. This will give you a good idea of what vocabulary students already possess and also clue students to pay more attention to the vocabulary in the lesson. Keep a list of each time a word mentioned by the students appears in the lesson as well as a list of new vocabulary.
- If students struggled with the Review Questions, have them practice with more basic compound words. Make a memory/matching game by writing word parts on index cards. A match will be two word parts that go together to form a word. In order to keep the match, the student must define the new word.

Vocabulary Lesson C: *Our Planet Earth* (Sci)

C) If *hydro* means water, what does *hydro* + *sphere* mean?

1 pt *Accept: water on the Earth, water round, water ball, or any other appropriate response*



D) Does this graphic help you understand vocabulary from the lesson? *1 pt* *Yes.*

Give one reason why OR one reason why not.

1 pt *It illustrates the different spheres; or any other appropriate response.*

E) What does *litho* mean? Write the definition here.

1 pt *glossary, dictionary or any other appropriate response*

Follow-Up Activities (cont.)

Extension:

- Give students a list of common Greek and Latin root words and have them put them together to make new words. Have them check to see if these words are in the dictionary. If words are not in the dictionary, have students vote on a favorite that they feel should be added to the dictionary.
- Put weekly vocabulary cards in a box. Allow students to draw a word from the box and define it for extra credit.
- Have students create crossword puzzles with vocabulary words (templates are available online). Have them write the definitions/"clues" in their own words. Have them exchange puzzles with a partner.

Vocabulary Lesson C: *Our Planet Earth* (Sci)

F) Can you guess what *bio* means? Hint: If something is alive, it is...

L *iving, ive, ife* **1 pt**

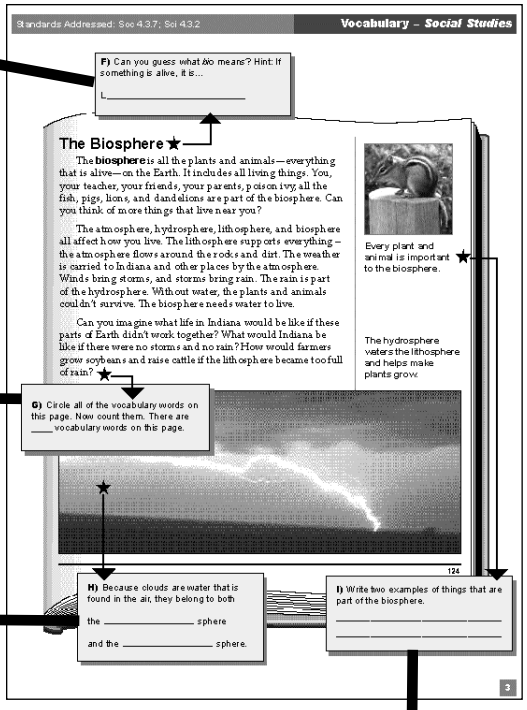
G) Circle all of the vocabulary words on this page. Now count them. There are *16* vocabulary words on this page.

2 pts *1 pt for circling vocabulary and 1 pt for finding all 16.*

H) Because clouds are water that is found in the air, they belong to both

the ***1 pt*** *atmo* sphere

and the ***1 pt*** *hydro* sphere.



I) Write two examples of things that are part of the biosphere.

2 pts *Accept any two living things at 1 pt each.*

Cross-Curricular Ties

- *E/LA 4.1.3* - Use knowledge of root words ... to determine the meaning of unknown words in a passage.
- *E/LA 4.1.4* - Use common roots ... and word parts ... derived from Greek and Latin to analyze the meaning of complex words.
- *E/LA 4.1.5* - Use a thesaurus to find related words and ideas.

Suggested Activity: Find synonyms for *rock* (*boulder, pebble*) and look up root words for types of rocks (sedimentary, igneous, and metamorphic).

Vocabulary Lesson C: *Our Planet Earth* (Sci)

Vocabulary – *Social Studies* **Standards Addressed:** Soc 4.3.7; Sci 4.3.2

Review Questions

The atmosphere is made of many layers of gas. Below are four of these layers. All of the names of the layers end in the word *sphere*. Read the definitions of the first parts of the words. Then read the descriptions of each layer. Match the names of the layers with the correct description.

Meso means middle. This is the layer between Earth and space.
Tropo means change or turning. This is the layer planes fly in.
Strato means to stretch and extend. This layer stretches over the troposphere.
Thermo means heat. This layer becomes hot very quickly.

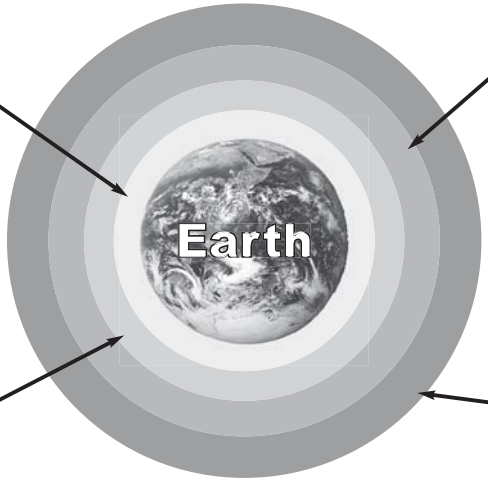
4 pts total

_____*Tropo*_____sphere

This is the first layer of atmosphere. It got its name from the quick change in temperature that happens there. This layer is the air we breathe and it holds the clouds. Planes also fly in this layer.

_____*Meso*_____sphere

This is the third layer of the atmosphere. It is in the middle. It got its name because it is in the center. It is between the stratosphere and the thermosphere.



_____*Strato*_____sphere

This is the second layer of atmosphere. It blocks the UV rays from the sun and keeps us safe. It got its name because it stretches over the troposphere.

_____*Thermo*_____sphere

This is the last layer of the atmosphere. It gets hot on this layer. It got its name because of its heat. This is where satellites/space shuttles usually orbit.

Now that you know the meaning of some word parts, you can figure out what these words mean without a dictionary!

What does *hydropower* mean? *1 pt water power*

Because *–ology* means "to study," what does...

biology mean? *1 pt the study of living things (or similar)*

hydrology mean? *1 pt the study of water (or similar)*

Difficult Words Lesson A: *The Ice Age in Indiana* (Study Skill)

NOTE: Students will need access to the lesson glossary or to dictionaries in order to complete this lesson.

Reading Difficulty: 3.9 **Scaffolding/Guided Reading Boxes★:** 6

Vocabulary

Text Feature Vocabulary:

- definition
- paragraph

Lesson Vocabulary:

- glacier
- Ice Age
- sediment

Skills and Standards

E/LA Focus:

- *4.1.2* - Apply knowledge of synonyms...antonyms...homographs...and idioms...to determine the meaning of words and phrases.
- *4.2.1* - Use the organization of informational texts to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.
- *4.2.4* - Evaluate new information and hypotheses (statements of theories or assumptions) by testing them against known information and ideas.

Social Studies Standards Addressed:

- *4.3.6* - Explain how glacial periods shaped Indiana's landscape and environment.
- *4.3.10* - Read and interpret thematic maps - such as transportation, population, and products - to acquire information about Indiana in the present and the past.

Science Standards Addressed:

- *4.3.5* - Describe how waves, wind, water, and glacial ice shape and reshape Earth's land surface by the erosion of rock and soil in some areas and depositing them in other areas.
- *4.3.7* - Explain that smaller rocks come from the breakage and weathering of bedrock and larger rocks and that soil is made partly from weathered rock, partly from plant remains, and also contains many living organisms.

Background Prompt

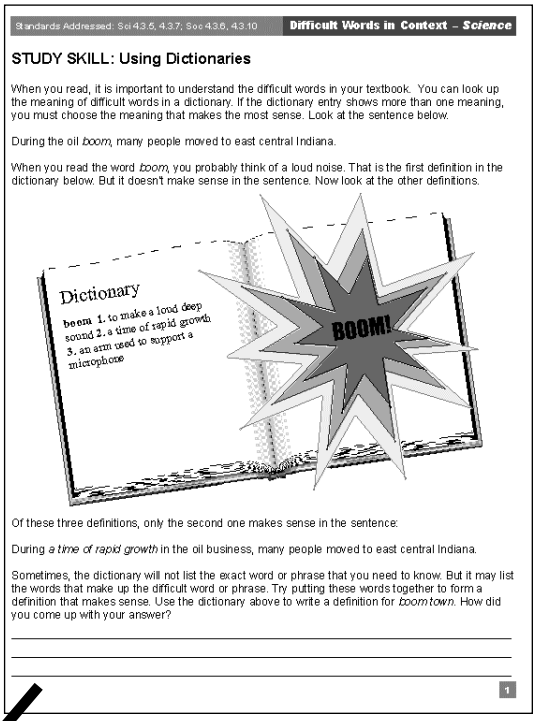
- What do you know about the Ice Age? What words would you use to describe it? *Write the words the students brainstorm on the board. Return to these ideas once students have completed the lesson. Discuss how their answers have changed after reading the lesson.*

Difficult Words Lesson A: *The Ice Age in Indiana* (Study Skill)

Think About! Discussion Points Following the Lesson

- Look at Question 1B. How did you know which definition of *kettle* to pick? *(It was related to geology; it sounded like it fit with the lesson, etc.)* How did you connect that definition with what you know about lakes to make a complete definition of *kettle lake*? *(A kettle hole filled with water would be a lake; thought about what a lake looks like, etc.)* What can you do the next time you find a word like this in your textbook? *(Look in the dictionary; use prior knowledge; find the definition of each word and put them together; etc.) Write the process and strategies suggested by the students on the board.*
- Look at the pronunciation guides for *glacier* and *Pleistocene* on page 1. *Textbooks sometimes create pronunciation guides using traditional spelling without diacritical marks. ITRI's pronunciation guides use phonetic transcription.* How do you sound out the word(s) using these symbols? *Explain how words can be sounded out using symbols.* Is this the same way our social studies/science textbooks show how to pronounce words? *If your textbooks use a different type of guide, have students find an example. Ask:* How are the two pronunciation guides different? How do you sound out the word(s) using these symbols? *Have students sound out an unfamiliar word from the textbook.*

Difficult Words Lesson A: *The Ice Age in Indiana* (Study Skill)



Standards Addressed: Sci 4.3.5, 4.3.7; Soc 4.3.6, 4.3.10 **Difficult Words in Context – *Science***

STUDY SKILL: Using Dictionaries

When you read, it is important to understand the difficult words in your textbook. You can look up the meaning of difficult words in a dictionary. If the dictionary entry shows more than one meaning, you must choose the meaning that makes the most sense. Look at the sentence below.

During the oil *boom*, many people moved to east central Indiana.

When you read the word *boom*, you probably think of a loud noise. That is the first definition in the dictionary below. But it doesn't make sense in the sentence. Now look at the other definitions.

Of these three definitions, only the second one makes sense in the sentence:

During *a time of rapid growth* in the oil business, many people moved to east central Indiana.

Sometimes, the dictionary will not list the exact word or phrase that you need to know. But it may list the words that make up the difficult word or phrase. Try putting these words together to form a definition that makes sense. Use the dictionary above to write a definition for *boom town*. How did you come up with your answer?

1

Use the dictionary above to write a definition for *boom town*. How did you come up with your answer? *1 pt a town built during a time of rapid growth, a rapidly growing town, or any other appropriate response.*

Follow-Up Activities

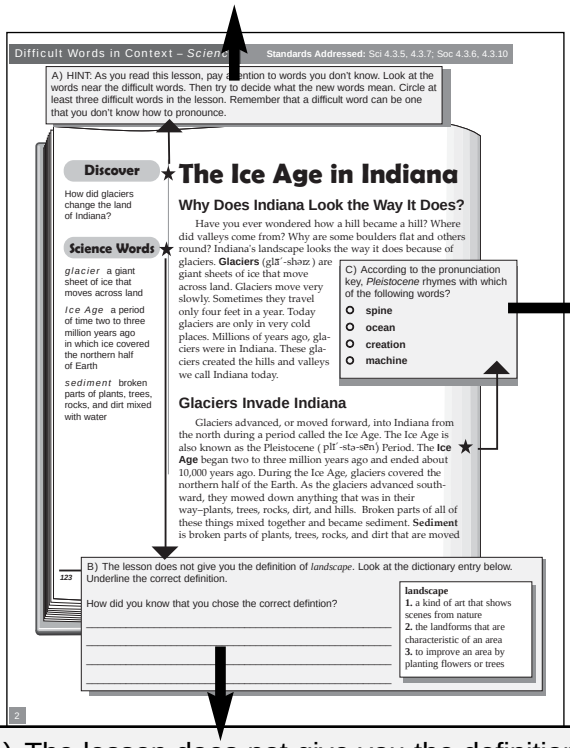
Additional Practice:

- If students have difficulty pronouncing words using the guides in the lesson or textbook, ask students to find a page with terms that include a pronunciation key. Work through a number of words so students have a chance to practice. Then have students choose ten words to "sound out" for you and/or a partner.
- Have students write their full names in phonetic spelling or with dictionary marks (whichever your textbook uses).
- Have students practice using a dictionary to look up vocabulary words from their science and social studies textbooks. Have them copy several possible definitions and predict which meaning applies to the textbook lesson.

Difficult Words Lesson A: *The Ice Age in Indiana* (Study Skill)

A) HINT: As you read this lesson, pay attention to words you don't know. Look at the words near the difficult words. Then try to decide what the new words mean. Circle at least three difficult words in the lesson. Remember that a difficult word can be one that you don't know how to pronounce.

3 pts Students should have circled three words for 1pt each.


Difficult Words in Context – *Scienc*

Standards Addressed: Sci 4.3.5, 4.3.7; Soc 4.3.6, 4.3.10

A) HINT: As you read this lesson, pay attention to words you don't know. Look at the words near the difficult words. Then try to decide what the new words mean. Circle at least three difficult words in the lesson. Remember that a difficult word can be one that you don't know how to pronounce.

Discover

How did glaciers change the land of Indiana?

Science Words

glacier a giant sheet of ice that moves across land

Ice Age a period of time two to three million years ago in which ice covered the northern half of Earth

sediment broken parts of plants, trees, rocks, and dirt mixed with water

The Ice Age in Indiana

Why Does Indiana Look the Way It Does?

Have you ever wondered how a hill became a hill? Where did valleys come from? Why are some boulders flat and others round? Indiana's landscape looks the way it does because of glaciers. **Glaciers** (glāˈ-shərz) are giant sheets of ice that move across land. Glaciers move very slowly. Sometimes they travel only four feet in a year. Today glaciers are only in very cold places. Millions of years ago, glaciers were in Indiana. These glaciers created the hills and valleys we call Indiana today.

C) According to the pronunciation key, *Pleistocene* rhymes with which of the following words?

- spine
- ocean
- creation
- machine

Glaciers Invade Indiana

Glaciers advanced, or moved forward, into Indiana from the north during a period called the Ice Age. The Ice Age is also known as the Pleistocene (plīˈ-stə-sēn) Period. The **Ice Age** began two to three million years ago and ended about 10,000 years ago. During the Ice Age, glaciers covered the northern half of the Earth. As the glaciers advanced southward, they mowed down anything that was in their way–plants, trees, rocks, dirt, and hills. Broken parts of all of these things mixed together and became sediment. **Sediment** is broken parts of plants, trees, rocks, and dirt that are moved

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B) The lesson does not give you the definition of *landscape*. Look at the dictionary entry below. Underline the correct definition.

How did you know that you chose the correct defintion?

landscape
1. a kind of art that shows scenes from nature
2. the landforms that are characteristic of an area
3. to improve an area by planting flowers or trees

2

C) According to the pronunciation key, *Pleistocene* rhymes with which of the following words? *1 pt*

- **spine**
- **ocean**
- **creation**
- **machine**

B) The lesson does not give you the definition of *landscape*. Look at the dictionary entry below. Underline the correct definition.

How did you know that you chose the correct definition?

1 pt It is the only one that makes sense in the sentence; the sentence is describing the way the land looks; or any other appropriate response.

landscape
1. a kind of art that shows scenes from nature
2. the landforms that are characteristic of an area *1 pt*
3. to improve an area by planting flowers or trees

Follow-Up Activities (cont.)

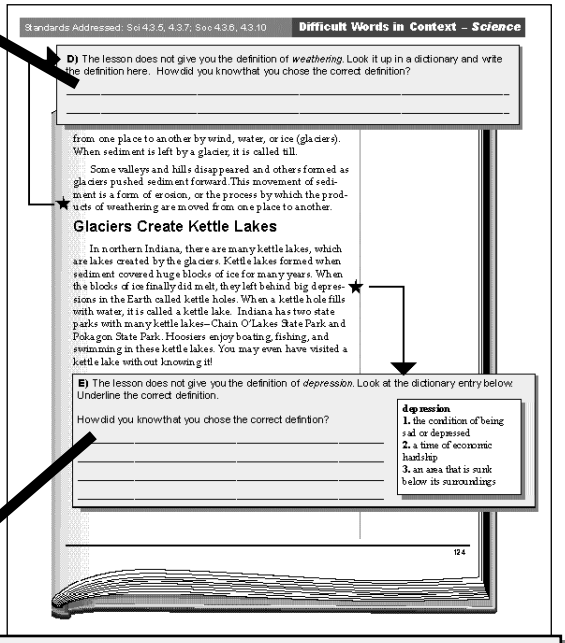
Extension:

- Have students look up vocabulary words in both a glossary and a dictionary and compare the definitions that they find.
- Have students explore a number of sources for the definitions of difficult words and concepts (glossaries, dictionaries, online dictionaries, Internet searches, encyclopedias, etc.). Have them discuss what kinds of information each source provides.

Difficult Words Lesson A: *The Ice Age in Indiana* (Study Skill)

D) The lesson does not give you the definition of *weathering*. Look it up in a dictionary and write the definition here. How did you know that you chose the correct definition?

1 pt *breaking down of rocks and other materials on Earth's surface by such processes as rain or wind; or any other appropriate response from a dictionary.*


Standards Addressed: Sci 4.3.5, 4.3.7; Soc 4.3.6, 4.3.10 **Difficult Words in Context – *Science***

D) The lesson does not give you the definition of *weathering*. Look it up in a dictionary and write the definition here. How did you know that you chose the correct definition?

from one place to another by wind, water, or ice (glaciers). When sediment is left by a glacier, it is called till.

Some valleys and hills disappeared and others formed as glaciers pushed sediment forward. This movement of sediment is a form of erosion, or the process by which the products of weathering are moved from one place to another.

Glaciers Create Kettle Lakes

In northern Indiana, there are many kettle lakes, which are lakes created by the glaciers. Kettle lakes formed when sediment covered huge blocks of ice for many years. When the blocks of ice finally did melt, they left behind big depressions in the Earth called kettle holes. When a kettle hole fills with water, it is called a kettle lake. Indiana has two state parks with many kettle lakes–Chain O'Lakes State Park and Pokagon State Park. Hoosiers enjoy boating, fishing, and swimming in these kettle lakes. You may even have visited a kettle lake without knowing it!

E) The lesson does not give you the definition of *depression*. Look at the dictionary entry below. Underline the correct definition.

How did you know that you chose the correct definition?

depression
1. the condition of being sad or depressed
2. a time of economic hardship
3. an area that is sunk below its surroundings

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E) The lesson does not give you the definition of *depression*. Look at the dictionary entry below. Underline the correct definition.

How did you know that you chose the correct definition?

1 pt *It is the only one that makes sense in the sentence; the sentence is describing a hole; or any other appropriate response.*

depression
1. the condition of being sad or depressed
2. a time of economic hardship
3. an area that is sunk below its surroundings *1 pt*

Cross-Curricular Ties

- E/LA 4.6.3 - Create interesting sentences by using words that describe, explain, or provide additional details and connections , such as adjectives, adverbs, appositives, participial phrases, prepositional phrases, and conjunctions.

Suggested Activity: Write sentences that use adjectives to describe the terrain in Indiana.

- Math 4.5.8 - Use volume and capacity as different ways of measuring the space inside a shape.

Suggested Activity: Use a tape measure or ruler to measure the length, width, and height of an object such as an aquarium. Use these figures to calculate volume. Then use water or measuring cubes to calculate the volume.

Difficult Words Lesson A: *The Ice Age in Indiana* (Study Skill)

Difficult Words in Context – *Science*

Standards Addressed: Sci 4.3.5, 4.3.7; Soc 4.3.6, 4.3.10

Signs of the Glaciers

How do we know that glaciers were in Indiana? The evidence is all around us, in the soil, the rocks, the trees and plants, the hills, the valleys, the plains, the rivers and streams and lakes. Northern Indiana is filled with lakes from the glaciers. Central Indiana is flat and full of sediment from the glaciers. And because the glaciers stopped just south of Indianapolis, southern Indiana is full of the hills that the glaciers pushed up and didn't flatten. We can tell by looking at these things that the glaciers were in Indiana.

F) Sometimes graphics may contain difficult words. Look up the word *moraine* in a dictionary and write the definition below.

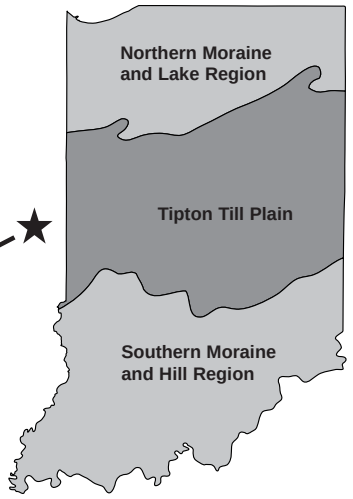
1 pt a pile of stones and boulders left behind by a glacier,

or any other appropriate response from a dictionary

What kinds of rocks would you expect to find in Northern and Southern Indiana?

1 pt stones and large boulders, or any other

appropriate response from the definition



Glaciers created Indiana's landforms: lakes and moraines in the north, the central flatlands, or till plain, in the middle, and hills in the south.

Review

1. a. Read the paragraph after the heading 'Glaciers Create Kettle Lakes.' Can you tell from the words in those sentences what the word *kettle lake* means? Write your definition below:

   1 pt a lake created by a glacier, or any other appropriate response

   b. Now look at the dictionary entry for *kettle*.

> **kettle**
> **1.** A metal pot used for boiling. **2.** A tea kettle. **3.** A kettledrum. **4.** A hole formed by the melting of a glacier. **5.** A pothole.

   There are five definitions. Choose the definition that goes with *kettle lake* and write it here. How did you know that you chose the correct definition?

   1 pt a hole formed by the melting of a glacier

   1 pt It is the only choice that makes sense; none of the other choices have anything to do with lakes; or any other appropriate response.

2. Write down another word from the lesson that you do not know. Then find and write the dictionary definition. If there are no unfamiliar words, choose a word that you do know, and use a dictionary to find another definition for that word.

   Word: *1 pt any appropriate word from the lesson*

   Dictionary definition: *1 pt any appropriate response from a dictionary*

Difficult Words Lesson B: *Indiana Limestone* (Sci)

NOTE: Students will need access to dictionaries in order to complete this lesson.

Reading Difficulty: 5.4 **Scaffolding/Guided Reading Boxes★:** 8

Vocabulary

Text Feature Vocabulary:

- definition

Lesson Vocabulary:

- limestone
- mineral
- natural resource
- rock

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.
- *4.2.4* - Evaluate new information and hypotheses (statements of theories or assumptions) by testing them against known information and ideas.

Social Studies Standards Addressed:

- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.
- *4.4.5* - Give examples of Indiana's role in world trade.

Science Standards Addressed:

- *4.3.6* - Recognize and describe that rock is composed of different combinations of minerals.

Background Prompt

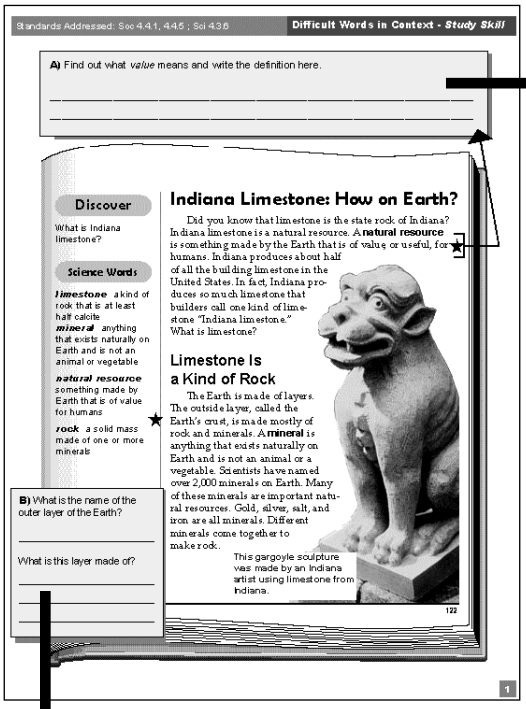
- *Write the words* limestone, mineral, natural resources, *and* rock *on the board. Ask students to write at least two possible sentences in which they use one or more of these vocabulary words. Have students volunteer to read their sentences to the class or write them on the board. Return to these sentences after the lesson and have students evaluate and correct them. If students avoided certain words before, ask them to use those words in writing a new sentence.*

Difficult Words Lesson C: *Indiana Limestone* (Sci)

Think About! Discussion Points Following the Lesson

- Look at Guided Reading Boxes E and H. These two-word terms are not in the dictionary. How did you figure out the definitions for *stone belt* and *Salem Limestone*? *(Answers will vary. You could use a dictionary, look at other words, use context or background knowledge, etc.)* Did anyone find one of the words in the glossary/dictionary? *(Words such as* stone *and* limestone *are probably in your dictionaries.)* How do the words that *are* in the dictionary help you understand the difficult words from the lesson? (*They provide clues and give the meanings of parts of the words, or of words in the phrase, etc.)* How does reading the words and sentences around a difficult word help you understand it? *(it gives a sense of general subject; it helps you guess what the difficult word must mean in order for the passage to make sense; etc.)*
- This lesson uses a lot of words that have multiple meanings. Think about the words *pop*, *rock*, and *bed*. What other meanings do you know for these words besides the one used in the lesson? *(Answers will vary. Have students brainstorm definitions. You may want to write these definitions on the board.)*

Difficult Words Lesson B: *Indiana Limestone* (Sci)


Standards Addressed: Sci 4.4.1, 4.4.5 ; Sci 4.3.6

Difficult Words in Context - *Study Skill*

A) Find out what *value* means and write the definition here.

Discover

What is Indiana limestone?

Science Words

limestone a kind of rock that is at least half calcite

mineral anything that exists naturally on Earth and is not an animal or vegetable

natural resource something made by Earth that is of value for humans

rock a solid mass made of one or more minerals

Indiana Limestone: How on Earth?

Did you know that limestone is the state rock of Indiana? Indiana limestone is a natural resource. A **natural resource** is something made by the Earth that is of value or useful, for humans. Indiana produces about half of all the building limestone in the United States. In fact, Indiana produces so much limestone that builders call one kind of limestone "Indiana limestone." What is limestone?

Limestone Is a Kind of Rock

The Earth is made of layers. The outside layer, called the Earth's crust, is made mostly of rock and minerals. A **mineral** is anything that exists naturally on Earth and is not an animal or a vegetable. Scientists have named over 2,000 minerals on Earth. Many of these minerals are important natural resources. Gold, silver, salt, and iron are all minerals. Different minerals come together to make rock.

This gargoyle sculpture was made by an Indiana artist using limestone from Indiana.

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B) What is the name of the outer layer of the Earth?

What is this layer made of?

1

A) Find out what *value* means and write the definition here.

1 pt "Value" is worth, usefulness, or importance (or any other appropriate definition).

B) What is the name of the outer layer of the Earth?

1 pt crust

What is this layer made of?

1 pt rocks and minerals

Follow-Up Activities

Additional Practice:

- Have students make a chart for the new vocabulary words in their lessons. Divide the chart into "I've heard this word," "I know a little about this word," and "I can use this word in a sentence." After students have put the words in the correct categories, have them discuss their charts in small groups. Have students practice these words until they can use them comfortably.

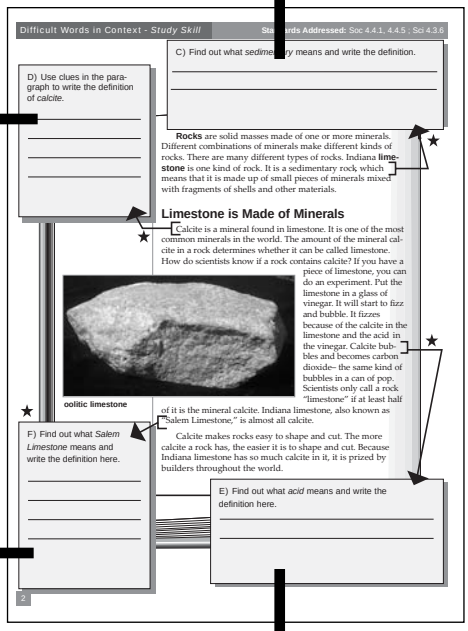
Difficult Words Lesson B: *Indiana Limestone* (Sci)

C) Find out what *sedimentary* means and write the definition.

1 pt relating to matter that settles to the bottom of a liquid

C) Use clues in the paragraph to write the definition of *calcite.*

1 pt a common mineral that makes up limestone and fizzes/bubbles in vinegar


Difficult Words in Context - *Study Skill*

Standards Addressed: Soc 4.4.1, 4.4.5 ; Sci 4.3.6

C) Find out what *sedimentary* means and write the definition.

D) Use clues in the paragraph to write the definition of *calcite.*

Rocks are solid masses made of one or more minerals. Different combinations of minerals make different kinds of rocks. There are many different types of rocks. Indiana **limestone** is one kind of rock. It is a sedimentary rock, which means that it is made up of small pieces of minerals mixed with fragments of shells and other materials.

Limestone is Made of Minerals

Calcite is a mineral found in limestone. It is one of the most common minerals in the world. The amount of the mineral calcite in a rock determines whether it can be called limestone. How do scientists know if a rock contains calcite? If you have a piece of limestone, you can do an experiment. Put the limestone in a glass of vinegar. It will start to fizz and bubble. It fizzes because of the calcite in the limestone and the acid in the vinegar. Calcite bubbles and becomes carbon dioxide– the same kind of bubbles in a can of pop. Scientists only call a rock "limestone" if at least half of it is the mineral calcite. Indiana limestone, also known as "Salem Limestone," is almost all calcite.

oolitic limestone

Calcite makes rocks easy to shape and cut. The more calcite a rock has, the easier it is to shape and cut. Because Indiana limestone has so much calcite in it, it is prized by builders throughout the world.

F) Find out what *Salem Limestone* means and write the definition here.

E) Find out what *acid* means and write the definition here.

2

F) Find out what *Salem Limestone* means and write the definition here.

1 pt name for limestone found in Indiana that is almost all calcite

E) Find out what *acid* means and write the definition here.

1 pt part of vinegar OR compound containing hydrogen and having a sour taste in water solution

Follow-Up Activities (cont.)

Extension:

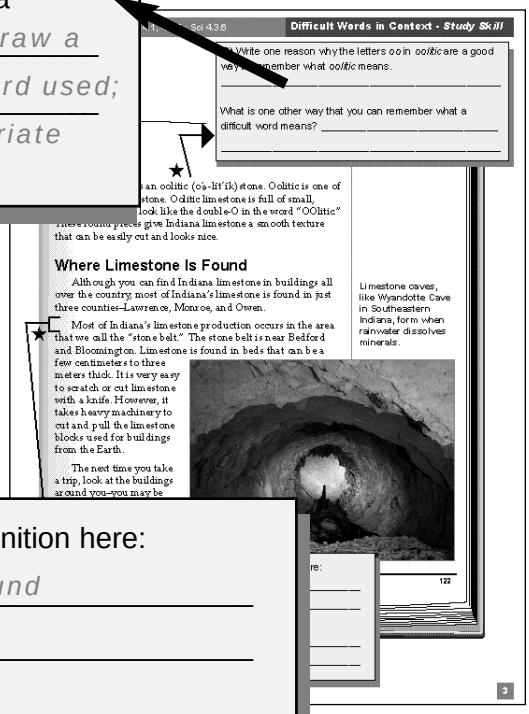
- Have students practice pronouncing words. Have students create a vocabulary test using contextual vocabulary words in the next lesson or chapter in their social studies or science textbook for the classroom next door or for next year's grade four class.
- Ask students to use a dictionary to find words with similar etymologies or word parts for words in a lesson.

Difficult Words Lesson B: *Indiana Limestone* (Sci)

G) Write one reason why the letters *oo* in *oolitic* are a good way to remember what *oolitic* means.

1 pt *The o's look like the round shapes that make up oolitic limestone.*

What is one other way that you can remember what a difficult word means? *1 pt* *Make a concept map; draw a picture; think about how you have heard the word used; make up a memory device; or any other appropriate response*



H) Find out what *stone belt* means and write the definition here:

1 pt *the area in Indiana where limestone is found*

What is one way you could remember this definition?

1 pt *Think about a belt that you wear/other meanings of the word* belt*; draw a picture; make a concept map; or any other appropriate response.*

Cross-Curricular Ties

- *Soc 4.3.5* – Map the physical regions of Indiana and identify major natural resources and crop regions.

Suggested Activity: Create maps to illustrate lessons in your social studies textbook using almanacs, encyclopedias, or online information.

- *Soc 4.3.10* – Read and interpret thematic maps–such as transportation, population, and products–to acquire information about Indiana in the present and the past.

Suggested Activity: Use thematic maps about Indiana to add to your social studies lessons. Assign different maps to different groups and have them compare and contrast what they learned from the maps.

- *E/LA 4.3.1* – Describe the differences of various imaginative forms of literature, including fantasies, fables, myths, legends, and fairy tales.

Suggested Activity: Explore different kinds of imaginative literature that use rock as a central part of the story. (i.e. *The Sword and the Stone*, *Sylvester and the Magic Pebble*, *Stone soup*, etc.) Compare and contrast these forms.

Difficult Words Lesson B: *Indiana Limestone* (Sci)

Difficult Words in Context - *Study Skill* **Standards Addressed:** Soc 4.4.1, 4.4.5 ; Sci 4.3.6

Review Questions

When you look up words in a dictionary or glossary, you learn their meanings. One way to check your understanding of these definitions is to use the words in a sentence. If you can write a sentence using a difficult word, you probably understand what the word means. Use the following words from the lesson to complete the sentences below. You may need to look back at the definitions that you wrote earlier in the lesson.

value	calcite	Salem Limestone
acid	stone belt	oolitic limestone

1. The fourth grade class took a field trip to the *1 pt stone belt*.

2. On their trip students saw many different Indiana rocks including *1 pt salem limestone*, which is a kind of *1 pt oolitic limestone*.

3. They learned about a mineral called *1 pt calcite*.

4. They used *1 pt acid* to help them identify the rocks that they found.

5. The students decided that their trip had a high *1 pt value* because they had a lot of fun and learned a lot.

6. Now use at least two other difficult words from the lesson to write a sentence (or sentences) of your own.

2 pts Accept any appropriate sentence that correctly uses two difficult words from the lesson.

7. Why is it important to learn the difficult words in a lesson even if they are not bolded vocabulary words?

1 pt You need them in order to understand the lesson (or lesson vocabulary), or any other appropriate response.

4

Difficult Words Lesson C: *State Government* (Soc)

Reading Difficulty: 5.0 **Scaffolding/Guided Reading Boxes★:** 10

Vocabulary

Text Feature Vocabulary:

- definition
- glossary
- paragraph

Lesson Vocabulary:

- appoint
- bills
- executive branch
- government
- judicial branch
- legislative branch

Skills and Standards

E/LA Focus:

- *4.1.2* - Apply knowledge of synonyms...antonyms...homographs...and idioms...to determine the meaning of words and phrases.
- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues that indicate what might happen next and direct quotations.

Social Studies Standards Addressed:

- *4.1.4* - Explain the significance of key documents in Indiana's development from a United States territory to statehood.
- *4.1.6* - Explain how key individuals and events influenced the early growth of the new state of Indiana.
- *4.2.3* - Identify and explain the major responsibilities of the legislative, executive, and judicial branches of state government as written in the Indiana Constitution.
- *4.2.4* - Identify major state offices and the duties and powers associated with them - such as governor, lieutenant governor, chief justice, state senators, and state representatives - and how they are chosen, such as by election or appointment.

Background Prompt

- Who makes up the government? *Write answers on the board.* What does each of these people do? *Return to these ideas after students have completed to the lesson. Add any new information that was learned in the lesson, and discuss whether there were any positions on the list that were not included in the lesson.*

Difficult Words Lesson C: *State Government* (Soc)

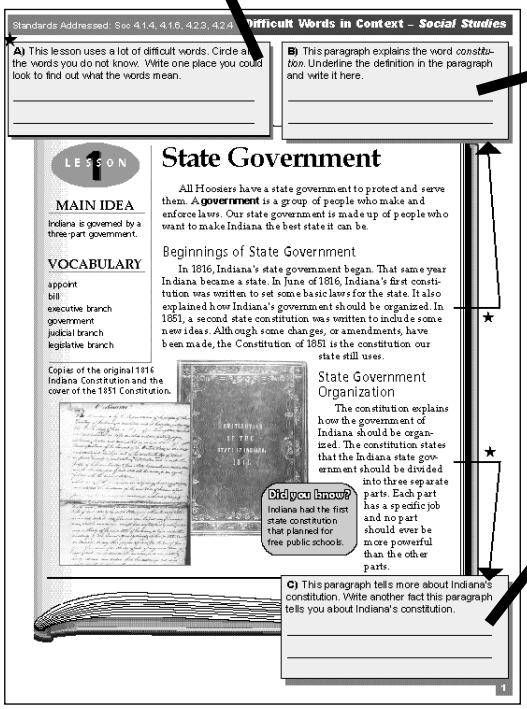
Think About! Discussion Points Following the Lesson

- Why do textbooks include glossaries? *(Glossaries include words you don't know; they are easy to use because they are in the book, so you don't need to go to the dictionary, etc.)* What are the differences between a glossary and a dictionary? (*A glossary has fewer words; dictionaries usually have longer definitions; glossaries may tell what page of the book the word appears on; etc.)* When might you need to use a dictionary? *(when words aren't in the glossary, when you need more detailed information or want to find out if the word has other meanings, etc.)*
- Your textbooks often introduce the definitions of words in the middle of a sentence. For example, "Senators represent, or speak for, all the people in their area of Indiana." Can you find another example? *(Point out sentences that contain this type of definition: changes/amendments; vetoes/rejects; appoints/chooses*) Why do you think textbooks define words this way?" *(It is an easy way for writers to give context; definitions can be put into one sentence instead of two; it flows well; etc.)*
- Look at Box J. How did you figure out what *Chief Justice* means? *(Answers will vary)* What should you do if you find other words like this in your textbooks? *(Look for a familiar word or word-part; use context; use graphics; etc.)*

Difficult Words Lesson C: *State Government* (Soc)

A) This lesson uses a lot of difficult words. Circle all the words you do not know. Write one place you could look to find out what the words mean:

1 pt Word(s) should be circled. 1 pt dictionary, glossary, or other appropriate response


Standards Addressed: Soc 4.1.4, 4.1.6, 4.2.3, 4.2.4

Difficult Words in Context – *Social Studies*

A) This lesson uses a lot of difficult words. Circle all the words you do not know. Write one place you could look to find out what the words mean.

B) This paragraph explains the word *constitution*. Underline the definition in the paragraph and write it here.

LESSON 1

State Government

MAIN IDEA

Indiana is governed by a three-part government.

VOCABULARY

appoint
bill
executive branch
government
judicial branch
legislative branch

All Hoosiers have a state government to protect and serve them. A **government** is a group of people who make and enforce laws. Our state government is made up of people who want to make Indiana the best state it can be.

Beginnings of State Government

In 1816, Indiana's state government began. That same year Indiana became a state. In June of 1816, Indiana's first constitution was written to set some basic laws for the state. It also explained how Indiana's government should be organized. In 1851, a second state constitution was written to include some new ideas. Although some changes, or amendments, have been made, the Constitution of 1851 is the constitution our state still uses.

Copies of the original 1816 Indiana Constitution and the cover of the 1851 Constitution.

State Government Organization

The constitution explains how the government of Indiana should be organized. The constitution states that the Indiana state government should be divided into three separate parts. Each part has a specific job and no part should ever be more powerful than the other parts.

Did you know?
Indiana had the first state constitution that planned for free public schools.

C) This paragraph tells more about Indiana's constitution. Write another fact this paragraph tells you about Indiana's constitution.

B) This paragraph explains the word *constitution*. Underline the definition in the paragraph and write it here:

1 pt for underlining 1 pt document setting out basic laws and explaining how government should be organized

C) This paragraph tells more about Indiana's constitution. Write another fact this paragraph tells you about Indiana's constitution.

1 pt It explains how the government should be organized; it states that the government of Indiana should have three parts; it states that each of the government's three parts has a specific job; it states that no part of government has power over the other parts.

Follow-Up Activities

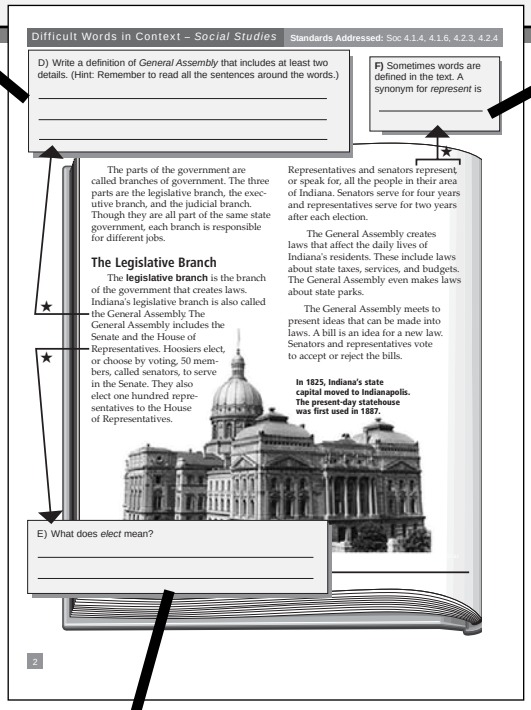
Additional Practice:

- Have students read the next chapter of their science or social studies textbook while looking for definitions set off with commas. Have students write the words and definitions, as they appear in the textbook, on a piece of paper with the title of the lesson at the top.
- Play "Liar, Liar" with words students need to know to understand the concepts in a lesson: Have students select five words they do not understand from the passage. Each team writes three definitions for each word. Two of the definitions are incorrect based on the word usage in the text, one definition is correct. One person from a team is called forward and asks to hear a word and a definition. If the definition is not true, he must say "Liar, liar the dictionary is on fire." Continue until each word is answered correctly.

Difficult Words Lesson C: *State Government* (Soc)

D) Write a definition of *General Assembly* that includes at least two details (Hint: Remember to read all the sentences around the words.) *2 pts* *The General Assembly makes or creates the laws; it is made up of the Senate and the House of Representatives; or any other appropriate response.*

F) Sometimes words are defined in the text. A synonym for *represent* is: *1 pt* *speak for*



E) What does *elect* mean?

1 pt *"Elect" means to choose by voting.*

Follow-Up Activities (cont.)

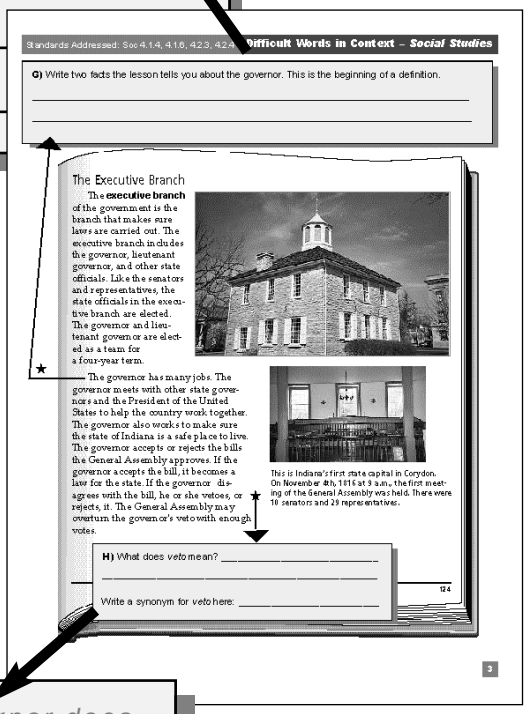
Extension:

- Have students read the next chapter of their science or social studies textbook while looking for definitions of vocabulary words that are set off with commas. Have students compare and contrast the way in which the words are defined in the text and the way they are defined in the glossary or at the beginning of the chapter.
- Have students create crossword puzzles with vocabulary from a science or social studies chapter (Templates are available online. See for example http://www.discoveryschool.com).

Difficult Words Lesson C: *State Government* (Soc)

G) Write two facts the lesson tells you about the governor. This is the beginning of a definition:

2 pts *The governor and lieutenant governor are elected as a team; the governor has many jobs; the governor meets with other state governors and/or the president of the United States.*


Standards Addressed: Soc 4.1.4, 4.1.6, 4.2.3, 4.2.4 **Difficult Words in Context – *Social Studies***

G) Write two facts the lesson tells you about the governor. This is the beginning of a definition.

The Executive Branch

The **executive branch** of the government is the branch that makes sure laws are carried out. The executive branch includes the governor, lieutenant governor, and other state officials. Like the senators and representatives, the state officials in the executive branch are elected. The governor and lieutenant governor are elected as a team for a four-year term.

The governor has many jobs. The governor meets with other state governors and the President of the United States to help the country work together. The governor also works to make sure the state of Indiana is a safe place to live. The governor accepts or rejects the bills the General Assembly approves. If the governor accepts the bill, it becomes a law for the state. If the governor disagrees with the bill, he or she vetoes, or rejects, it. The General Assembly may overturn the governor's veto with enough votes.

This is Indiana's first state capital in Corydon. On November 4th, 1816 at 9 a.m., the first meeting of the General Assembly was held. There were 16 senators and 29 representatives.

H) What does *veto* mean? _____

Write a synonym for *veto* here: _____

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3

H) What does *veto* mean? *1 pt* *It means the governor does not agree with the bill. He or she rejects it.*

Write a synonym for veto here: *1 pt* *reject*

Cross-Curricular Ties

- *Sci 4.5.4* - Demonstrate how graphical displays of numbers may make it possible to spot patterns that are not otherwise obvious, such as comparative size and trends.
- *Math 4.6.1* - Represent data on a number line and in tables, including frequency table.

Suggested Activity: Graph the number of representatives for each county in Indiana. Use the graph to make inferences about the populations of these counties.

- *E/LA 4.5.6* - Write for different purposes (information, persuasion) and to a specific audience or person.

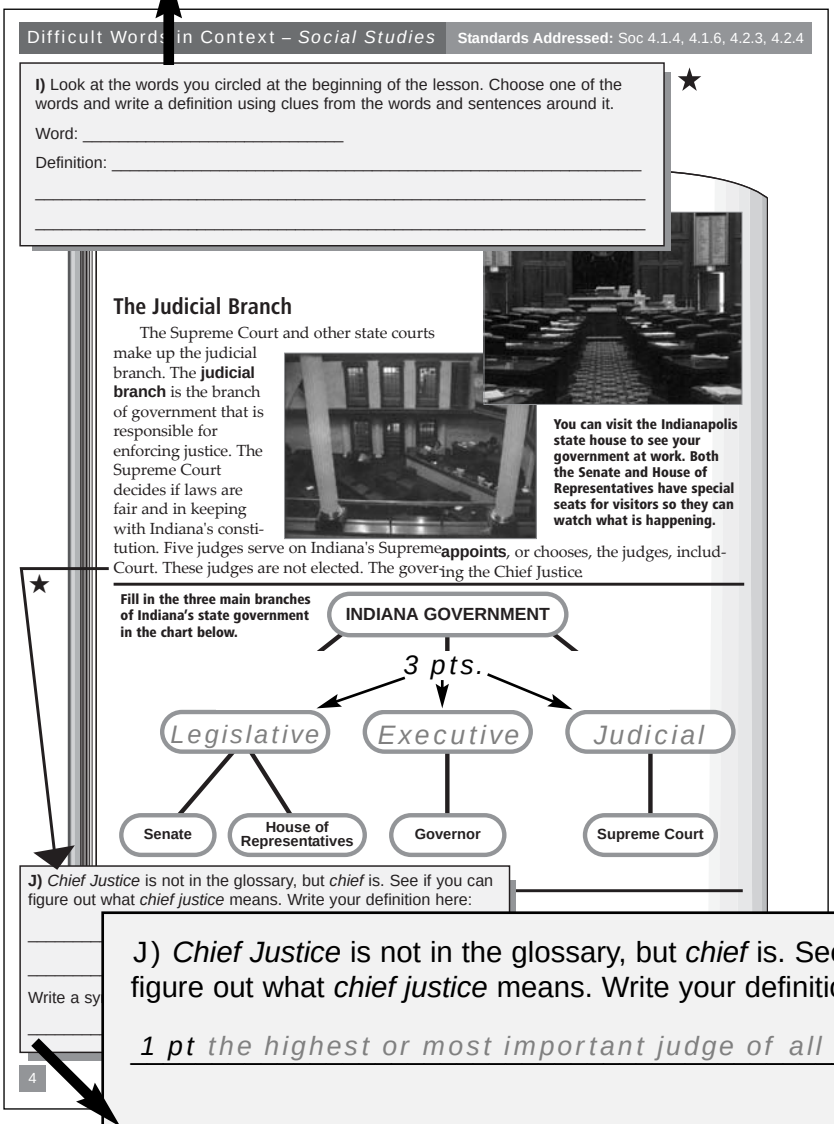
Suggested Activity: Write letters to state representatives.

Difficult Words Lesson C: *State Government* (Soc)

I) Look at the words you circled at the beginning of the lesson. Choose one of the words and write a definition using clues from the words and sentences around it.

Word: *1 pt any appropriate word*

Definition: *1 pt Accept any appropriate definition of the word taken from the text.*



Difficult Words in Context – *Social Studies* **Standards Addressed:** Soc 4.1.4, 4.1.6, 4.2.3, 4.2.4

I) Look at the words you circled at the beginning of the lesson. Choose one of the words and write a definition using clues from the words and sentences around it.

Word: _____

Definition: _____

The Judicial Branch

The Supreme Court and other state courts make up the judicial branch. The **judicial branch** is the branch of government that is responsible for enforcing justice. The Supreme Court decides if laws are fair and in keeping with Indiana's constitution. Five judges serve on Indiana's Supreme Court. These judges are not elected. The governor **appoints**, or chooses, the judges, including the Chief Justice.

You can visit the Indianapolis state house to see your government at work. Both the Senate and House of Representatives have special seats for visitors so they can watch what is happening.

Fill in the three main branches of Indiana's state government in the chart below.

INDIANA GOVERNMENT

3 pts.

Legislative | *Executive* | *Judicial*

Senate | House of Representatives | Governor | Supreme Court

J) *Chief Justice* is not in the glossary, but *chief* is. See if you can figure out what *chief justice* means. Write your definition here:

Write a sy

4

J) *Chief Justice* is not in the glossary, but *chief* is. See if you can figure out what *chief justice* means. Write your definition here:

1 pt the highest or most important judge of all

Write a synonym for *justice*:

1 pt judge, or any other appropriate response

Graphics Lesson A: *Sun and Shadows* (Study Skill)

Reading Difficulty: 4.3 **Scaffolding/Guided Reading Boxes★:** 4

Vocabulary

Text Feature Vocabulary:

- chart
- graphic
- paragraph

Lesson Vocabulary:

- rotate
- shadow

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.3.3* - Explain the essential facts of Earth/sun relationships and be able to relate these to the climate of Indiana.

Science Standards Addressed:

- *4.2.4* - Use numerical data to describe and compare objects and events.
- *4.3.9* - Draw or correctly select drawings of shadows and their direction and length at different times of day.
- *4.5.4* - Demonstrate how graphical displays of numbers may make it possible to spot patterns that are not otherwise obvious, such as comparative size and trends.

Background Prompt

- What makes a shadow? *Ask for hypotheses from students and write them on the board. You may want to come back to these hypotheses after the lesson and have students evaluate them.*

Graphics Lesson A: *Sun and Shadows* (Study Skill)

Think About! Discussion Points Following the Lesson

- *Take the students through each graphic in the lesson beginning with page Ask:* How helpful is this graphic? *After all graphics have been assessed, ask students:* Which graphics are the most useful? least useful? Why? *(Answers will vary. Ask students to justify their choices.)*
- Look at Guided Reading Box B. How can a chart show information quickly? *(It makes it easy to spot trends and patterns, see differences, compare sizes, etc.)* How is the chart similar to the illustration underneath it? How is it different? Which do you like better? Why? *(Answers will vary. Ask students to justify their answers Point out that both kinds of graphics give good information and that different people learn differently.)*
- Why is it sometimes helpful to turn information from a graphic into a narrative? *(You may need to include the information in a written report; it helps you check your understanding of the graphic; etc.)* When would it be more helpful to have a graphic? A paragraph? When would it be a good idea to change information from a graphic to paragraph (or vice-versa) in your textbook? *(Answers will vary. Ask students to justify their answers.)*

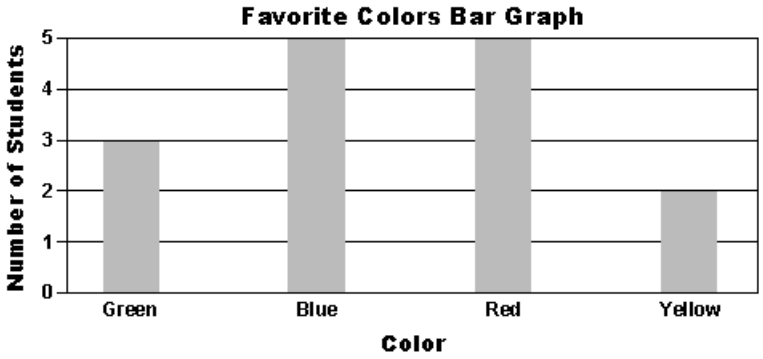
Graphics Lesson A: *Sun and Shadows* (Study Skill)

Standards Addressed: Soc 4.3.3; Sci 4.2.4, 4.3.9, 4.5.4 — **Graphics – *Study Skill***

STUDY SKILL: Transforming Graphics into Narratives

When you read, it is important to understand graphics. One way to show that you understand a graphic is to explain it in your own words.

Look at the graphic below:



If you wanted to write about this graphic, you could write:

1 pt each for a total of 4

Fifteen students listed their favorite colors. Three of the students chose green *as their favorite color.* Two *of the students chose yellow as their favorite color. Five students chose red and five chose blue as their favorite color. The least popular color was* yellow*. The most popular colors were* red *and blue.*

When you read, make sure you can explain the graphics and understand what the captions mean.

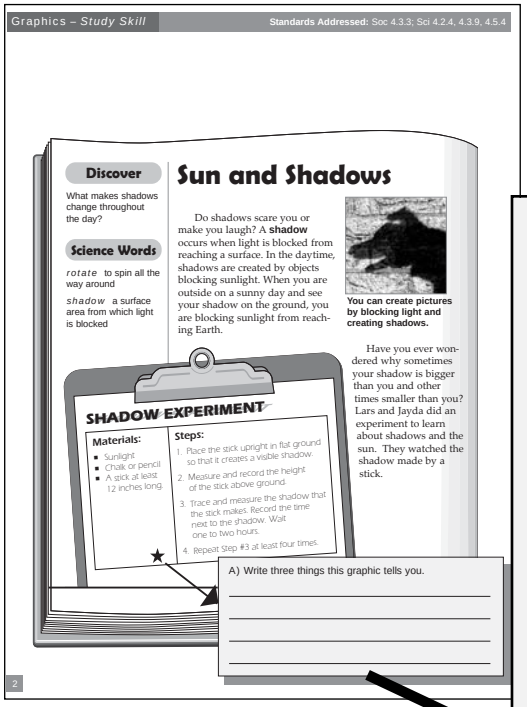
1

Follow-Up Activities

Additional Practice:

- Have students read a paragraph or section from a science or social studies textbook that describes a concept. Have them create a graphic that tells about the concept.
- Ask students to find two graphics in a textbook that are unnecessary for content understanding and two that are necessary for content understanding. Have students explain their choices.

Graphics Lesson A: *Sun and Shadows* (Study Skill)



A) Write three things this graphic tells you.

3 pts (any three of the following sentences) The graphic shows you what materials you need; it shows you what steps to take; the graphic tells you that you need: sunlight/chalk or pencil/ a stick at least 12 inches long; the graphic tells you to place the stick upright in flat ground so that it creates a visible shadow (or any of the other steps listed on the graphic); or any other appropriate response.

Follow-Up Activities (cont.)

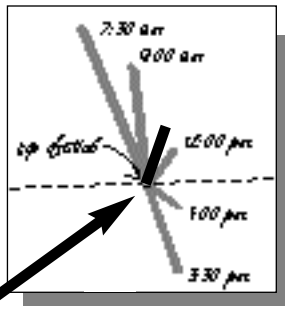
Extension:

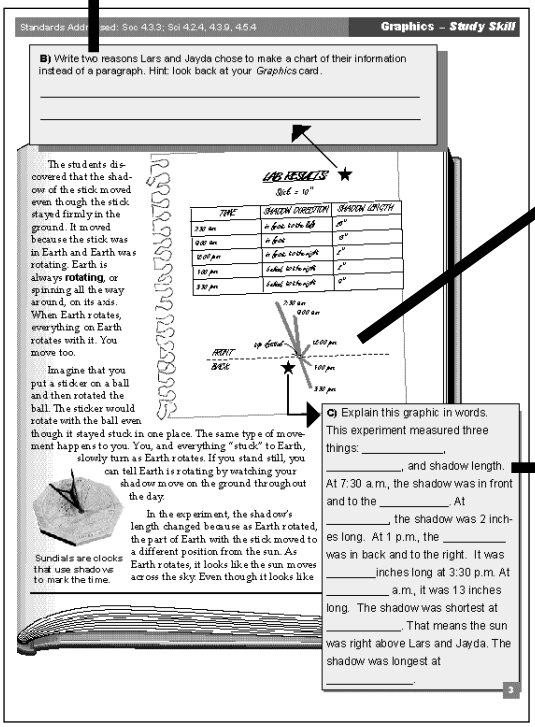
- Have students transfer information from a bar graph into a chart and vice versa.
- Have students read a paragraph or section that describes a new concept (from a lesson they have not yet studied in their textbooks). Tell each student to create a graphic that tells about the concept. Have students trade graphics and either try to find the matching passage in their textbooks OR turn the graphic back into a narrative. If students return the graphic to narrative, have them compare and contrast the graphic and the narrative to determine if any critical information was added or left out.

Graphics Lesson A: *Sun and Shadows* (Study Skill)

B) Write two reasons Lars and Jayda chose to make a chart of their information instead of a paragraph. Hint: Look back at your *Graphics* card.

2 pts *It is easier to see information; you can get the information from the chart faster that from a paragraph; or any other appropriate response.*





12 or 1 *p.m.*

C) *9 pts* Explain this graphic in words. This experiment measured three things: *time*, *direction*, and shadow length. At 7:30 a.m., the shadow was in front and to the *left*. At *12 or 1 p.m.*, the shadow was 2 inches long. At 1 p.m., the *shadow* was in back and to the right. It was *9* inches long at 3:30 p.m. At *9* a.m., it was 13 inches long. The shadow was shortest at *12 or 1 p.m.*. That means the sun was right above Lars and Jayda. The shadow was longest at *7:30 a.m.*.

Cross-Curricular Ties

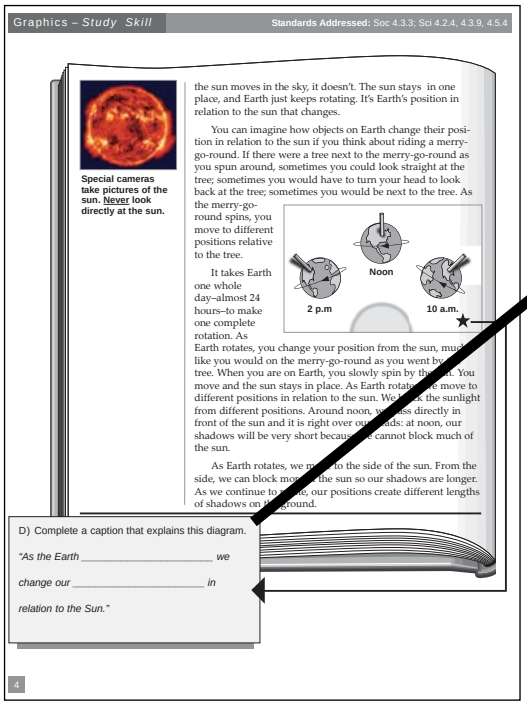
- *Math 4.4.1* - Identify, describe, and draw rays, right angles, acute angles, obtuse angles, and straight angles using appropriate mathematical tools and technology.

Suggested Activity: After recording shadow lengths, determine the various angles in relation to the object blocking the sun.

- *E/LA 4.4.8* - Understand the organization of almanacs, newspapers, and periodicals and how to use those print materials.

Suggested Activity: Observe patterns in daily temperatures, and seasonal climate by using almanacs and newspapers as sources. Write essays about how these temperatures are related to the Earth and sun position.

Graphics Lesson A: *Sun and Shadows* (Study Skill)



D) Complete a caption that explains this diagram.

"As the Earth 1 pt rotates

we change our 1 pt position

in relation to the Sun."

(or any other appropriate response)

Graphics Lesson B: *Dinosaur Water* (Sci)

Reading Difficulty: Grade 4 Easy **Scaffolding/Guided Reading Boxes★:** 6

Vocabulary

Text Feature Vocabulary:

- graph
- graphic

Lesson Vocabulary:

- condensation
- evaporation
- hydrologic cycle
- precipitation

Skills and Standards

E/LA Focus:

- *4.1.3* - Use knowledge of root words...to determine the meaning of unknown words within a passage.
- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.3.7* - Describe Earth's atmosphere, lithosphere, hydrosphere, and biosphere and explain how these systems affect life in Indiana.

Science Standards Addressed:

- *4.2.4* - Use numerical data to describe and compare objects and events.
- *4.3.2* - Begin to investigate and explain that air is a substance that surrounds us and takes up space, and whose movements we feel as wind.
- *4.5.4* - Demonstrate how graphical displays of numbers may make it possible to spot patterns that are not otherwise obvious, such as comparative size and trends.

Background Prompt

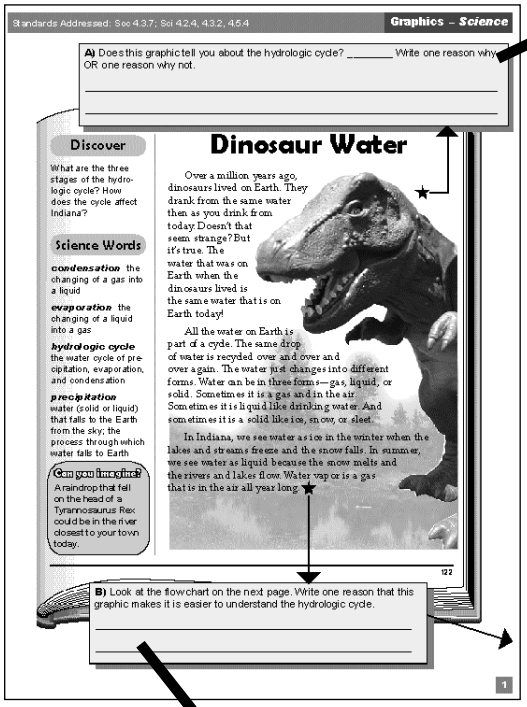
- Where does water come from? *Write student answers on the board. You may want to return to these answers after the lesson to see if students can clarify or add to them.*

Graphics Lesson B: *Dinosaur Water* (Sci)

Think About! Discussion Points Following the Lesson

- Look at Guided Reading Boxes B and C. How do graphics make lessons easier to understand? *(They show difficult concepts/ideas in picture form; they add information that wasn't in the text; they make it easy to see how a series of events or a process works; they are helpful for visual learners; etc.)* How many of you think the pictures were easier to understand than the words? How many of you think that the words were easier to understand than the pictures? *Ask students to explain their answers. Emphasize that different people learn differently* What other things might make a new word or idea easier to understand? *(Ideas may include oral descriptions, color pictures, etc.)*
- *Discuss student answers for all Guided Reading Boxes.* Why do you think there are graphics in the lesson? What do they add? *(They get your attention; they provide information; they help you visualize what is being described; etc.) Have students work in pairs to rank the graphics in this lesson from most important to least important.* How did you decide how to rank the graphics? *(Answers will vary. Ask students to justify their choices.)*

Graphics Lesson B: *Dinosaur Water* (Sci)



A) Does this graphic tell you about the hydrologic cycle? *1 pt No.* Write one reason why OR one reason why not.

1 pt The picture shows a dinosaur; it does not have water; or any other appropriate response.

B) Look at the flowchart on the next page. Write one reason that this graphic makes it is easier to understand the hydrologic cycle.

1 pt The flowchart shows you the cycle's stages; it uses arrows/labels; or any other appropriate response.

Follow-Up Activities

Additional Practice:

- Photocopy or show a picture of a concept and have students write about what the picture shows. Offer students basic sentences to get them started. (*This picture tells about….One interesting thing about this picture is….This picture could be in a textbook that tells about..., etc.*)
- Have students bring in information or select a concept from a science or social studies lesson. Have students turn it into a graphic that tells about the subject quickly. (This could be a scientific concept, a vocabulary word, a person, etc.)

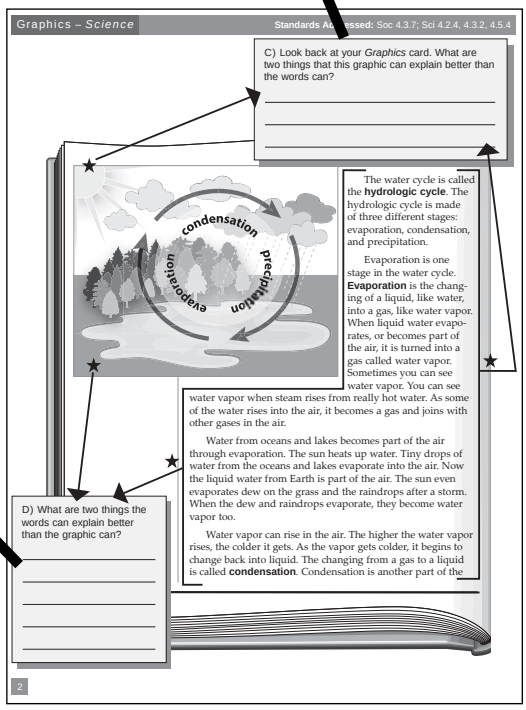
Graphics Lesson B: *Dinosaur Water* (Sci)

C) Look back at your *Graphics* card. What are two things that this graphic can explain better than the words can?

2 pts accept two of the following: how water moves through the hydrologic cycle, what stages of the cycle look like, how the process works, or any other appropriate response.

D) What are two things the words can explain better than the graphic can?

2 pts accept two of the following: more details, more information, vocabulary words, explains rather than shows, defines ideas, or any other appropriate response.



Follow-Up Activities (cont.)

Extension:

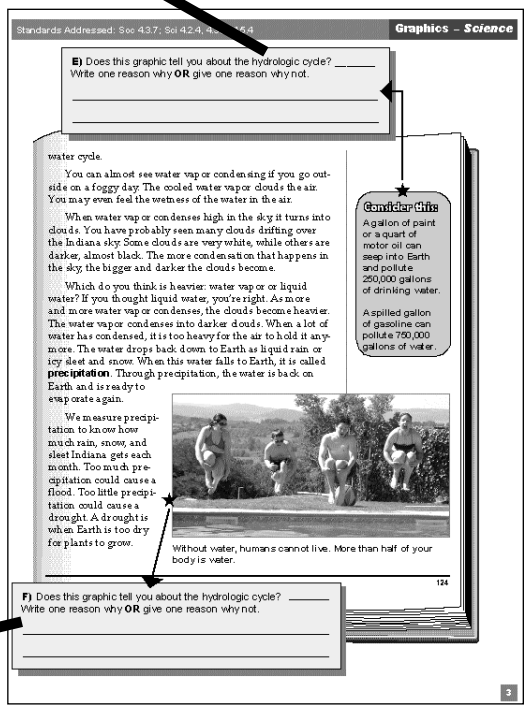
- Have students rank all the graphics in a science or social studies lesson in order of their importance. Have students write explanations for their rankings.
- Ask students to design two new graphics for a chapter in their books. Have them describe how these graphics relate to the material in the lesson, and how important they would be to the lesson as a whole.

Graphics Lesson B: *Dinosaur Water* (Sci)

E) Does this graphic tell you about the hydrologic cycle? *1 pt* No.
Write one reason why **OR** give one reason why not.

1 pt It only talks about Earth and water pollution;

the cycle is process; it doesn't tell about water, etc.



F) Does this graphic tell you about the hydrologic cycle? *1 pt* No.
Write one reason why **OR** give one reason why not.

1 pt It only shows people swimming; it doesn't talk

about process; it doesn't tell about water, etc.

Cross-Curricular Ties

- *Math* 4.6.1 Represent data on a number line and in tables, including frequency tables.

Suggested Activity: Use an almanac or other resource to find data on rain or snowfall. Use this information to construct a graphic.

- *E/LA 4.5.3* - Write informational reports...

Suggested Activity: Use a nonfiction book, such as F. Robinson's *Where Do Puddles Go?* to write a brief informational report.

Graphics Lesson B: *Dinosaur Water* (Sci)

Graphics – *Science*

Standards Addressed: Soc 4.3.7; Sci 4.2.4, 4.3.2, 4.5.4

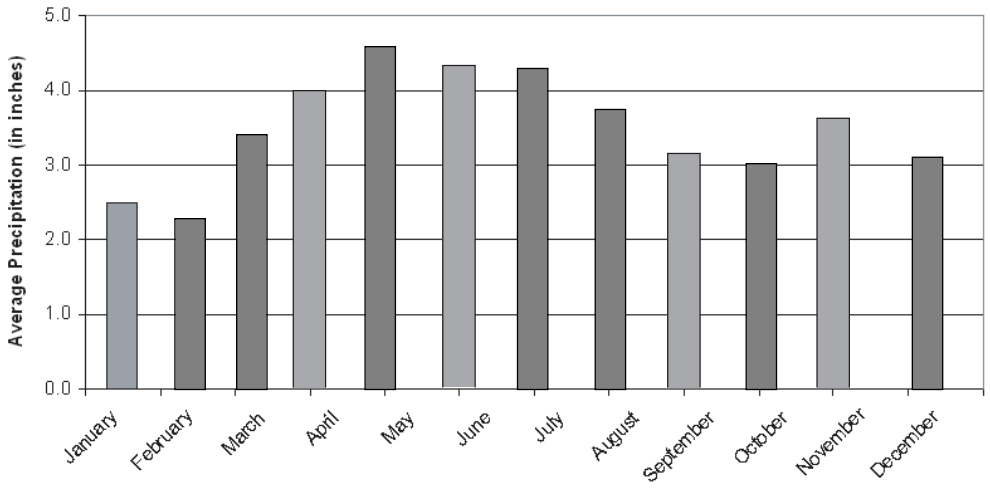
Review Questions

The average amount of precipitation in Indiana between 1971 and 2000 is recorded in the box below. Use this information to create a bar graph that shows the amount of rain or snow for each month. Some of the months have been done for you.

- In March it rained an average of 3.4 inches.
- In July it rained an average of 4.2 inches.
- ✓ In January it snowed and sleeted an average of 2.5 inches.
- In December it snowed and sleeted an average of 3.1 inches.
- ✓ In April it rained an average of 3.9 inches.
- In February it snowed and sleeted an average of 2.3 inches.
- In August it rained an average of 3.9 inches.
- In October it rained an average of 3.0 inches.
- ✓ In June it rained an average of 4.2 inches.
- In May it rained an average of 4.5 inches.
- ✓ In November it rained an average of 3.4 inches.
- ✓ In September it rained an average of 3.1 inches.

9 pts total

Average Monthly Precipitation 1971-2000



1. What are the three stages of the hydrologic cycle?
   - ○ rain, sleet, snow
   - ○ oceans, lakes, rivers
   - ● evaporation, condensation, precipitation

2. How does the hydrologic cycle affect Indiana?
   - ○ It brings new water to the Earth.
   - ● It creates clouds, rain, and snow.
   - ○ It changes freshwater into saltwater.

4

Graphics Lesson C: *Indiana Tax Dollars* (Soc)

Reading Difficulty: 5.0 **Scaffolding/Guided Reading Boxes★:** 4

Vocabulary

Text Feature Vocabulary:

- flowchart
- graphic
- pie chart

Lesson Vocabulary:

- budget
- fund
- revenue
- tax
- transportation

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.4.9* - Identify important goods and services provided by the state and local governments by giving examples of how state and local tax revenues are used.

Science Standards Addressed:

- *4.2.4* - Use numerical data to describe and compare objects and events.
- *4.5.4* - Demonstrate how graphical displays of numbers may make it possible to spot patterns that are not otherwise obvious, such as comparative size and trends.

Background Prompt

- Why is it that you have to pay $1.05 for something that is marked 99 cents? *(Students will probably know about sales tax.)* Why do you have to pay this tax? Where does the money go? You may want to *return to these answers after the lesson and see if the students can clarify or add to them.*

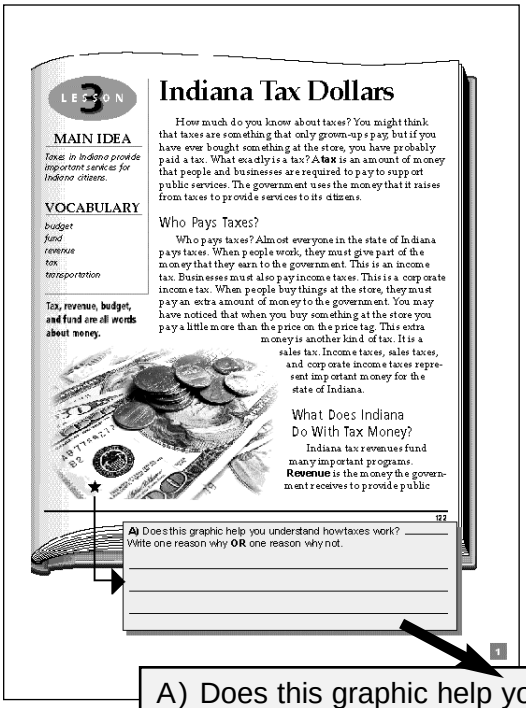
Note: If your students are not familiar with pie charts (circle graphs) or flowcharts, you may wish to introduce these graphics prior to the lesson. This may be done either in place of, or in addition to, the Background Prompt. You might, for example, have students construct a flowchart that shows where they get the money they spend, where they spend it, what the store/etc. does with the money, etc.

Graphics Lesson C: *Indiana Tax Dollars* (Soc)

Think About! Discussion Points Following the Lesson

- Look at the flowcharts on page 2 and page 3. Why do you think these are called *flow*charts? What does *flow* mean? *(It means to run or move smoothly, to circulate.)* How do flowcharts show movement? *(They use arrows, lines from one box to another,etc. They are read from left to right, from top to bottom, etc.)* What are the stages, or steps, in the "Flow of State Taxes" flowchart on page 2? (*People and businesses pay taxes; the taxes go to the state government and are spent on different state programs.)* How do you know when one stage ends and the next stage begins? *(Look at the direction/ placement of arrows, etc.)* How does this flowchart show movement? *(arrows)* What is moving? *(money)*
- *Have students look at each graphic in the lesson beginning on page one.* What does each graphic add to the lesson? *(The graphic on page one doesn't really add anything; the flowchart on page 2 shows how and where the money moves; the pie chart on page 2 shows how the money is budgeted/gets spent; The flowchart on page 3 shows how and where the money moves; the money photo on page 4 is the same as on page 1.)* What do you think is the most important graphic in this lesson? *(Answers will vary. Ask students to justify their choices.)*

Graphics Lesson C: *Indiana Tax Dollars* (Soc)



A) Does this graphic help you understand how taxes work? *1 pt No.*
Write one reason why **OR** one reason why not.

1 pt It is just a picture of money, or any other appropriate response.

Follow-Up Activities

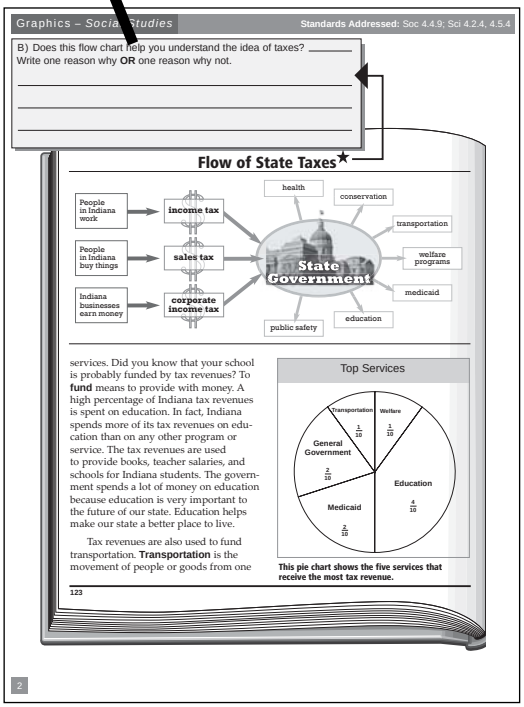
Additional Practice:

- Have students read the directions for a science experiment/activity in their textbooks. Ask them to create a flow chart that shows the science experiment's steps. Their flow charts should illustrate the steps in the experiment/activity.
- Explain that a pie chart is used to show relationships. Have students create pie charts to illustrate things in their world: number of children/adults in their families, number of soft-cover books versus hardcover books in their rooms, number of fourth grade classrooms in their school, the number of teachers per grade level, etc.

Graphics Lesson C: *Indiana Tax Dollars* (Soc)

B) Does this flow chart help you understand the idea of taxes? *1 pt Yes.*
Write one reason why **OR** one reason why not.

1 pt The arrows point to where the money is going, or any other appropriate response.



Follow-Up Activities (cont.)

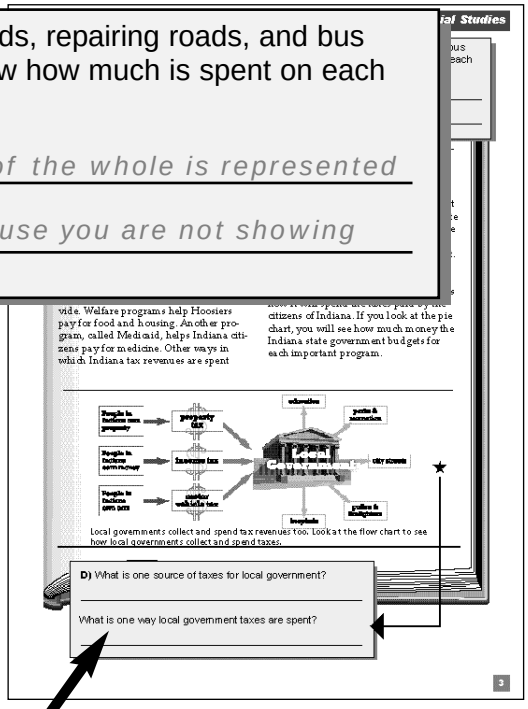
Extension:

- Have students make a chart to compare and contrast different kinds of graphics such as flowcharts, circle graphs, bar charts, etc. Columns might include: what the graphic looks like, when it should be used, what kind of information it can include, etc.
- Have students create simple surveys (such as favorite food, musician, animal, color, etc.) and represent the data in as many different kinds of graphics as possible (frequency tables, pictographs, circle graphs, bar graphs, etc.).

Graphics Lesson C: *Indiana Tax Dollars* (Soc)

C) Transportation budgets include money for building roads, repairing roads, and bus service. Should you use a pie chart or a flow chart to show how much is spent on each service? Why?

1 pt pie chart 1 pt A pie chart shows what part of the whole is represented by each part; you wouldn't use as flow chart because you are not showing movements; or any other appropriate response.



D) What is one source of taxes for local government?

1 pt property tax, income tax, motor vehicle tax, people own property, people earn money, or people own cars

What is one way local government taxes are spent?

1 pt education, parks and recreation, city streets, hospitals, or police and firefighters

Cross-Curricular Ties

- *Math 4.2.10* - Use a standard algorithm to add and subtract decimals (to hundredths).

Suggested Activity: Add money and decimals on charts.

- *Math 4.5.10* - Determine the amount of change from a purchase.

Suggested Activity: Use with math lesson focusing on money and taxes paid.

- *Math 4.6.2* - Interpret data graphs to answer questions about a situation.

Suggested Activity: Create and read pie charts.

Graphics Lesson C: *Indiana Tax Dollars* (Soc)

Graphics – *Social Studies* **Standards Addressed:** Soc 4.4.9; Sci 4.2.4, 4.5.4

Review Questions

1. According to the pie chart on page 2, which three services receive the most funding from Indiana tax revenues?

   3 pts *education, general government, Medicaid*

2. Compare the state government flow chart with the local government flow chart.

   a. Write one difference in how state and local governments collect taxes.

   1 pt *State Government: sales taxes, corporate income tax. Local government: property tax, motor vehicle tax.*

   b. Write one similarity in how state and local governments spend taxes.

   1 pt *Both collect from personal income taxes. Both spend money on education and on pubic safety.*

4. The pie chart on page 2 shows how Indiana spends money for government programs. Imagine that you have $10 to spend. You want to spend $5 on a book, $2 on a notebook, $2 on markers, and $1 on pencils. Complete the chart below and then construct a pie chart to show how your $10 will be spent.

1 pt each

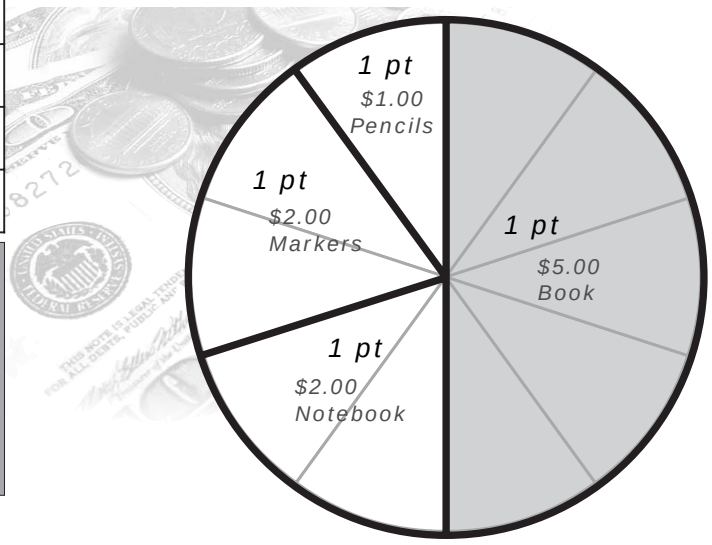
book	$\frac{5}{10}$
notebook	$\frac{2}{10}$
markers	$\frac{2}{10}$
pencils	$\frac{1}{10}$

Pieces of the Pie

$5 = \frac{5}{10}$

$2 = \frac{2}{10}$

$1 = \frac{1}{10}$



4

Skimming & Predicting Lesson A: *Indiana Transportation* (Study Skill)

Reading Difficulty: 3.9 **Scaffolding/Guided Reading Boxes★:** 8

Vocabulary

Text Feature Vocabulary:

- bold/bolded
- column
- headings
- lesson
- topic

Lesson Vocabulary:

- goods
- interstate
- transportation

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:

- *4.1.8* - Summarize the participation of Indiana citizens in the Civil War.
- *4.1.9* - Give examples of Indiana's increasing agricultural, industrial, and business development in the nineteenth century.
- *4.1.11* - Identify important events and movements that changed life in Indiana in the twentieth century.
- *4.3.10* - Read and interpret thematic maps - such as transportation, population and products - to acquire information about Indiana in the present and past.
- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.
- *4.5.5* - Give examples of the impacts of science and technology on the migration and settlement patterns of various groups.

Science Standards addressed:

- *4.1.8* - Recognize and explain that any invention may lead to other inventions.

Background Prompt

- How do we transport, or move, goods from place to place? How do you think people transported goods before we had cars/trucks/airplanes?

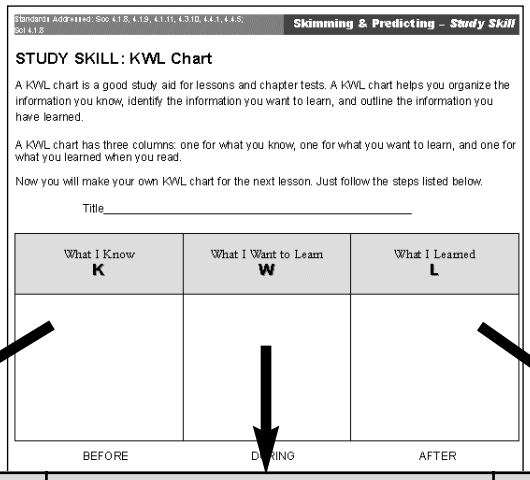
Note: If students are not familiar with KWL charts, you may need to work on making an all-class KWL chart before students can successfully complete the questions on the last page. Consider having students skim the lesson and then create the KWL chart together. It is more important that students be successful and understand the concept than for them to work independently.

Skimming & Predicting Lesson A: *Indiana Transportation* (Study Skill)

Think About! Discussion Points Following the Lesson

- How can a KWL chart be useful a week or a month from now? (*You can use it for studying; it is a quick way to review what was learned; it is a good prompt for memorization, etc.)* How is a KWL chart similar to other graphic organizers that you have used? *(It can help you organize information; it is a study tool; it helps you visualize the task, etc.)* How is it different? *(It is started before reading; it helps you plan your reading; it helps you think about why you are reading; etc.)* When should you use a KWL chart? *(Use a KWL chart when you want to plan your reading, or think about what you already know about a topic, etc.)*
- Why is the title of a KWL chart so important? *(it directs what the chart will cover; it limits the amount of information that it can contain; etc.)* How are the headings and vocabulary words of a lesson important in a KWL chart? *(they help you predict what you will learn; they help you review what you have learned for the third column; etc.)*
- *Lead students in discussion of how each lesson or chapter in their science or social studies textbooks is organized.* Where are vocabulary words listed, where is the lesson's main idea presented, how are vocabulary words set-off in the text, etc.? *(Answers will vary depending on the textbook, but many will be similar to ITRI.)* How can you use these elements to skim or to predict, and how can these elements be used in a KWL chart? *(They show how the lesson is organized; they give you an idea of what the lesson is about/what is important in the lesson; they help you understand the main idea; etc.)*

Skimming & Predicting Lesson A: *Indiana Transportation* (Study Skill)


Standards Addressed: Soc 4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.4.5; Sci 4.1.8

Skimming & Predicting – *Study Skill*

STUDY SKILL: KWL Chart

A KWL chart is a good study aid for lessons and chapter tests. A KWL chart helps you organize the information you know, identify the information you want to learn, and outline the information you have learned.

A KWL chart has three columns: one for what you know, one for what you want to learn, and one for what you learned when you read.

Now you will make your own KWL chart for the next lesson. Just follow the steps listed below.

Title_____

What I Know K	What I Want to Learn W	What I Learned L

BEFORE DURING AFTER

Title: 1 pt Transportation, Indiana Transportation, Railways to Highways, or any other appropriate response

What I Know K	What I Want to Learn W	What I Learned L
2 pts. *Appropriate responses will have something to do with their own experiences or knowledge about transportation (I ride a bike to school, my dad drives a car, my brother walks, I've been on a boat fishing, etc.).*	***2 pts.*** *Appropriate responses will have something to do with the graphics, vocabulary words, or titles in the lesson.*	***2 pts.*** *Appropriate responses will respond to information in the lesson and may reference information in the previous columns on the KWL chart.*

Follow-Up Activities

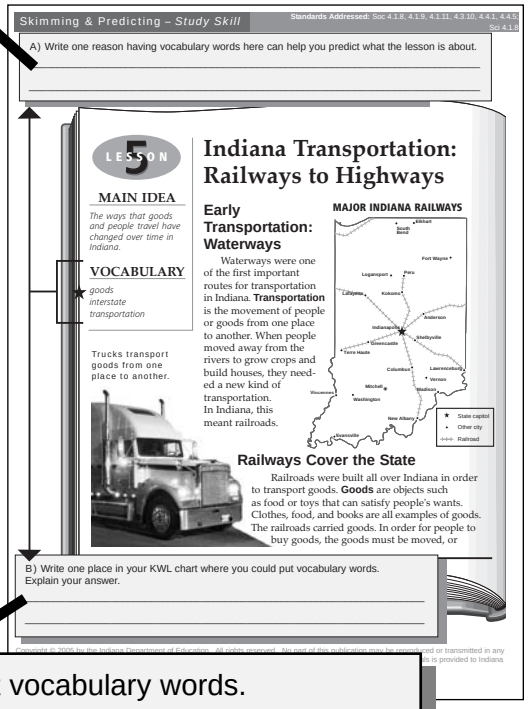
Additional Practice:

- Have students create KWL charts for a lesson in science or social studies.
- If students are having difficulty being specific about "What I Know," help by giving generic background prompts related to the subject (i.e., How do you get to school? How do people travel in Indiana? Etc.).
- If students are having difficulty coming up with reasonable topics for "What I Want to Know," change the heading to "What the *Author* Wants Me to Know."
- Students who continue to struggle should practice KWL charts with self-selected non-fiction books before attempting KWL charts for their textbooks.

Skimming & Predicting Lesson A: *Indiana Transportation* (Study Skill)

A) Write one reason having vocabulary words here can help you predict what the lesson is about.

1 pt It helps you know what words are important in the lesson so that you can look for them; it gives you an idea of what the lesson will be about; or other appropriate response.


Skimming & Predicting – *Study Skill*

Standards Addressed: Soc 4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.4.5; Sci 4.1.6

A) Write one reason having vocabulary words here can help you predict what the lesson is about.

LESSON 5

MAIN IDEA

The ways that goods and people travel have changed over time in Indiana.

VOCABULARY

goods
interstate
transportation

Trucks transport goods from one place to another.

Indiana Transportation: Railways to Highways

Early Transportation: Waterways

Waterways were one of the first important routes for transportation in Indiana. **Transportation** is the movement of people or goods from one place to another. When people moved away from the rivers to grow crops and build houses, they needed a new kind of transportation. In Indiana, this meant railroads.

MAJOR INDIANA RAILWAYS

State capitol
Other city
Railroad

Railways Cover the State

Railroads were built all over Indiana in order to transport goods. **Goods** are objects such as food or toys that can satisfy people's wants. Clothes, food, and books are all examples of goods. The railroads carried goods. In order for people to buy goods, the goods must be moved, or

B) Write one place in your KWL chart where you could put vocabulary words. Explain your answer.

B) Write one place in your KWL chart where you could put vocabulary words. Explain your answer.

1 pt under What I Know (if already known), under Want to Learn (if don't know), or under What I Learned (at end of lesson)

1 pt Explanation, accept: "I already knew that;" "I want to know about...;" "I learned it in the lesson," etc...

Follow-Up Activities (cont.)

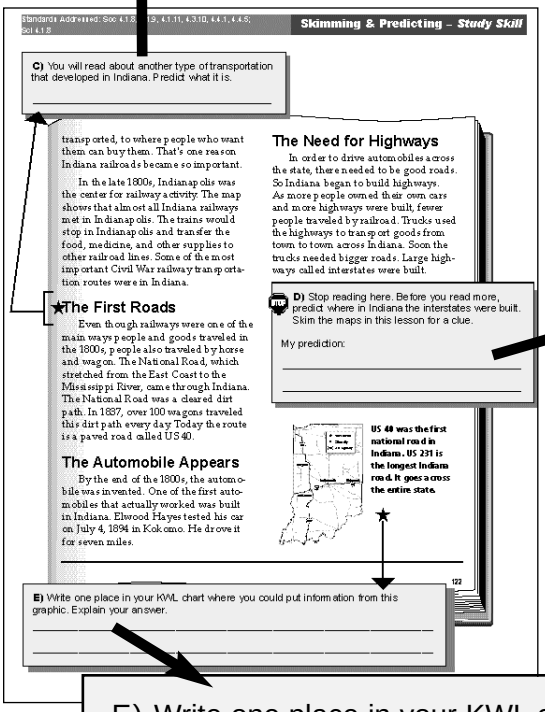
Extension:

- Have students create KWL charts for each of their lessons in science and social studies for at least four to six weeks. Once they've completed at least four KWL charts, have students review what they've accomplished and discuss how KWL charts can be useful.
- Have students create more advanced charts, such as KWHL charts which include a column for "How I Can Learn More." Encourage students to think of different ways to research a topic, including books, museum exhibits, the Internet, educational videos, almanacs, periodicals, etc. Ask them what kind of information they might expect to find in each source.

Skimming & Predicting Lesson A: *Indiana Transportation* (Study Skill)

C) You will read about another type of transportation that developed in Indiana. Predict what it is.

1 pt *automobiles*



D) Stop reading here. Before you read more, predict where in Indiana the interstates were built. Skim the maps in this lesson for a clue.

My prediction:

1 pt *near railroad tracks, on routes already there, east to west through Indiana, north to south through Indiana, connecting with other states, or any other appropriate response*

E) Write one place in your KWL chart where you could put information from this graphic. Explain your answer.

1 pt *under What I Know (if already known), under Want to Learn (if don't know), or under What I Learned (at end of lesson)*

1 pt *for the explanation Accept: "I already knew that;" "I want to know about...;" "I learned it in the lesson," etc...*

Cross-Curricular Ties

- *Math 4.4.2* - Identify, describe, and draw parallel, perpendicular, and oblique lines using appropriate mathematical tools and technology.

Suggested Activity: Find parallel and perpendicular railways and highways on a map. Measure them using map tools.

- *Sci 4.3.14* - Explain that energy in fossil fuels comes from plants that grew long ago.

Suggested Activity: Discuss the fuel needs of automobiles and trains as well as the need for conservation of fossil fuels.

Skimming & Predicting Lesson A: *Indiana Transportation* (Study Skill)

Skimming & Predicting – *Study Skill*

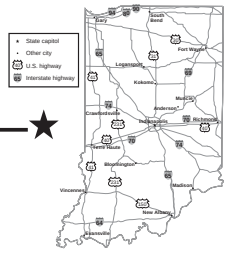
Standards Addressed: Soc 4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.4.5; Sci 4.1.8

F) Where would you write the names of trucking companies that serve Indiana?

- ○ What I have learned because I read it in the lesson.
- ● What I want to learn because it is not in the lesson.
- ○ What I know because I know how trucks are made.

that the railroads used. Why do you think that is?

★ Today trucks transport most of the goods around the state of Indiana. Semi-trucks, or trucks that have a cab and a large trailer attached to them, carry many different kinds of goods. Sometimes they



More major highways intersect in Indiana than in any other state in America.

carry new cars. Sometimes they carry cows and pigs. Sometimes they carry televisions or radios. What are some of the other ways goods are transported today? ★

1. Write two ways the KWL chart helps you remember the lesson.

_____

_____

_____

_____

2. How could you use a KWL chart to prepare to write a report?

_____

_____

_____

_____

2 pts Accept any two of the following at 1 pt each: It organizes information; it identifies important information; it outlines information; it helps you review quickly; or any other appropriate response.

1 pt It helps you organize your thoughts; it helps you figure out what you want to learn/write about; it helps you review what you learned in your research; or any other appropriate response.

H) Complete your KWL chart on page one by writing at least two things you learned from this lesson in the third column. GO!

G) Think about a highway near your school. If you wanted to add information about this highway to your KWL chart, where would you put it? Explain your answer.

_____

_____

H) *4 pts*
one for titling the KWL chart and three for each column

4

G) Think about a highway near your school. If you wanted to add information about this highway to your KWL chart, where would you put it? Explain your answer.

1 pt under What I Know (if already known), under Want to Learn (if don't know), or under What I Learned (at end of lesson)

1 pt Explanation, accept: "I already knew that;" "I want to know about...;" "I learned it in the lesson," etc...

Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

Reading Difficulty: 4.8 **Scaffolding/Guided Reading Boxes★:** 9

Vocabulary

Text Feature Vocabulary:

- bold/bolded
- graphic
- heading
- lesson
- paragraph
- section

Lesson Vocabulary:

- archaeological site
- archaeologist
- artifact

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:

- *4.1.1* - Identify and compare the major early cultures that existed in the region that became Indiana prior to contact with Europeans.
- *4.4.1* - Give examples of goods and services produced in Indiana in different historical periods.

Science Standards Addressed:

- *4.4.8* - Know and explain that artifacts and preserved remains provide some evidence of the physical characteristics and possible behavior of human beings who lived a very long time ago.

Background Prompt

- How do pictures or graphics help readers skim? *Have students look through a chapter about artifacts or early cultures in their science or social studies textbook.* What do the pictures tell you about the lesson?

Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

Think About! Discussion Points Following the Lesson

- Look at Guided Reading Box D (the map). How can looking at pictures and graphics help you to skim and predict? *(Graphics can show subject matter quickly; they provide information; they can help you find out what you will read about; etc.*) How can reading the captions of graphics help you skim and predict? *(Captions help you understand the graphic, which can give you an idea about the lesson; they give you an idea of what the lesson is about; etc.)*
- Why might some graphics be misleading when you are skimming and predicting*? (Graphics that are merely decorative may lead you to believe that the lesson is about something that it is not.) If students have read the "Dinosaur Water" lesson, you might remind them of the dinosaur graphic on the first page which may have led many of them to believe that they would be reading a lesson about dinosaurs. Encourage students to look for similar examples in their textbooks.*
- Look at Guided Reading Box H. How can looking at the review questions before you read help you predict? *(It is useful because the questions introduce information, prompt thinking about the topic, tell you what you are expected to learn and remember, etc.).*

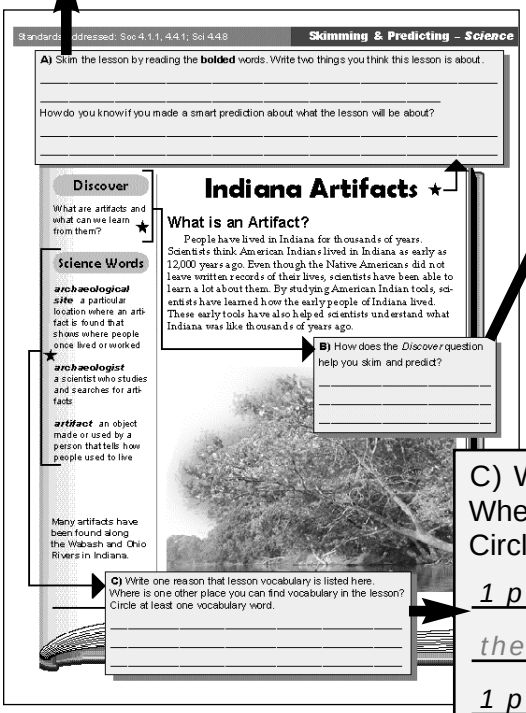
Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

A) Skim the lesson by reading the **bolded** words. Write two things you think this lesson is about:

2 pts Accept any of the following for 1 pt each: artifacts, archaeologist(s), archaeological site(s), scientists, or any other appropriate response.

How do you know if you made a smart prediction about what the lesson will be about?

1 pt Read the lesson thoroughly; or any other appropriate response from the Skimming and Predicting card.


Standards addressed: Soc 4.1.1, 4.4.1; Sci 4.4.8

Skimming & Predicting – *Science*

A) Skim the lesson by reading the **bolded** words. Write two things you think this lesson is about.

How do you know if you made a smart prediction about what the lesson will be about?

Discover

What are artifacts and what can we learn from them?

Science Words

archaeological site a particular location where an artifact is found that shows where people once lived or worked

archaeologist a scientist who studies and searches for artifacts

artifact an object made or used by a person that tells how people used to live

Indiana Artifacts

What is an Artifact?

People have lived in Indiana for thousands of years. Scientists think American Indians lived in Indiana as early as 12,000 years ago. Even though the Native Americans did not leave written records of their lives, scientists have been able to learn a lot about them. By studying American Indian tools, scientists have learned how the early people of Indiana lived. These early tools have also helped scientists understand what Indiana was like thousands of years ago.

B) How does the *Discover* question help you skim and predict?

Many artifacts have been found along the Wabash and Ohio Rivers in Indiana.

C) Write one reason that lesson vocabulary is listed here. Where is one other place you can find vocabulary in the lesson? Circle at least one vocabulary word.

B) How does the *Discover* question help you skim and predict?

1 pt It tells you what you will find out when you read; it helps you identify the main idea; you know you need to look for the answer; or any other appropriate response.

C) Write one reason that lesson vocabulary is listed here. Where is one other place you can find vocabulary in the lesson? Circle at least one vocabulary word.

1 pt It lets you know what words will be important in the lesson; or any other appropriate response.

1 pt bolded in the text, in the headings, or any other appropriate response

1 pt for circling any of the three vocabulary words anywhere in the lesson

Follow-Up Activities

Additional Practice:

- Have students copy the titles, subtitles, vocabulary words, and review questions of their next science or social studies lesson (tell them not to read it!). Have students trade papers or hand them out at random and have each student predict what they will learn.
- Copy a chapter from a textbook. Have students highlight the title of the chapter. Have students use highlighters to color code all of the bolded words. Then have them color code all of the headings. Next, have them color code the introduction section (vocabulary, main idea, etc.) Last, color code the graphics. Then have students read and make predictions based on just the highlighted sections.

Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

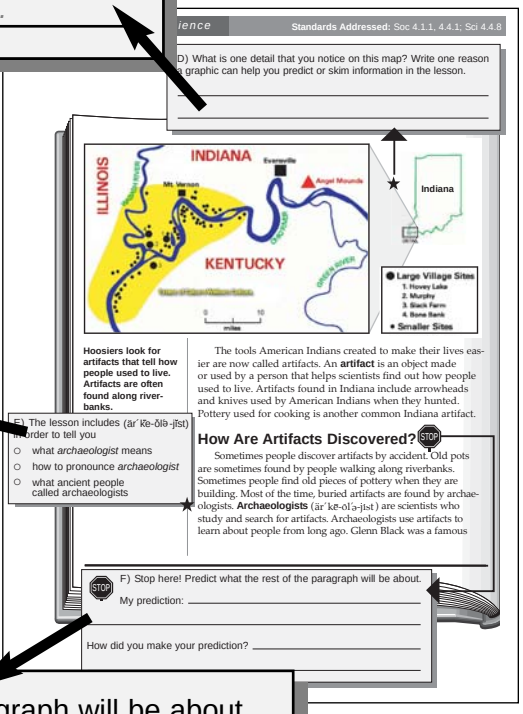
D) What is one detail that you notice on this map? Write one reason a graphic can help you predict or skim information in the lesson.

1 pt for noticing any specific detail on the map

1 pt It shows you information very quickly; it helps you picture the subject; it helps you understand what the lesson is about; or any other appropriate response.

E) The lesson includes (är´kē-ŏlə-jĭst) in order to tell you

- ○ what *archaeologist* means
- ● how to pronounce *archaeologist*
- ○ what ancient people called archaeologists



STOP

F) Stop here! Predict what the rest of the paragraph will be about.

My prediction: *1 pt The paragraph will discuss how artifacts are discovered, or any other appropriate response.*

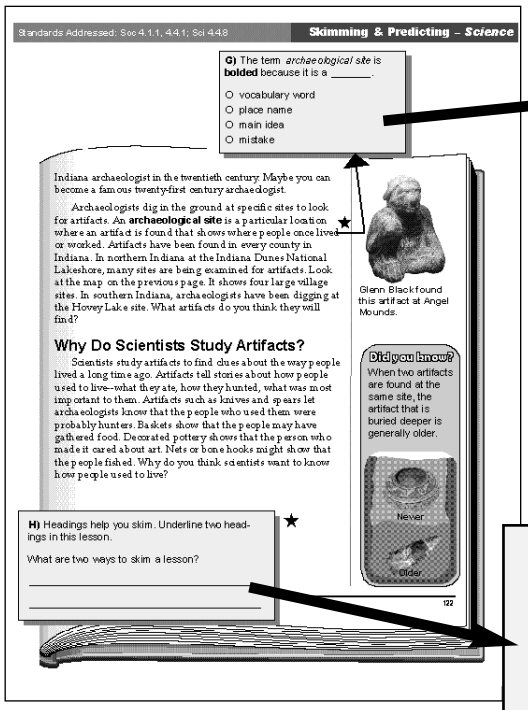
How did you make your prediction? *1 pt The heading asks a question that the paragraph will answer, or any other appropriate response.*

Follow-Up Activities (cont.)

Extension:

- Have students take one of their favorite library books and turn it into a "textbook" by copying or drawing a page and adding the skimming and predicting features (main idea, vocabulary words, review questions, etc.).
- Teach students how to outline a chapter by using headings and subheadings. Have them begin an outline of a chapter before they read and complete the outline with key facts as they read.

Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)



G) The term *archaeological site* is **bolded** because it is a _____.

- ● vocabulary word
- ○ place name
- ○ main idea
- ○ mistake

H) Headings help you skim. Underline two headings in this lesson. *1 pt for identifying headings*

What are two ways to skim a lesson? *2 pts*

Read review questions; read headings; look at pictures; or any other appropriate response from "Skimming and Predicting" card.

Cross-curricular Ties:

- *Math 4.2.1* - Understand and use standard algorithms for addition and subtraction.

Suggested Activity: Use subtraction to determine the difference in age of various artifacts.

- *Soc 4.5.4* - Describe the role of Indiana artists in American visual arts, literature, music, dance, and theatre.

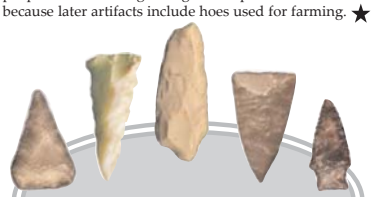
Suggested Activity: Learn about local artisans and how they make their craft. Try weaving, pottery, or basket making.

Skimming & Predicting Lesson B: *Indiana Artifacts* (Sci)

Skimming & Predicting – *Science* **Standards Addressed:** Soc 4.1.1, 4.4.1; Sci 4.4.8

What if...
If you were to put one thing in a time capsule for people to see hundreds of years from now, what would it be?

Knowing what tools people used also helps us understand what Indiana used to be like. Because of the differences in artifacts found in Indiana, we know that people lived different kinds of lives in different periods of time. For example, the earliest people to live in Indiana hunted and gathered their food. We know this because the oldest artifacts found in Indiana are spear points used for hunting. As time passed, people in Indiana began to grow crops. Scientists know this because later artifacts include hoes used for farming. ★



Many kinds of artifacts are made from a rock called chert. Chert was popular for toolmakers because it would break where they wanted. Many Indiana arrowheads are made of chert.

REVIEW
1. Write one reason why artifacts are important.

2. Write your own definition of *artifact.*

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I) When you have finished reading, it is a good idea to skim the lesson so you can _____.

○ guess ○ predict ○ review

4

1 pt Artifacts help us learn about the people who lived long ago in the place where the artifacts were found; they help us learn what Indiana used to be like; or any other appropriate response.

1 pt objects made and left behind by people living many years ago, or other any appropriate response

I) When you have finished reading, it is a good idea to skim the lesson so you can *1 pt*.

○ guess ○ predict ● review

Skimming & Predicting Lesson C: *Waterways to Railways* (Soc)

Reading Difficulty: 4.0 **Scaffolding/Guided Reading Boxes★:** 5

Vocabulary

Text Feature Vocabulary:

- heading
- lesson
- paragraph
- section
- title

Lesson Vocabulary:

- goods
- Indianapolis
- Ohio River
- transportation

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:

- *4.1.6* - Explain how key individuals and events influenced the early growth of the new state of Indiana.
- *4.1.9* - Give examples of Indiana's increasing agricultural, industrial, and business development in the nineteenth century.
- *4.3.8* - Create a map tracing the routes and methods of travel used by settlers to reach Indiana, and identify ways in which settlers have changed the landscape in Indiana over the past two hundred years.
- *4.3.10* - Read and interpret thematic maps - such as transportation, population, and products - to acquire information about Indiana in the present and in the past.
- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.

Science Standards Addressed:

- *4.1.8* - Recognize and explain that any invention may lead to other inventions.

Background Prompt

- *On the board, write down all the headings from this lesson or a lesson in a science or social studies textbook. Have students read these headings and predict what they will learn about.*

Skimming & Predicting Lesson C: *Waterways to Railways* (Soc)

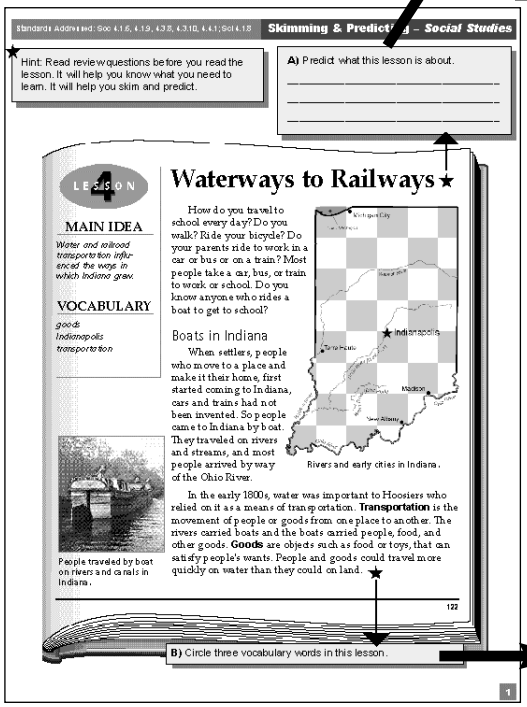
Think About! Discussion Points Following the Lesson

- Look at page 1: Where is the main idea on this page? *(It is on the left side of the page.)* Where are the vocabulary words? *(They are bolded in the text and listed under "main idea.")* How do you know they are vocabulary words? *(The heading and/or bolded font tells you.)* Why is there a map? *(It adds information. Looking at it before you read will help you predict what the lesson is about.)* Why are headings important? *(They help organize the lesson; they give you a "map" of the information in the lesson, etc.)* Where are all of these things in your science/social studies text book? *(Answers will vary by publisher, but textbooks should be similar to the ITRI lessons.) Be prepared to point out differences between ITRI and your textbooks and to help students find elements that may be different.*
- Look at Guided Reading Box A. How did you find the answer to this question? *(Students may have looked at illustrations, headings, captions, the title, main idea, review questions, vocabulary, etc.)* What did you look at first, second, etc. *(Answers will vary.)* What should you look at in order to skim the next lesson in your social studies/science textbook? (*They can look at the "main idea" box; they can read headings; they can look at pictures and graphics; they look at words in bold; they can look at the review questions, etc.)*

Skimming & Predicting Lesson C: *Waterways to Railways* (Soc)

A) Predict what this lesson is about.

1 pt transportation in Indiana, waterways and railways, trains and boats, or any other appropriate response



B) Circle three vocabulary words in this lesson.

4 pts Accept three of one vocabulary word or three different vocabulary words. Accept goods, Indianapolis, *and/or* transportation.

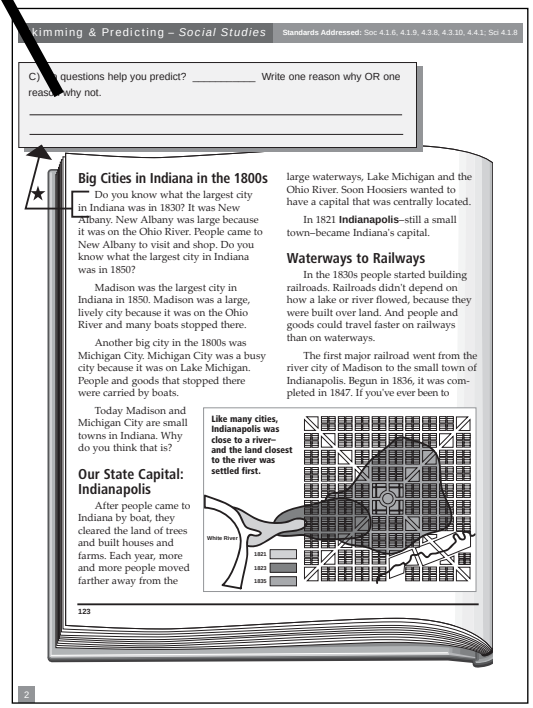
Follow-Up Activities

Additional Practice:

- Have students choose one lesson from a future chapter in either their science or social studies textbooks. Have them copy the main idea, headings, and vocabulary from the lesson. Have them write a paragraph that predicts what the lesson will be about and explains why.
- Using the table of contents, have students predict what various chapters will include. Discuss subheadings and the type of vocabulary that might be found. Check predictions by skimming the chapters.
- Have students write review questions or "what will happen next" questions for each paragraph in a science or social studies lesson.

Skimming & Predicting Lesson C: *Waterways to Railways* (Soc)

C) Do questions help you predict? *1 pt Yes.*
Write one reason why OR one reason why not. *1 pt They help you think about the subject; they introduce new information; questions help the reader find out information about the text; or any other appropriate response.*


Skimming & Predicting – *Social Studies* Standards Addressed: Soc 4.1.6, 4.1.9, 4.3.8, 4.3.10, 4.4.1; Sci 4.1.8

C) ...questions help you predict? _____ Write one reason why OR one reason why not.

Big Cities in Indiana in the 1800s

Do you know what the largest city in Indiana was in 1830? It was New Albany. New Albany was large because it was on the Ohio River. People came to New Albany to visit and shop. Do you know what the largest city in Indiana was in 1850?

Madison was the largest city in Indiana in 1850. Madison was a large, lively city because it was on the Ohio River and many boats stopped there.

Another big city in the 1800s was Michigan City. Michigan City was a busy city because it was on Lake Michigan. People and goods that stopped there were carried by boats.

Today Madison and Michigan City are small towns in Indiana. Why do you think that is?

Our State Capital: Indianapolis

After people came to Indiana by boat, they cleared the land of trees and built houses and farms. Each year, more and more people moved farther away from the large waterways, Lake Michigan and the Ohio River. Soon Hoosiers wanted to have a capital that was centrally located.

In 1821 **Indianapolis**–still a small town–became Indiana's capital.

Waterways to Railways

In the 1830s people started building railroads. Railroads didn't depend on how a lake or river flowed, because they were built over land. And people and goods could travel faster on railways than on waterways.

The first major railroad went from the river city of Madison to the small town of Indianapolis. Begun in 1836, it was completed in 1847. If you've ever been to

Like many cities, Indianapolis was close to a river–and the land closest to the river was settled first.

White River

1821
1823
1835

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2

Follow-Up Activities

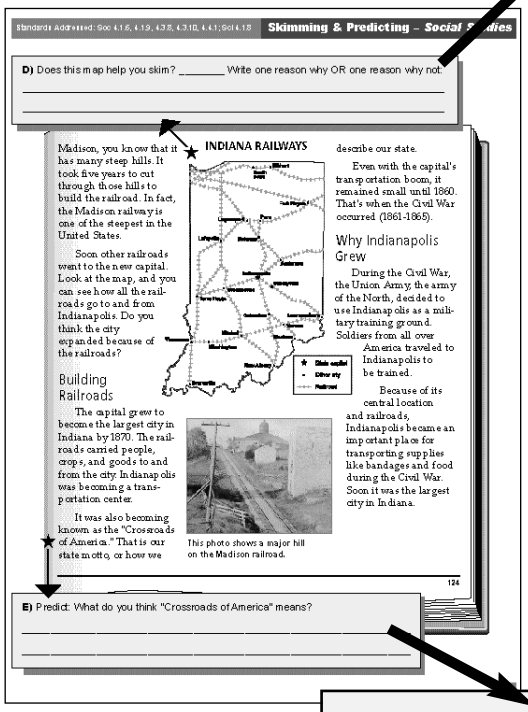
Extension:

- Take a paragraph from an informational article or book and add predictive questions.
- Have each student read a short lesson or article and come up with a main idea. Have students trade with a partner who will only skim the text to predict the main idea. Have them compare and discuss their responses.

Skimming & Predicting Lesson C: *Waterways to Railways* (Soc)

D) Does this map help you skim? *1 pt Yes.*

Write one reason why OR one reason why not: *1 pt It shows all the places the railroad lines went to in Indiana; it is an easy/fast way to get information; or any other appropriate response.*



Standards Addressed: Soc 4.1.6, 4.1.9, 4.3.8, 4.3.10, 4.4.1; Sci 4.1.8 **Skimming & Predicting – *Social Studies***

D) Does this map help you skim? _____ Write one reason why OR one reason why not

Madison, you know that it has many steep hills. It took five years to cut through those hills to build the railroad. In fact, the Madison railway is one of the steepest in the United States.

Soon other railroads went to the new capital. Look at the map, and you can see how all the railroads go to and from Indianapolis. Do you think the city expanded because of the railroads?

INDIANA RAILWAYS

Building Railroads

The capital grew to become the largest city in Indiana by 1870. The railroads carried people, crops, and goods to and from the city. Indianapolis was becoming a transportation center.

It was also becoming known as the "Crossroads of America." That is our state motto, or how we describe our state.

Even with the capital's transportation boom, it remained small until 1860. That's when the Civil War occurred (1861-1865).

Why Indianapolis Grew

During the Civil War, the Union Army, the army of the North, decided to use Indianapolis as a military training ground. Soldiers from all over America traveled to Indianapolis to be trained.

Because of its central location and railroads, Indianapolis became an important place for transporting supplies like bandages and food during the Civil War. Soon it was the largest city in Indiana.

This photo shows a major hill on the Madison railroad.

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E) Predict: What do you think "Crossroads of America" means?

E) Predict: What do you think "Crossroads of America" means?

1 pt Many railroad lines meet and "cross" through in Indiana; Indiana has lots of transportation; etc.

Cross-Curricular Ties

- *Soc 4.3.8* - Create a map tracing the routes and methods of travel used by settlers to reach Indiana and identify ways in which settlers have changed the landscape in Indiana over the past two hundred years.

Suggested Activity: Have students make maps on transparency sheets and share using the overhead.

- *Soc 4.3.4* - Locate Indiana on a map of the United States; indicate the state capital, major cities, and rivers in Indiana; and be able to place these on a blank map of the state.

Suggested Activity: Create maps of Indiana with major rivers and early transportation centers that developed along the rivers noted.

Skimming & Predicting Lesson C: *Waterways to Railways* (Soc)

Skimming & Predicting – *Social Studies* **Standards Addressed:** Soc 4.1.6, 4.1.9, 4.3.8, 4.3.10, 4.4.1; Sci 4.1.8

Review Questions

1. The following headings are taken from the lesson. Choose the sentence below that best describes what you read in the section under each heading. Write the letter of the sentence on the line next to the correct heading.

1 pt each

_B_ *Waterways to Railways*

_E_ *Boats in Indiana*

_G_ *Big Cities in Indiana in the 1800s*

_A_ *Our State Capital: Indianapolis*

_C_ *Building Railroads*

_F_ *Why Indianapolis Grew*

A. Indianapolis became the capital in 1821.
B. Transportation influenced how Indiana grew.
C. Indianapolis was becoming the "Crossroads of America."
D. Railroads were built to Indianapolis.
E. Many people came to Indiana by boat.
F. During the Civil War, Indianapolis was a transportation center.
G. Madison and New Albany were big cities because they were on the Ohio River.

2. Why was Indianapolis chosen as the capital of Indiana?

1 pt Indianapolis was chosen as the capital of Indiana because it was located in the center of the state.

3. Write two important events or inventions that changed life in Indiana in the 1800s.

1 pt The Civil War (1861-65) was important to the growth of Indianapolis, since soldiers trained there; the growth of the railroads changed life in Indiana; or any other appropriate response

4. Write two things you do when you predict. *1 pt each*

a) _____

b) _____

2 pts accept any of the following:

- *look at graphics and topics before you read*
- *make a smart guess*
- *look for words in bold*
- *read titles and headings*
- *read captions*
- *read the questions at the end of the lesson*
- *plan ahead as you read*
- *figure out what you should learn*

Cause & Effect Lesson A: *Catching a Cold* (Study Skill)

Reading Difficulty: 4.1 **Scaffolding/Guided Reading Boxes★:** 6

Vocabulary

Text Feature Vocabulary:

- diagram
- graphic organizer
- paragraph

Lesson Vocabulary:

- immune system
- vaccine
- virus

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.
- *4.2.6* - Distinguish between cause and effect and between fact and opinion in informational text.

Social Studies Standards Addressed:

- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.

Science Standards Addressed:

- *4.1.7* - Discuss and give examples of how technology, such as computers and medicines, has improved the lives of many people, although the benefits are not equally available to all.
- *4.4.10* - Explain that if germs are able to get inside the body, they may keep it from working properly. Understand that for defense against germs, the human body has tears, saliva, skin, some blood cells, and stomach secretions. Also note that a healthy body can fight most germs that invade it. Recognize, however, that there are some germs that interfere with the body's defenses.
- *4.4.11* - Explain that there are some diseases that human beings can only catch once. Explain that there are many diseases that can be prevented by vaccination, so that people do not catch them even once.

Background Prompt

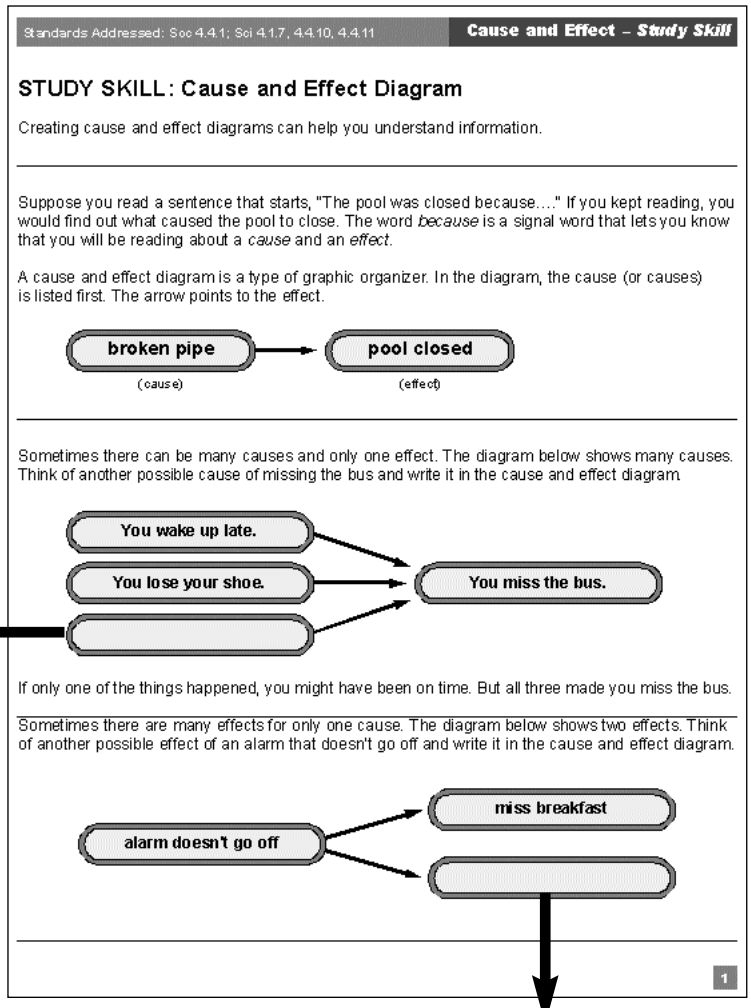
- *Have students hypothesize about what causes people to become sick. Write these ideas on the board. Return to the ideas after the lesson and have students evaluate them. Some of the ideas may have been common myths, such as not dressing warmly. Ask students how the lesson changed their answers.*

Cause & Effect Lesson A: *Catching a Cold* (Study Skill)

Think About! Discussion Points Following the Lesson

- Look at the cause and effect diagram and the "How a Virus Attacks Cells" illustration on page 3. How are they alike? *(The causes are to the left; the effects are to the right; the arrows point right; they show cause and effect; etc.)* How are they different? *(The illustration has multiple causes/effects; the diagram has one; the illustration uses words and pictures; the diagram uses only words; etc.)*
- Look at the sentence you underlined for Box C. Which sentence did you choose? *You may want students to write their sentences on the board so everyone can notice the similarities and differences.* How can underlining sentences be useful? *(It is fast and easy it is a quick way to review later; it helps you read carefully; etc.)* How is taking notes on a separate piece of paper similar to underlining sentences? *(It identifies important information; it helps you review quickly later, etc.)* What are the benefits of each? *(Both help you study; underlining is faster, but taking notes helps you remember, and can be used when you can't write in your textbooks, etc.)*

Cause & Effect Lesson A: *Catching a Cold* (Study Skill)



1 pt Accept any answer that could reasonably lead to missing the bus (You can't find your homework; you forget to look at the clock; you take too long eating breakfast, etc.)

1 pt Accept any reasonable effect of "alarm doesn't go off" (miss bus, get up late, late for school, late for work, etc.)

Follow-Up Activities

Additional Practice:

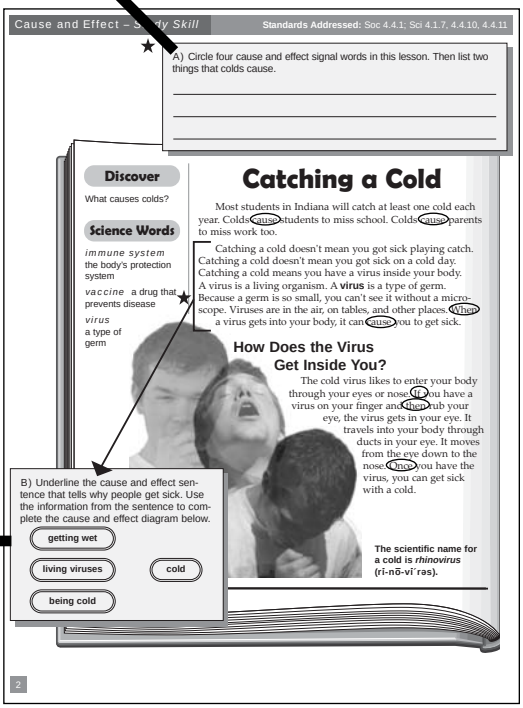
- Create a list of cause and effect subjects that increase in difficulty and that use examples from previous instructional tools (left social studies book at home–couldn't study at school; urban growth–fewer farms, etc.) and have students create cause and effect diagrams.
- Have students read picture books, such as *Why Mosquitoes Buzz in People's Ears: A West African Tale* by Verda Aardema or *If You Give a Mouse a Cookie* by Laura Joffee Numeroff. Have students draw cause and effect diagrams to show how the events of the story were related to each other.

Cause & Effect Lesson A: *Catching a Cold* (Study Skill)

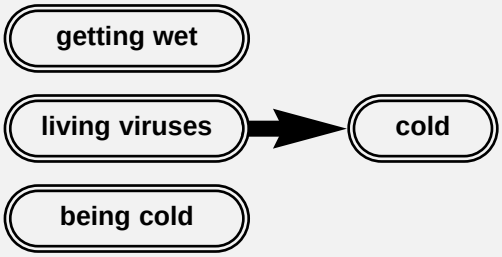
A) Circle four cause and effect signal words in this lesson. Then list two things that colds cause.

4 pts for circling any four signal words

2 pts, 1pt each for illness, sickness, miss school, miss work, or any other appropriate response



B) Underline the cause and effect sentence that tells why people get sick. Use the information from the sentence to complete the cause and effect diagram below.



B) *2 pts: one for underlining and one for arrow*

The last sentence of the second paragraph should be underlined: "when a virus gets into your body, it can cause you to get sick." The arrow should move from "Living Viruses" to "Cold."

Follow-Up Activities (cont.)

Extension:

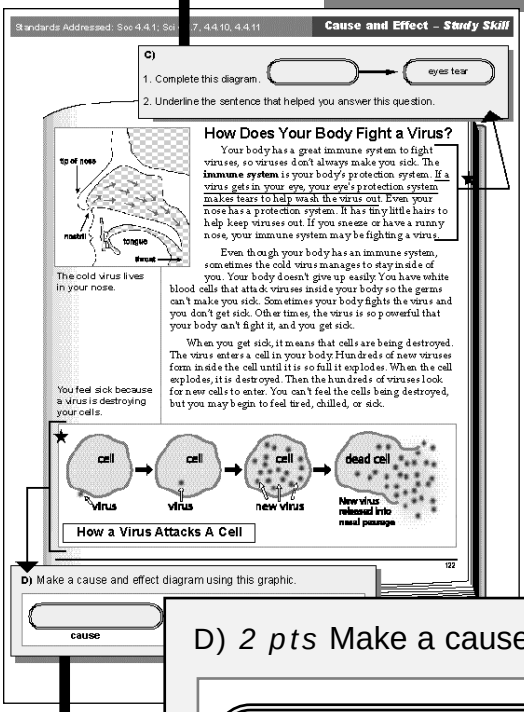
- Have students create cause and effect diagram worksheets based on passages from their science or social studies textbooks for each other to complete. Have students use cause and effect diagrams from this instructional tool as examples on their worksheets.
- Ask students to select two to three events from their science or social studies textbooks. Have them search for as many causes as they can find and create a cause and effect diagram that shows the causes and the effect(s).
- Have students select a disease and use their health or science textbook to research both its causes and its effects.

Cause & Effect Lesson A: *Catching a Cold* (Study Skill)

C) *2 pts*

1. Complete this diagram. *Eyes defense system works, etc.* → **eyes tear**

2. Underline the sentence that helped you know how to answer this question.



D) *2 pts* Make a cause and effect diagram using this graphic.

cause → **effect**

possible causes: virus enters cell, hundreds of new viruses form
cause

→ *possible effects: hundreds of new viruses form, cell dies, virus released into nasal passage*
effect

(or any other appropriate response in proper order)

1 pt for drawing the diagram correctly and one point for each answer

Cross-Curricular Ties

- *E/LA 4.3.3* - Use knowledge of the situation, setting, and a character's traits, motivations, and feelings to determine the causes for that character's actions.

Suggested Activity: Read books where the character suffers from an illness or accident (such as *On the Banks of Plum Creek* by Laura Ingalls Wilder or *Running Out of Time* by Margaret Peterson Haddix) and relate how the character's situation causes other actions.

Cause & Effect Lesson A: *Catching a Cold* (Study Skill)

Cause and Effect – *Study Skill* **Standards Addressed:** Soc 4.4.1; Sci 4.1.7, 4.4.10, 4.4.11

E) Does this graphic show cause and effect? *1 pt* No.
Write one reason why OR one reason why not.
1 pt It is just a picture of a vaccine. If student answered "yes," 1pt may be awarded if answer relates vaccines to preventing viruses.

How Do You Get Better?

If you rest, your body will have the strength to get rid of the germs. Your body will continue to make more white blood cells so that the virus will be destroyed. Medicines can't make cold viruses go away. Medicines might make you feel better, but your body has to fight the virus on its own. A **vaccine** (văk-sēn´) is a drug that prevents disease. Your doctor might give you a vaccine to help prevent some viruses, such as measles, from making you sick. There are, however, no vaccines yet to prevent viruses that cause colds.

Eli Lilly is an Indiana company that makes vaccines and medicines.

Misunderstandings About Colds

Sometimes people think they became ill, or sick, because they played outside on a cold day. Cold air and rain don't make people ill, but if you are not dressed warmly, your body may not be strong enough to fight any viruses that have entered you. Your body will be working hard to keep you warm, instead of fighting germs. You may end up sick. The same thing happens if you don't get enough sleep. Because your body is tired, it won't have the energy to fight the germs inside of you. You may feel ill and miss doing the things you wanted to do.

Staying Healthy

1. Wash germs off your hands by using soap and warm water.
2. Get the rest you need.
3. Keep your hands away from your nose and eyes.

Review

1. When you get sick it is because *1 pt*
   - ○ defenses kept the virus out.
   - ● the virus is in your body.
   - ○ it is cold outside.
2. What fights the cold virus? *1 pt*
   - ● your body
   - ○ vaccines
   - ○ medicine

F) As you read this paragraph, pay attention to what causes and what does not directly cause colds. List one action that does not directly cause a cold and underline the sentence where you found the answer:

4

F) 2 pts As you read this paragraph, pay attention to what causes and does not directly cause colds. List one action that does not directly cause a cold and underline the sentence where you found the answer:

1 pt for underlining, 1 pt playing outside on a cold day, cold air, rain, or not being dressed warmly

Cause & Effect Lesson B: *Experiment: Friction* (Sci)

Reading Difficulty: 3.9 **Scaffolding/Guided Reading Boxes★:** 7

Vocabulary

Text Feature Vocabulary:

- caption
- diagram
- paragraph

Lesson Vocabulary:

- friction
- heat

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.
- *4.2.6* - Distinguish between cause and effect and between fact and opinion in informational text.

Social Studies Standards Addressed:

- *4.1.11* - Identify important events and movements that changed life in Indiana in the twentieth century.

Science Standards Addressed:

- *4.3.12* - Investigate, observe, and explain that heat is produced when one object rubs against another, such as one's hands rubbing together.

Background Prompt

- Even if you use gloves or mittens, your hands can get cold in the winter. How could you warm them up? What could you do using your own body to produce heat? Why does this work? *You may want to return to these answers after the lesson to see if students can clarify or add to them.*

Cause & Effect Lesson B: *Experiment: Friction* (Sci)

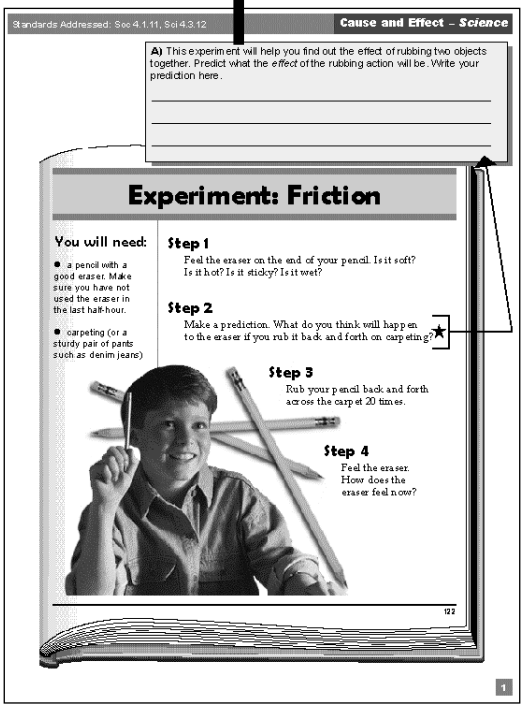
Think About! Discussion Points Following the Lesson

- This lesson uses a science experiment to teach cause and effect. Why do you think most science experiments use cause and effect? (*Testing a hypothesis is testing what will be the effect, or trying to cause a certain effect, etc.)* Why do textbooks often use cause and effect writing for experiments or history time lines? (*It is logical; it helps to explain; it makes results clear; it shows connections; it explains how events are related; it shows what happened first; etc.)*
- Look at Review Question #3. There are two places in the lesson where you might have found this answer–in the caption next to the water slide photo and in the text. Where did you look? *(Answers will vary. Have students defend their ideas)* How do different kinds of features on a page (pictures, captions, graphics, titles, etc.) tell you information? *(They add to or explain/clarify what you have read, etc.)*
- Sometimes *cause* is used as a noun as in, "What was the *cause* of the fire?" Sometimes it is used as a verb. "The match *caused* the fire." How can you tell what the cause and effect are when you read? *(Look for context clues; ask which makes sense; look where the word is in the sentence; look for verb endings; etc.)* Look at Review Questions #5 and #6. In #5, friction is an effect. In #6, friction is a cause. How can something be a cause in one situation and an effect in another? *(There might be a chain reaction; one thing might lead to another; etc.)* Can more than one thing be a cause? (*Yes. Sometimes one thing alone might not cause something, but the combination of two or more things may.)* Can there be more than one effect? *(Yes.)*

Cause & Effect Lesson B: *Experiment: Friction* (Sci)

A) This experiment will help you find out the effect of rubbing two objects together. Predict what the *effect* of the rubbing action will be. Write your prediction here.

1 pt *Rubbing will make heat; the eraser will get hot; the eraser will wear down; or any other appropriate response.*



Follow-Up Activities

Additional Practice:

- Create a cause and effect memory game using science and social studies topics. Put a cause, such as "friction," on one index card and an effect, such as "slows down objects," on another. Create at least five sets of different causes and effects to make a memory game in which students match causes and effects on overturned cards.
- Have students underline where they found their answers to the Guided Reading Box questions and Review Questions in the text.
- Have students underline the *cause* and circle the *effect* in the text or in a photocopied page from a science or social studies textbook.

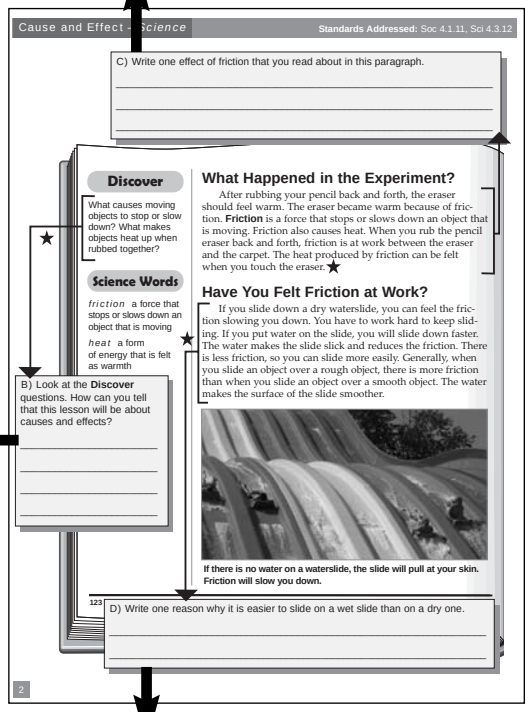
Cause & Effect Lesson B: *Experiment: Friction* (Sci)

C) Write one effect of friction that you read about in this paragraph.

1 pt *The eraser feels warm; the eraser feels hot; heat is produced; objects stop or slow down; or any other appropriate response*

B) Look at the **Discover** questions. How can you tell that this lesson will be about causes and effects?

1 pt *These are cause and effect signal words ('causes'/'makes') in the question; the questions ask about causes and effects; or any other appropriate response.*



D) Write one reason why it is easier to slide on a wet slide than on a dry one.

1 pt *The friction is reduced; there is less friction; the water makes the slide smoother; or any other appropriate response.*

Follow-Up Activities (cont.)

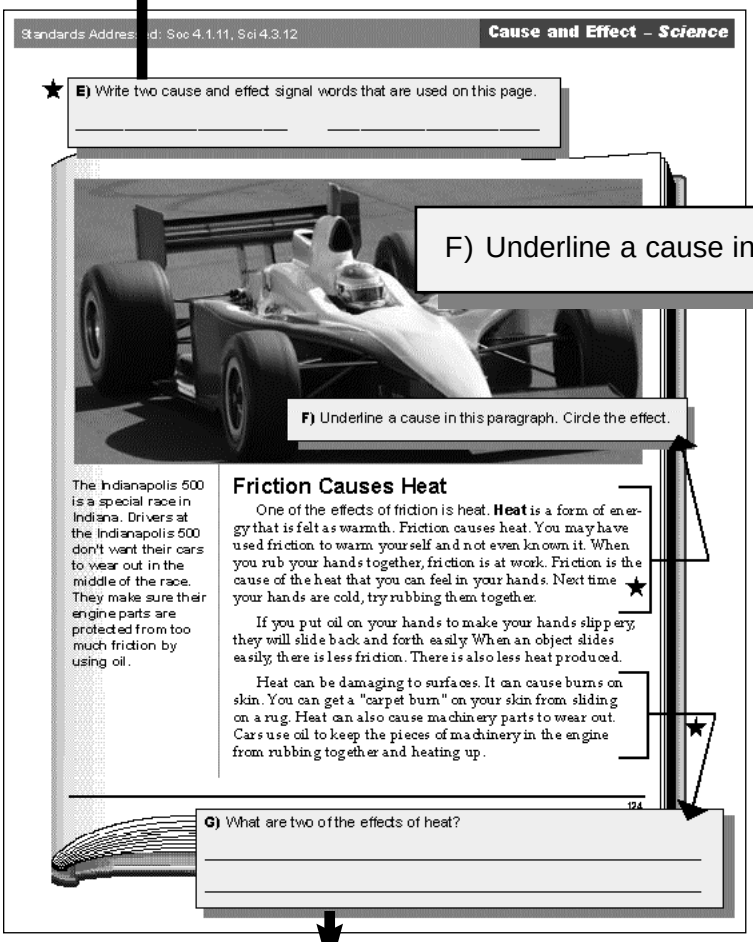
Extension:

- Have students explore the idea that what is viewed as the cause of a historical event or natural phenomenon is often dependent upon the viewpoint or historical circumstances of the writer or observer. They might, for example, explore the causes of tensions between American Indians and European settlers, considering both sides, or explore the mythologies of different peoples to find different ideas about the cause(s) of a natural phenomenon.
- Have students discuss cause and effect relationships in additional examples of friction.

Cause & Effect Lesson B: *Experiment: Friction* (Sci)

E) Write two cause and effect signal words that are used on this page.

2 pts each: 1pt each for when, causes, makes, if



F) Underline a cause in this paragraph. Circle the effect.

G) What are two of the effects of heat?

2 pts damage to surfaces, "carpet burn," the wearing out of machine parts, or any other appropriate response

Cross-Curricular Ties

- *E/LA 4.1.6* - Distinguish and interpret words with multiple meanings ... by using context clues (the meaning of the text around a word).

Suggested Activity: Study other meanings for *friction* such as "animosity between people" and read stories that explore this type of friction.

Cause & Effect Lesson B: *Experiment: Friction* (Sci)

Cause and Effect – *Science* **Standards Addressed:** Soc 4.1.11, Sci 4.3.12

Review Questions

1. Circle at least five cause and effect signal words on this page. (Hint: There are 28.)

Look at these examples and then complete questions 2-4 below.

When *this happens* (cause) then *this will occur* (effect)

When *friction happens* (cause) then *an object will slow down or get hot* (effect)

2. When *no oil is in a car's engine* (cause)
   then *1 pt the parts of the engine will wear out/heat up/rub together* (effect)

3. When *water is on the slide* (cause)
   then *1 pt friction is reduced, you slide faster, the surface is slick, you slide more easily* (effect)

4. When *you have oil on your hands* (cause)
   then *1 pt your hands will be slippery, your hands slide back and forth easily, there is less friction* (effect)

Complete the Chart

5. Write one *cause* of friction that you read about in the lesson.

Cause	Effect
1 pt objects rub together	Friction

6. Write one *effect* of friction that you read about in the lesson.

Cause	Effect
Friction	*1 pt Objects heat up/slow down, machine parts wear out, people get carpet burns, surfaces are damaged*

4

1. *Students should have circled at least nine signal words. Examples include: cause, effect, when, then, etc. (1 pt each--do not award more than 9 pts for this exercise)*

Cause & Effect Lesson C: *Changes in Indiana Farming* (Soc)

Reading Difficulty: 4.1 **Scaffolding/Guided Reading Boxes★:** 8

Vocabulary

Text Feature Vocabulary:

- developer
- chart
- diagram
- subheading

Lesson Vocabulary:

- profit
- revenue
- specialize
- urban

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.
- *4.2.6* - Distinguish between cause and effect and between fact and opinion in informational text.

Social Studies Standards Addressed:

- *4.1.12* - Research Indiana's agricultural and industrial transformation, emphasizing new technologies, transportation, and international connections, in the last part of the twentieth century.
- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.
- *4.4.8* - Define profit and describe how profit is an incentive for entrepreneurs.

Science Standards Addressed:

- *4.1.7* - Discuss and give examples of how technology, such as computers and medicines, has improved the lives of many people, although the benefits are not equally available to all.
- *4.2.4* - Use numerical data to describe and compare objects and events.
- *4.4.7* - Describe that human beings have made tools and machines, such as x-rays, microscopes, and computers, to sense and do things they could not otherwise sense or do at all, or as quickly, or as well.

Background Prompt

- Why do you think farmers grow crops? What do you think affects a farmer's decision about what crops to grow? *You may want to return to these answers after the lesson to see if students can clarify or add to them.*

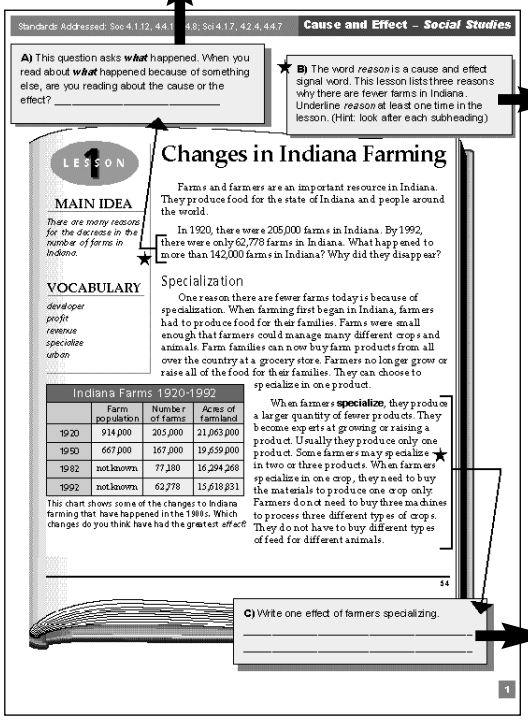
Cause & Effect Lesson C: *Changes in Indiana Farming* (Soc)

Think About! Discussion Points Following the Lesson

- Look at Review Questions #5 and #6. In #5, "people move to cities" is an effect. In #6, "people move to cities" is the cause. How can something be a cause in one situation and an effect in another? *(It may be part of a chain of events; a change in one thing may actually cause a change in another; etc.)* Can there be more than one cause? *(Yes.)* Can there be more than one effect? *(Yes.)*
- What does the Indiana Farms 1920-1992 chart tell you? *(It tells how many farms were in Indiana in different years; it shows you that there has been a decrease in the number of farms; etc.)* Does the chart tell you about cause and effect? *(It shows an effect (fewer farms) that is discussed in the lesson, but it does not explain the cause.)* Does it have different information from the text? *(Yes. It is more specific/detailed than the text of the lesson.)* What kind of chart could show you the cause of changes in farming? *(One that listed/showed factors that influenced changes, such as changes in population and migration to the cities compared to number of farms; a timeline of natural disasters that ruined crops; etc.)*

Cause & Effect Lesson C: *Changes in Indiana Farming* (Soc)

A) This question asks ***what*** happened. When you read about ***what*** happened because of something else, are you reading about the cause or the effect? *1 pt effect*



Standards Addressed: Soc 4.1.12, 4.4.1, 4.4.8; Sci 4.1.7, 4.2.4, 4.4.7 — **Cause and Effect – *Social Studies***

A) This question asks ***what*** happened. When you read about ***what*** happened because of something else, are you reading about the cause or the effect? _____

B) The word *reason* is a cause and effect signal word. This lesson lists three reasons why there are fewer farms in Indiana. Underline *reason* at least one time in the lesson. (Hint: look after each subheading)

LESSON 1

Changes in Indiana Farming

Farms and farmers are an important resource in Indiana. They produce food for the state of Indiana and people around the world.

In 1920, there were 205,000 farms in Indiana. By 1992, there were only 62,778 farms in Indiana. What happened to more than 142,000 farms in Indiana? Why did they disappear?

MAIN IDEA

There are many reasons for the decrease in the number of farms in Indiana.

VOCABULARY

developer
profit
revenue
specialize
urban

Specialization

One reason there are fewer farms today is because of specialization. When farming first began in Indiana, farmers had to produce food for their families. Farms were small enough that farmers could manage many different crops and animals. Farm families can now buy farm products from all over the country at a grocery store. Farmers no longer grow or raise all of the food for their families. They can choose to specialize in one product.

When farmers **specialize**, they produce a larger quantity of fewer products. They become experts at growing or raising a product. Usually they produce only one product. Some farmers may specialize in two or three products. When farmers specialize in one crop, they need to buy the materials to produce one crop only. Farmers do not need to buy three machines to process three different types of crops. They do not have to buy different types of feed for different animals.

Indiana Farms 1920-1992

	Farm population	Number of farms	Acres of farmland
1920	914,000	205,000	21,063,000
1950	667,000	167,000	19,659,000
1982	not known	77,380	16,294,268
1992	not known	62,778	15,618,831

This chart shows some of the changes to Indiana farming that have happened in the 1900s. Which changes do you think have had the greatest effect?

C) Write one effect of farmers specializing.
_____
_____

B) The word *reason* is a cause and effect signal word. This lesson lists three reasons why there are fewer farms in Indiana. Underline *reason* at least one time in the lesson. (Hint: look after each subheading)

1 pt Reason is in the first sentence after each subheading.

C) Write one effect of farmers specializing.

1 pt They produce larger quantities of fewer products; they become expert at growing/raising one product; they need fewer types of machines/feed; or any other appropriate response.

Follow-Up Activities

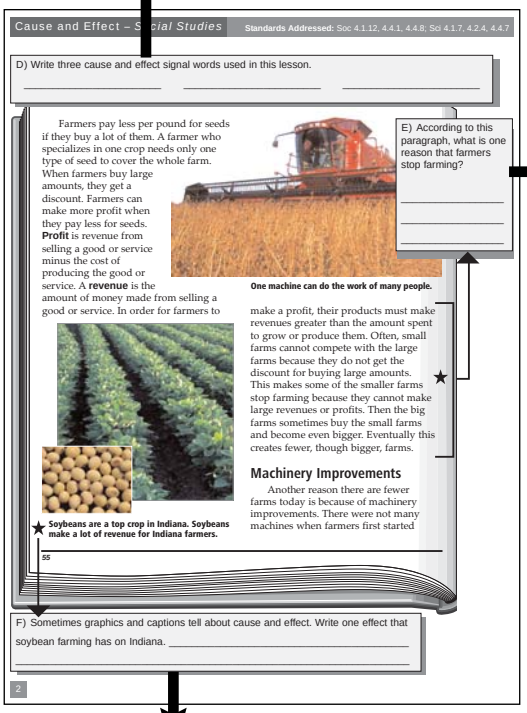
Additional Practice::

- Students sometimes understand the concept of cause and effect better by working backwards. Work backwards to emphasize cause and effect. Ask the student to give you reasons something happened (e.g., flooded streets (effect) because of huge amounts of rain in a short time (cause), etc.).
- Have students make and complete lists similar to Review Questions #5 and #6. If students are having trouble, ask them to create lists based on their everyday experiences.
- Ask students to choose one or two pictures from their science or social studies textbooks. Tell students that a picture is the result (the effect) and they must think up the cause for the picture. (i.e., a picture of a snow-covered mountain: the cause was a snowstorm perhaps or daily mountain snows).

Cause & Effect Lesson C: *Changes in Indiana Farming* (Soc)

D) Write three cause and effect signal words used in this lesson.

2 pts Accept: cause, effect, because, due to, if (...then), so, then, when, reason, since, makes, or as a result.


Cause and Effect – Social Studies

Standards Addressed: Soc 4.1.12, 4.4.1, 4.4.8; Sci 4.1.7, 4.2.4, 4.4.7

D) Write three cause and effect signal words used in this lesson.

Farmers pay less per pound for seeds if they buy a lot of them. A farmer who specializes in one crop needs only one type of seed to cover the whole farm. When farmers buy large amounts, they get a discount. Farmers can make more profit when they pay less for seeds. **Profit** is revenue from selling a good or service minus the cost of producing the good or service. A **revenue** is the amount of money made from selling a good or service. In order for farmers to make a profit, their products must make revenues greater than the amount spent to grow or produce them. Often, small farms cannot compete with the large farms because they do not get the discount for buying large amounts. This makes some of the smaller farms stop farming because they cannot make large revenues or profits. Then the big farms sometimes buy the small farms and become even bigger. Eventually this creates fewer, though bigger, farms.

E) According to this paragraph, what is one reason that farmers stop farming?

One machine can do the work of many people.

Soybeans are a top crop in Indiana. Soybeans make a lot of revenue for Indiana farmers.

Machinery Improvements

Another reason there are fewer farms today is because of machinery improvements. There were not many machines when farmers first started

55

F) Sometimes graphics and captions tell about cause and effect. Write one effect that soybean farming has on Indiana.

2

E) According to this paragraph, what is one reason that farmers stop farming?

1 pt They can't compete with large farms; they do not get the same discounts as large farms; they cannot make large profits/revenues; or any other appropriate response.

F) Sometimes graphics and captions tell about cause and effect. Write one effect that soybean farming has on Indiana. *1 pt Indiana farmers make a lot of revenue.*

Follow-Up Activities (cont.)

Extension:

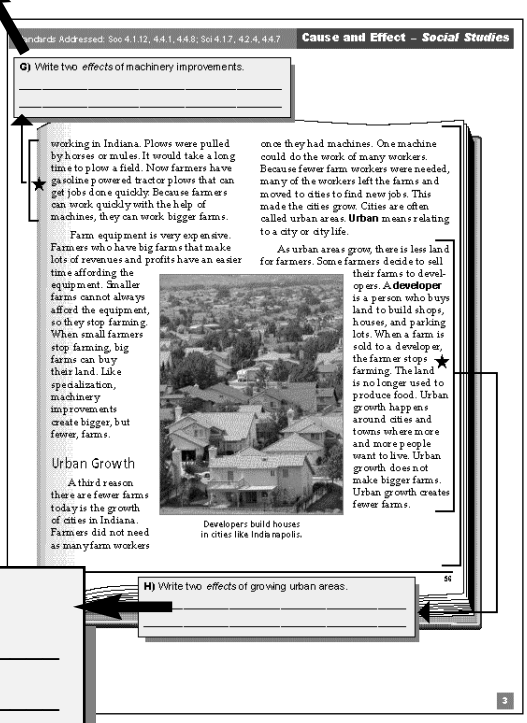
- Ask students to select two to three events from their science or social studies textbooks. Have them search for the causes of these events and list as many as they can find.

- Ask students to consider how some things can be both a cause and an effect (For example, missing the bus may be the effect of getting up late, and also the cause of being late to school). Have students create a cause and effect graphic based on passages in their science or social studies textbooks.

Cause & Effect Lesson C: *Changes in Indiana Farming* (Soc)

G) Write two *effects* of machinery improvements.

2 pts (1 pt each) Work can be done faster; farmers can work bigger farms; small farms stop farming; bigger farms; fewer farms; or any other appropriate response.


Standards Addressed: Soc 4.1.12, 4.4.1, 4.4.8; Sci 4.1.7, 4.2.4, 4.4.7

Cause and Effect – *Social Studies*

G) Write two *effects* of machinery improvements.

working in Indiana. Plows were pulled by horses or mules. It would take a long time to plow a field. Now farmers have gasoline powered tractor plows that can get jobs done quickly. Because farmers can work quickly with the help of machines, they can work bigger farms.

Farm equipment is very expensive. Farmers who have big farms that make lots of revenues and profits have an easier time affording the equipment. Smaller farms cannot always afford the equipment, so they stop farming. When small farmers stop farming, big farms can buy their land. Like specialization, machinery improvements create bigger, but fewer, farms.

Urban Growth

A third reason there are fewer farms today is the growth of cities in Indiana. Farmers did not need as many farm workers once they had machines. One machine could do the work of many workers. Because fewer farm workers were needed, many of the workers left the farms and moved to cities to find new jobs. This made the cities grow. Cities are often called urban areas. **Urban** means relating to a city or city life.

As urban areas grow, there is less land for farmers. Some farmers decide to sell their farms to developers. A **developer** is a person who buys land to build shops, houses, and parking lots. When a farm is sold to a developer, the farmer stops farming. The land is no longer used to produce food. Urban growth happens around cities and towns where more and more people want to live. Urban growth does not make bigger farms. Urban growth creates fewer farms.

Developers build houses in cities like Indianapolis.

H) Write two *effects* of growing urban areas.

H) Write two *effects* of growing urban areas.

2 pts (1 pt each) There is less land for farmers; some farmers sell their land to developers; developers buy land; farmers stop farming; there are fewer farms; or any other appropriate response.

Cross-Curricular Ties

- *Math 4.5.3* - Know and use formulas for finding the perimeters of rectangles and squares.
- *Math 4.5.4* - Know and use formulas for finding the areas of rectangles and squares.

Suggested Activity: Determine the perimeter and square acreage of given farms.

- *E/LA 4.3.3* - Use knowledge of the situation, setting, and character's traits, motivations and feelings to determine the causes for that character's actions.

Suggested Activity: Read stories about farm families and examine the characters' actions and the resulting effects.

Cause & Effect Lesson C: *Changes in Indiana Farming* (Soc)

 Standards Addressed: Soc 4.1.12, 4.4.1, 4.4.8; Sci 4.1.7, 4.2.4, 4.4.7

Review Questions

1 pt each

1. One reason there are fewer farms in Indiana today is that
   - ● farms are bigger.
   - ○ families are busier.
   - ○ seeds are smaller.

2. As a result of farm machines, people
   - ● looked for new jobs.
   - ○ bought fewer seeds.
   - ○ moved to farms.

3. Urban growth causes
   - ○ bigger farms.
   - ● fewer farms.
   - ○ older farms.

4. Cities grew because people moved there to
   - ○ start farms.
   - ● find new jobs.
   - ○ buy new farm machines.

Complete the Chart

5. Give causes for these effects. Be sure to fill in all of the empty boxes.

Cause	Effect
1. huge amounts of rain in a short time	1. flooded streets
2.	2. fewer farms
3.	3. people move to cities

6. Write the effects of these causes. Be sure to fill in all of the empty boxes.

Cause	Effect
1. ice storm	1. power outage
2. farmers specialize	2.
3. people move to cities	3.

2. bigger farms, specialization, machinery improvements, urban growth (or any other appropriate response)

3. machines do the jobs of workers, farmers did not need as many workers, people needed jobs (or any other appropriate response)

2. farmers produce fewer crops, farmers need to buy the materials to produce one crop only, farmers do not need to buy three types of machines/feed for different types of animals, there are fewer farms (or any other appropriate response)

3. cities/urban areas grow, fewer farms (or any other appropriate response)

Main Idea and Details Lesson A: *West Baden* (Study Skill)

Reading Difficulty: 4.8 **Scaffolding/Guided Reading Boxes★:** 4

Vocabulary

Text Feature Vocabulary:

- graphic organizer
- heading
- section
- title

Lesson Vocabulary:

- employ
- Great Depression
- mineral
- spring

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:

- *4.1.9* - Give examples of Indiana's increasing agricultural, industrial, and business development in the nineteenth century.
- *4.1.11* - Identify important events and movements that changed life in Indiana in the twentieth century.
- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.
- *4.4.7* - Identify entrepreneurs who have influenced Indiana and the local community.

Science Standards Addressed:

- *4.3.6* - Recognize and describe that rock is composed of different combinations of minerals.

Background Prompt

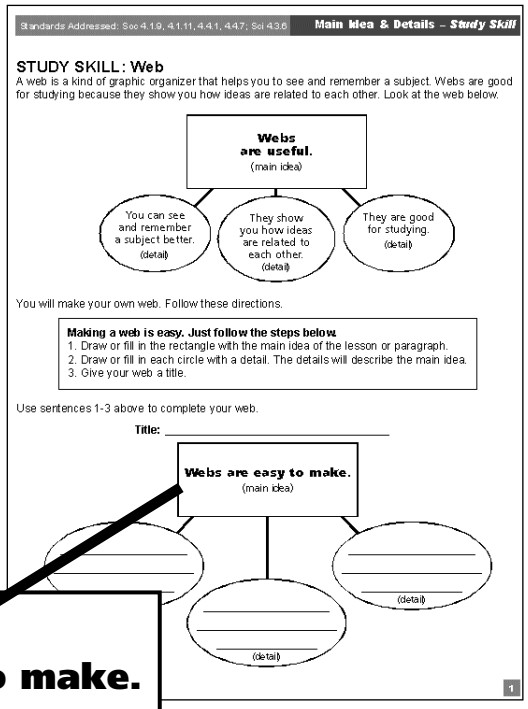
- Indiana has a lot of famous buildings that you can visit. Have you ever been to any of them? Which ones? Why do you think they are important to Indiana?

Main Idea and Details Lesson A: *West Baden* (Study Skill)

Think About! Discussion Points Following the Lesson:

- How are the titles of the webs related to the main ideas? *(They usually reflect the main idea, or restate it. Sometimes they may be almost identical.)* How would the kinds of information in a web change if the title changed? *(For example, if the title of the web in Guided Reading Box A were "Curing Illnesses," different details would be chosen. The main idea would probably change.)* Why does the title matter? (*It gives you an idea about what belongs in the web; it limits the number and kinds of details that you can include; it helps you narrow your focus; etc.)*
- *Have students compare Guided Reading Box C, the web for the lesson, and a paragraph without a web.* How much more detailed could the lesson web be if we wanted to add all the details included in the lesson? (*It could be very detailed; details could branch off of other details, etc.)* How do you know what is the most important information to include? (*Important details can be identified through looking at the vocabulary words, or asking* ***who***, ***what***, ***when***, ***where***, ***why***, *and* ***how*** *about the main idea, etc. Content-driven graphics may also be important.)* What might not need to be included? (*Minor details, information from graphics that doesn't really add new or important information to the main idea, etc. can be excluded.)*
- How are webs similar to other graphic organizers you have used? *(They help you organize information; they are a study tool; they help visual learners; etc.)* How are they different? *(They are specific to how information is organized/main idea and details.)* When should you use a web instead of a different graphic organizer? *(Use a web when you want to outline a lesson or paragraph or when you need to show how details are related to each other and the main idea, etc.)*

Main Idea and Details Lesson A: *West Baden* (Study Skill)



Title: 1 pt. *Webs are Easy to Make, How to Make a Web, or any other appropriate response*

Webs are easy to make.
(main idea)

1 pt.
Draw or fill in the rectangle with the main idea of the lesson or paragraph.

1 pt.
Draw or fill in each circle with a detail. The details will describe the main idea.
(detail)

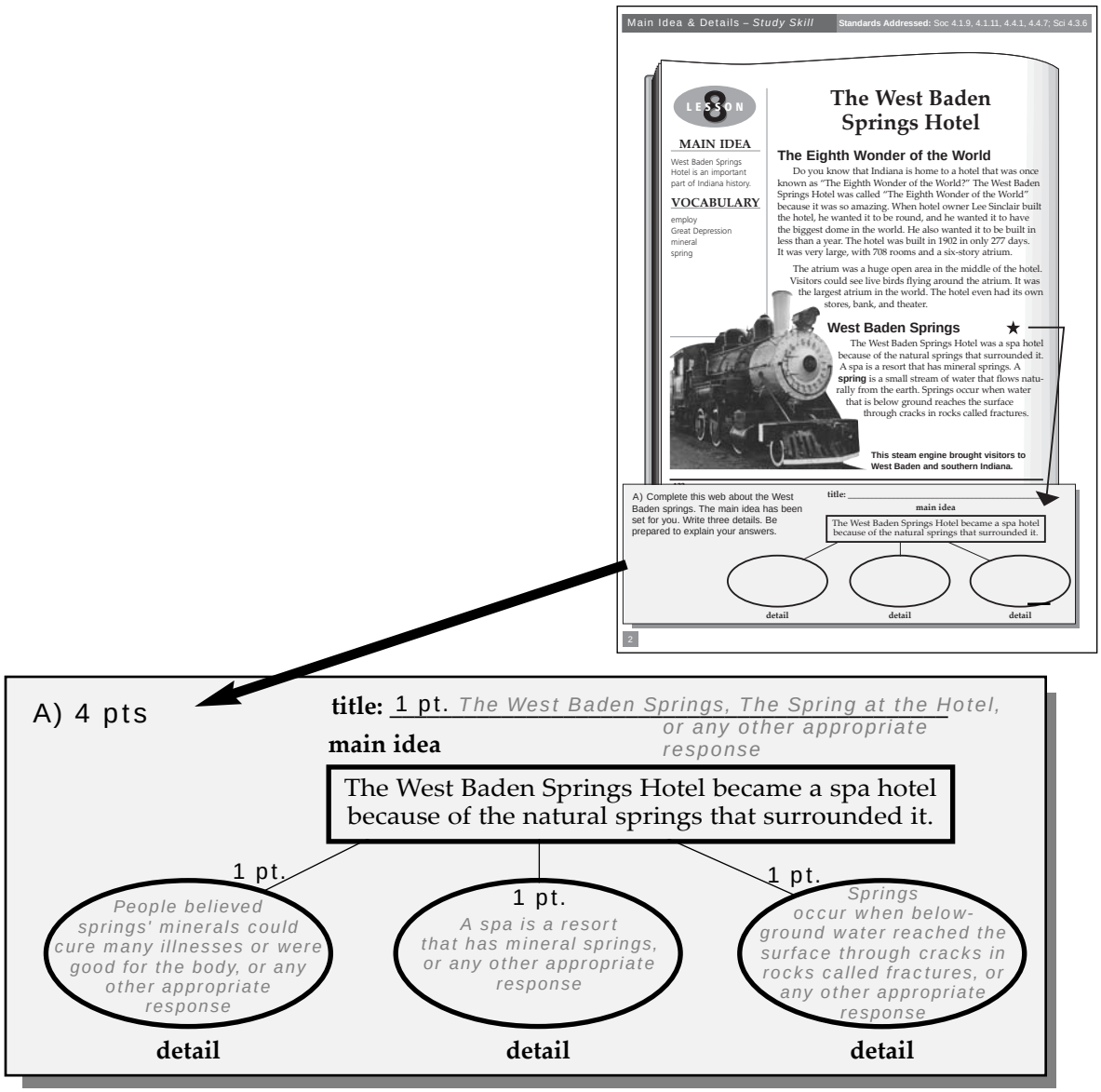
1 pt.
Give your web a title.
(detail)

Follow-Up Activities

Additional Practice:

- Have students choose another paragraph from this lesson and have them create a graphic organizer for it. Extend the activity by having them create graphic organizers for the next lesson or section in their textbooks.
- Make a living web to help students visualize the main idea and details. Make copies of two informational paragraphs with clearly stated main ideas. Cut out each sentence and glue it on an index card. Give one card to each student or small group. Let the class figure out which sentences go together to form paragraphs one and two by moving around the room and grouping together with students with related sentences. Have them decide who has the main idea and connect themselves with him or her to form a web.

Main Idea and Details Lesson A: *West Baden* (Study Skill)

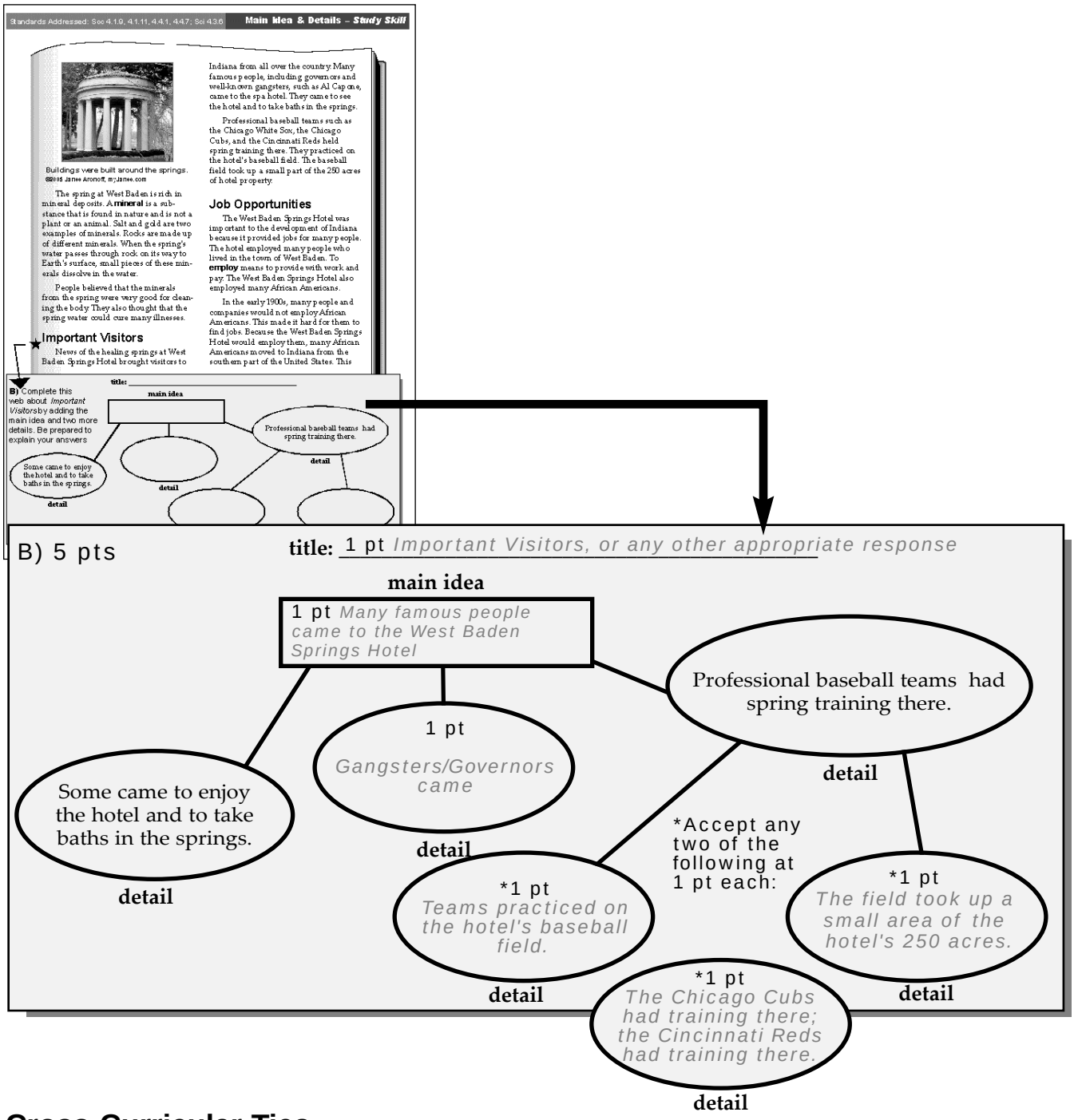


Follow-Up Activities (cont.)

Extension:

- Have students brainstorm additional ways to organize main idea and details such as-- Have them use these strategies to organize the main idea and details of the next lesson in a textbook.
- Have students create more complex webs that show how the details are related to each other (some details actually support other details, etc.).

Main Idea and Details Lesson A: *West Baden* (Study Skill)



Cross-Curricular Ties

- *E/LA 4.7.1* - Make narrative (story) presentations that....

Suggested Activity: Have each student recount a trip taken, in an oral presentation, that focuses on one aspect of the trip (what grandma's house looked like, the train ride, campfire food.)

- *E/LA 4.5.4* - Write summaries that contain the main ideas of the reading selection and the most significant details.

Suggested Activity: Read and summarize travel diaries, such as *Joshua's Westward Journal* by Joan Anderson.

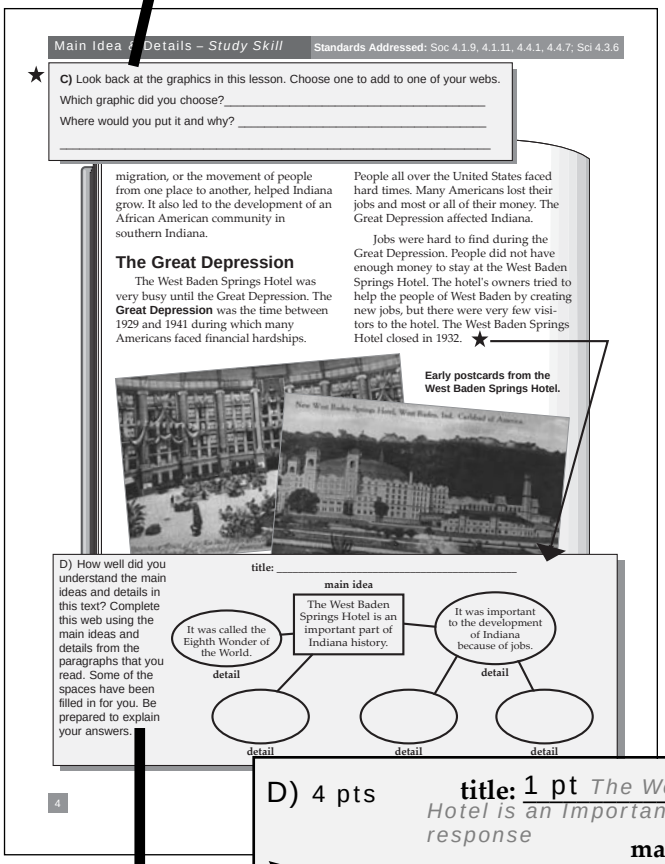
Main Idea and Details Lesson A: *West Baden* (Study Skill)

C) Look back at the graphics in this lesson. Choose one to add to one of your webs.

Which graphic did you choose? 1 pt *train, spring, postcards*

Where would you put it and why? 2 pts: 1 pt for identifying any of the three webs

1 pt for adequately explaining how the graphic might add information to the main idea of the web



Main Idea & Details – *Study Skill* **Standards Addressed:** Soc 4.1.9, 4.1.11, 4.4.1, 4.4.7; Sci 4.3.6

C) Look back at the graphics in this lesson. Choose one to add to one of your webs.

Which graphic did you choose?_____

Where would you put it and why? _____

_____

migration, or the movement of people from one place to another, helped Indiana grow. It also led to the development of an African American community in southern Indiana.

The Great Depression

The West Baden Springs Hotel was very busy until the Great Depression. The **Great Depression** was the time between 1929 and 1941 during which many Americans faced financial hardships.

People all over the United States faced hard times. Many Americans lost their jobs and most or all of their money. The Great Depression affected Indiana.

Jobs were hard to find during the Great Depression. People did not have enough money to stay at the West Baden Springs Hotel. The hotel's owners tried to help the people of West Baden by creating new jobs, but there were very few visitors to the hotel. The West Baden Springs Hotel closed in 1932.

Early postcards from the West Baden Springs Hotel.

D) How well did you understand the main ideas and details in this text? Complete this web using the main ideas and details from the paragraphs that you read. Some of the spaces have been filled in for you. Be prepared to explain your answers.

title: _____

main idea

The West Baden Springs Hotel is an important part of Indiana history.

It was called the Eighth Wonder of the World. — **detail**

It was important to the development of Indiana because of jobs. — **detail**

detail **detail** **detail**

4

D) 4 pts

title: 1 pt *The West Baden Springs Hotel, The West Baden Springs Hotel is an Important Part of Indiana History, or any other appropriate response*

main idea

The West Baden Springs Hotel is an important part of Indiana history.

It was called the Eighth Wonder of the World. — **detail**

It was important to the development of Indiana because of jobs. — **detail**

1 pt *(leave) or any other appropriate response that tells us why the hotel is of historical significance* — **detail**

1 pt *It brought African Americans to Indiana; It employed many African Americans.* — **detail**

1 pt *It employed many Hoosiers; It provided jobs during the Great Depression.* — **detail**

Accept any answer that tells why/how the hotel provided jobs

Main Idea & Details Lesson B: *Saltwater* (Sci)

Reading Difficulty: 4.3 **Scaffolding/Guided Reading Boxes★:** 7

Vocabulary

Text Feature Vocabulary:

- heading
- paragraph

Lesson Vocabulary:

- density
- erosion
- evaporation

Skills and Standards

E/ LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Science Standards Addressed:

- *4.3.3* - Identify salt as the major difference between fresh and ocean waters.
- *4.3.5* - Describe how waves, wind, water, and glacial ice shape and reshape Earth's land surface by the erosion of rock and soil in some areas and depositing them in other areas.
- *4.3.6* - Recognize and describe that rock is composed of different combinations of minerals.

Background Prompt

- What do you think the water in *(nearby body of water)* is like? *Have students list what they can about the water.* How do you think ocean water is different? *Record these answers on the board. You may want to return to these answers after the lesson to see if students can add to or clarify them.*

Main Idea & Details Lesson B: *Saltwater* (Sci)

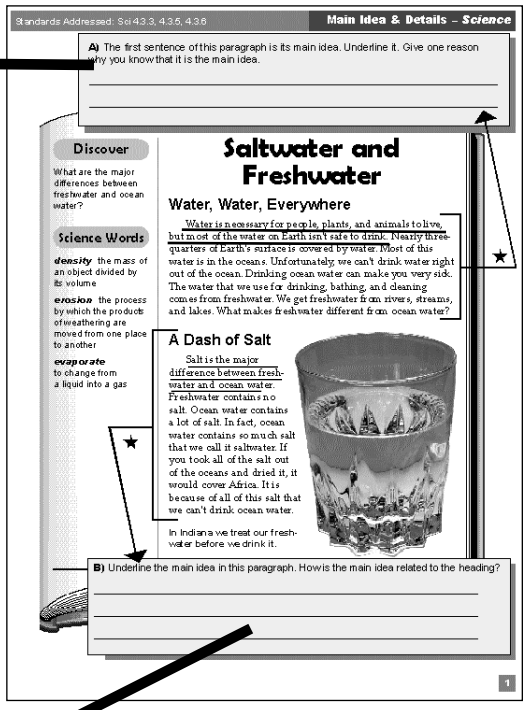
Think About! Discussion Points Following the Lesson

- Look at Guided Reading Boxes B and E. Why are headings important? *(They help you understand the organization of the lesson; they provide clues about main idea; etc.)* What information do headings give the reader? (*They identify key concepts, vocabulary, subjects, etc; they signal a break and the beginning of a new topic.)* Are headings always connected to the main idea of the paragraph, section, or lesson? (*Not always, but headings will usually help you identify important content in a paragraph. They are usually a clue to main idea of the section, and may be important details related to the main idea of the lesson)*
- This lesson includes many graphics. How do you think these graphics are related to the main idea of the lesson or to the main ideas of the paragraphs? (*Graphics are usually details. They can add new details about the main idea or illustrate key detail(s). Graphics can be solely decorative.)*
- Look at the Review Questions. How did you know where to put the additional details? (*Answers may include: by looking for words in both questions and the paragraph, by looking at headings, by matching new information to the main idea; etc.) If students are stuck, ask:* Did you look for words that were the same between questions and the paragraphs? Did you look at headings? Did you look at the main ideas? Did you look at graphics? *You may want to record student answers on the board so that they can observe and consider multiple strategies.* How do these questions help you understand how main ideas and details work together? (*You must understand the main ideas of the paragraphs in order to answer the questions; you must connect the new detail to the main idea; etc.)*
- Look at Guided Reading Boxes F and G. How did you figure out the main idea? (*All of the sentences have something to do with taking salt out of ocean water so that it can be used; the heading provides a clue; etc.)* How can you tell the difference between a main idea and a detail? (*Details tell about one part of the main idea; details answer* ***who, what where, when, why,*** *and* ***how*** *about the main idea; information about evaporation tells* ***how*** *salt is removed from ocean water.)*

Main Idea & Details Lesson B: *Saltwater* (Sci)

A) The first sentence of this paragraph is its main idea. Underline it. Give one reason why you know that it is the main idea. 1 pt for underlining

1 pt *All of the other sentences in the paragraph tell about this idea; it tells that the lesson is about "water;" it states that water is necessary for all living things; or any other appropriate response.*


Standards Addressed: Sci 4.3.3, 4.3.5, 4.3.6

Main Idea & Details – *Science*

A) The first sentence of this paragraph is its main idea. Underline it. Give one reason why you know that it is the main idea.

Discover

What are the major differences between freshwater and ocean water?

Science Words

density the mass of an object divided by its volume

erosion the process by which the products of weathering are moved from one place to another

evaporate to change from a liquid into a gas

Saltwater and Freshwater

Water, Water, Everywhere

Water is necessary for people, plants, and animals to live, but most of the water on Earth isn't safe to drink. Nearly three-quarters of Earth's surface is covered by water. Most of this water is in the oceans. Unfortunately, we can't drink water right out of the ocean. Drinking ocean water can make you very sick. The water that we use for drinking, bathing, and cleaning comes from freshwater. We get freshwater from rivers, streams, and lakes. What makes freshwater different from ocean water?

A Dash of Salt

Salt is the major difference between freshwater and ocean water. Freshwater contains no salt. Ocean water contains a lot of salt. In fact, ocean water contains so much salt that we call it saltwater. If you took all of the salt out of the oceans and dried it, it would cover Africa. It is because of all of this salt that we can't drink ocean water.

In Indiana we treat our freshwater before we drink it.

B) Underline the main idea in this paragraph. How is the main idea related to the heading?

1

B) Underline the main idea in this paragraph. How is the main idea related to the heading? 1 pt for underlining

1 pt *Accept any answer that tells about salt or saltwater in the ocean, or that salt is the main difference between salt and fresh water.*

Follow-Up Activities

Additional Practice:

- Have students write a title for each paragraph on a page of their textbooks. Have them add one or two details under each title. Explain to students that this is called "outlining" and many students, including college students, use this reading strategy to help them remember what they read.
- Copy a chapter or section from a chapter in their textbooks. Have students circle or highlight words that are repeated frequently. Explain that if something is the main idea, it will usually be repeated throughout the text. Collect a class tally of what the most frequent words were and see if students can come up with a main idea.

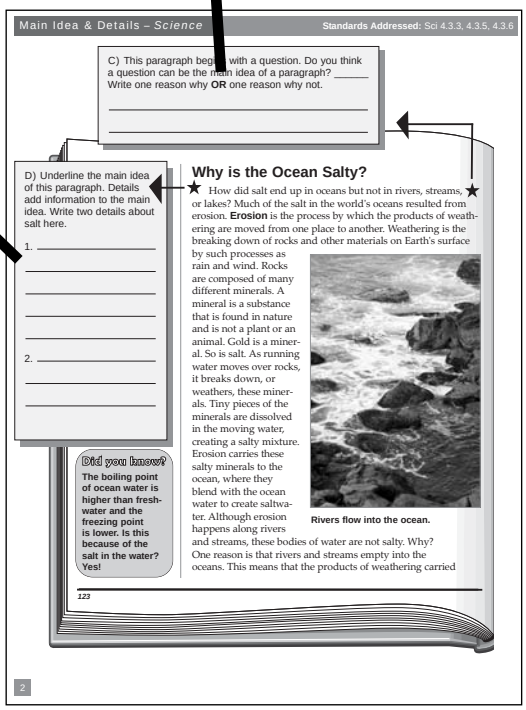
Main Idea & Details Lesson B: *Saltwater* (Sci)

C) 2 pts This paragraph begins with a question. Do you think a question can be the main idea of a paragraph? 1 pt *yes/no*
Give one reason why OR one reason why not.

1 pt *Accept any reasonable explanation that supports the yes/no answer above.*

D) 3 pts Underline the main idea of this paragraph. Details add information to the main idea. Write two details about salt here.

Accept any two of the following: salt is a mineral; there is a lot of salt in the ocean but not in rivers, lakes, or streams; tiny pieces of mineral dissolved in water make a salty mixture; salt does not stay in rivers and streams, but ends up in the ocean instead.


Main Idea & Details – *Science*

Standards Addressed: Sci 4.3.3, 4.3.5, 4.3.6

C) This paragraph begins with a question. Do you think a question can be the main idea of a paragraph? _____ Write one reason why **OR** one reason why not.

D) Underline the main idea of this paragraph. Details add information to the main idea. Write two details about salt here.

1. _____

2. _____

Why is the Ocean Salty?

★ How did salt end up in oceans but not in rivers, streams, or lakes? Much of the salt in the world's oceans resulted from erosion. **Erosion** is the process by which the products of weathering are moved from one place to another. Weathering is the breaking down of rocks and other materials on Earth's surface by such processes as rain and wind. Rocks are composed of many different minerals. A mineral is a substance that is found in nature and is not a plant or an animal. Gold is a mineral. So is salt. As running water moves over rocks, it breaks down, or weathers, these minerals. Tiny pieces of the minerals are dissolved in the moving water, creating a salty mixture. Erosion carries these salty minerals to the ocean, where they blend with the ocean water to create saltwater. Although erosion happens along rivers and streams, these bodies of water are not salty. Why? One reason is that rivers and streams empty into the oceans. This means that the products of weathering carried ★

Did you know?
The boiling point of ocean water is higher than freshwater and the freezing point is lower. Is this because of the salt in the water? Yes!

Rivers flow into the ocean.

123

2

Follow-Up Activities (cont.)

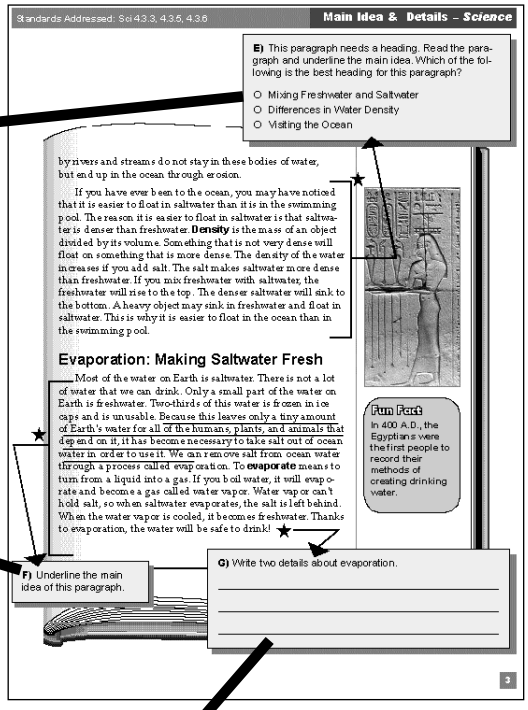
Extension:

- Discuss resources where students might find more details about the topic of the lesson (encyclopedias, library books, dictionaries, etc.). Have students look up information and draw illustrations with captions that add details about the topic and describe the illustration.
- Allow students to do research on a textbook subject that interests them. See if they can collect more details than the textbook gives and have them write a new paragraph or two with a clear main idea and the new details.

Main Idea & Details Lesson B: *Saltwater* (Sci)

E) 1 pt This paragraph needs a heading. Read the paragraph and underline the main idea. Which of the following is the best heading for this paragraph?

- ○ Mixing Freshwater and Saltwater
- ● Differences in Water Density
- ○ Visiting the Ocean



F) 1 pt Underline the main idea of this paragraph.

Student should have underlined: "Because this leaves only a tiny amount of Earth's water for all of the humans, plants, and animals that depend on it, it has become necessary to take salt out of ocean water in order to use it."

G) 2 pts Write two details about evaporation.

Student should have written any two of the following: to evaporate means to turn from a liquid into a gas; if you boil water it will evaporate; evaporated water is a gas called water vapor; when saltwater evaporates, the salt is left behind; evaporation makes saltwater fresh; evaporation makes saltwater safe to drink.

Cross-Curricular Ties

- *Soc 4.3.4* - Locate Indiana on a map of the United States; indicate the state capital, major cities, and rivers in Indiana; and be able to place these on a blank map of the state.

Suggested Activity: Make a map showing Indiana lakes and rivers, and reservoirs.

- *Math 4.2.10* - Use a standard algorithm to add and subtract decimals (to hundreths).

Suggested Activity: Figure out the cost of water, determine water bill amounts.

- *E/LA 4.5.1* - Write narratives that...

Suggested Activity: Visit a local water treatment plant and write a summary of the visit, listing important details and staying with a main idea.

Main Idea & Details Lesson B: *Saltwater* (Sci)

 Standards Addressed: Sci 4.3.3, 4.3.5, 4.3.6

Review Questions 1 pt each

There are five paragraphs in this lesson. Starting on page 1, number each paragraph.

Below you will find some more details about the differences between saltwater and freshwater that were not in the lesson. Using the main ideas that you have identified for each paragraph in the lesson, decide which paragraph each new detail belongs in.

1. *It is easy to remove the salt from ocean water, but it is very expensive because it needs to be done to such a large amount of water.*
   - ○ 2nd paragraph
   - ○ 3rd paragraph
   - ○ 4th paragraph
   - ● 5th paragraph

2. *The salt in the ocean is the same kind of salt that we put on our food.*
   - ● 2nd paragraph
   - ○ 3rd paragraph
   - ○ 4th paragraph
   - ○ 5th paragraph

3. *Saltwater has more mass than freshwater.*
   - ○ 2nd paragraph
   - ○ 3rd paragraph
   - ● 4th paragraph
   - ○ 5th paragraph

4. *Rocks are composed of many chemicals that are classified as minerals.*
   - ○ 2nd paragraph
   - ● 3rd paragraph
   - ○ 4th paragraph
   - ○ 5th paragraph

5. What is the main idea of the whole lesson?
   - ○ Saltwater is denser than freshwater.
   - ○ Saltwater will make you float when you swim in it.
   - ○ Salt can be taken out of ocean water through evaporation.
   - ● Salt is the major difference between freshwater and ocean water.

Main Idea and Details Lesson C: *Battle of Tippecanoe* (Soc)

Reading Difficulty: 5.2 **Scaffolding/Guided Reading Boxes★:** 6

Vocabulary

Text Feature Vocabulary:

- paragraph

Lesson Vocabulary:

- Battle of Tippecanoe
- settlers
- Tecumseh
- Tenskwatawa
- William Henry Harrison

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.3* - Make and confirm predictions about text by using prior knowledge and ideas presented in the text itself, including illustrations, titles, topic sentences, important words, foreshadowing clues (clues that indicate what might happen next), and direct quotations.

Social Studies Standards Addressed:

- *4.1.2* - Identify and describe historic Indian groups that lived in the region that became Indiana at the time of early European exploration and settlement in the seventeenth century.
- *4.1.3* - Explain the importance of the Revolutionary War and other key events and people that influenced Indiana's development.
- *4.3.10* - Read and interpret thematic maps - such as transportation, population, and products - to acquire information about Indiana in the present and the past.

Background Prompt

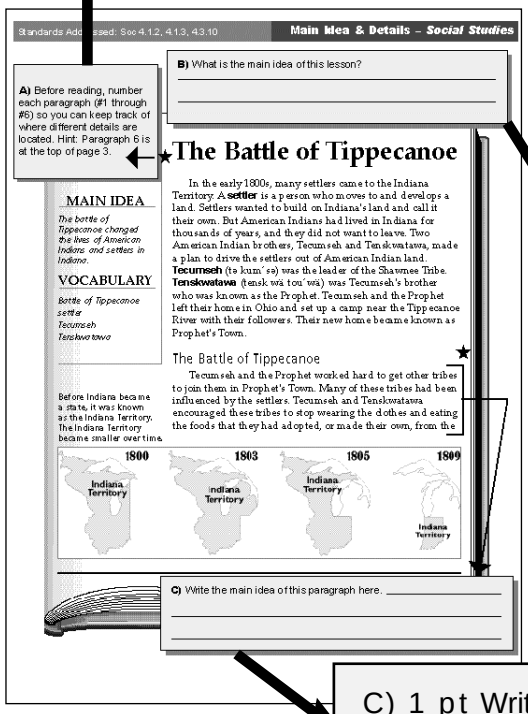
- The name *Indiana* means "Land of the Indians." How do you think it got its name? *You may want to return to these answers after the lesson to see if students can add to or clarify them.*

Main Idea and Details Lesson C: *Battle of Tippecanoe* (Soc)

Think About! Discussion Points Following the Lesson:

- What are the most important details in this lesson? (*Among the most important will be details that tell about what led to the battle and the battle itself. Also important will be details that tell about Tecumseh, the Prophet, and Harrison.)* Do the subtitles reflect the main ideas of each sub-section? *(Yes and no. The headings are written sequentially and indicate text structure, etc. The headings are about the subject at hand, not American Politics or the relationship with American Indians, etc.)* Would you change any of them? Why? *(Answers will vary. Have students defend their ideas.)*
- Look at the page with the Review Questions. Why might outlining be a good reading strategy? (*It provides a map of what is important to remember; writing information down makes it easier to remember, etc.*)

Main Idea and Details Lesson C: *Battle of Tippecanoe* (Soc)



A) 1 pt for identifying and numbering paragraphs correctly

B) 1 pt What is the main idea of this lesson?

The battle of Tippecanoe changed the lives of American Indians and settlers in Indiana.

C) 1 pt Write the main idea of this paragraph here.

Tecumseh and the Prophet worked hard to bring many tribes together and to prepare for a battle against the settlers.

Follow-Up Activities

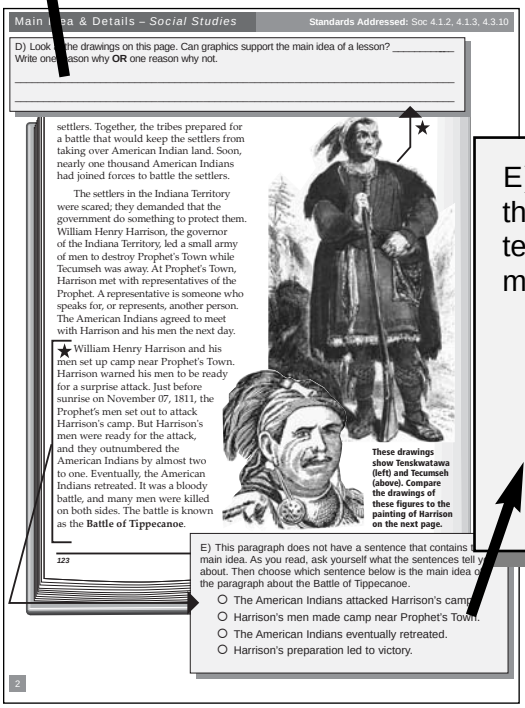
Additional Practice:

- If students are having difficulty understanding the difference between main idea and details, have them find the mian idea of a complex sentence (usually the subject and predicate) and the details (adjectives, adverbs, etc.). Once main ideas are mastered at the sentence level, have them move to paragraphs and then to groups of paragraphs.
- Have students look at graphics, such as the illustration of the Indiana Territory on page 1. Have students write the main idea and include details from the graphics.
- Use *who, when, where, why,* and *what* questions to help identify the main points of a lesson.

Main Idea and Details Lesson C: *Battle of Tippecanoe* (Soc)

D) Look at the drawings on this page. Can graphics support the main idea of a lesson? 1 pt *Yes*
Write one reason why **OR** one reason why not.

1 pt *They give information about the topic; they show what Tecumseh and the Prophet might have looked like; or any other appropriate response.*



E) This paragraph does not have a sentence that contains the main idea. As you read, ask yourself what the sentences tell you about. Then choose which sentence below is the main idea of the paragraph about the Battle of Tippecanoe.

- ○ The American Indians attacked Harrison's camp.
- ○ Harrison's men made camp near Prophet's Town.
- ○ The American Indians eventually retreated.
- ● Harrison's preparation led to victory.

Follow-Up Activities (cont.)

Extension:

- Provide students with an outline of the main idea and details of a lesson or chapter that has not been covered. Give this outline to the students and see if they can recreate the lesson. Have students compare and contrast what they included and what they left out. This can also be an individual or small-group activity with students preparing the outline.
- Have students examine a paragraph and determine the main idea. Then have them determine which details from the paragraph are most important to the main idea. Have them group the details into categories based on how important they are. Have them defend their choices.

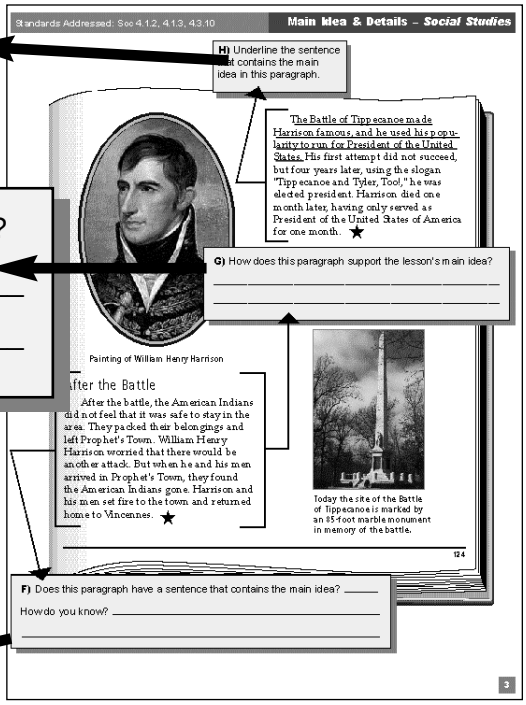
Main Idea and Details Lesson C: *Battle of Tippecanoe* (Soc)

H) 1 pt Underline the sentence that contains the main idea in this paragraph.

The Battle of Tippecanoe made W.H. Harrison famous and he used his popularity to run for President of the United States.

G) How does this paragraph support the lesson's main idea?

1 pt *It tells how the battle changed the lives of American Indians; it tells what Harrison and his men did after the battle; or any other appropriate response.*



F) 2 pts. Does this paragraph have a sentence that contains the main idea? 1 pt *No.*

How do you know? 1 pt *The paragraph mentions several different things that happened, but there is not a sentence that explains all of them; there isn't a sentence that explains the reason for the paragraph; there is not one sentence that brings together what all of the sentences tell about; or any other appropriate response.*

Cross-Curricular Ties

- *E/LA 4.5.6* - Write for different purposes (information, persuasion) and to a specific audience or person.

Suggested Activity: Harrison came from Vincennes, the site of Indiana's first newspaper. Have students write a newspaper account of the Battle of Tippecanoe.

- *E/LA 4.7.12* - Make informal presentations that focus on one main topic.

Suggested Activity: Ask students to research another battle that took place in Indiana (Fort Sackville, Corydon, General Harmar's defeat at Ft. Wayne, etc.) and create a class presentation that has a clear main idea.

Main Idea and Details Lesson C: *Battle of Tippecanoe* (Soc)

Accept any two details from Paragraph 1: 2 pts

- *American Indians had lived in Indiana for thousands of years.*
- *They did not want to leave Indiana.*
- *Many settlers were moving on to land where American Indians used to live.*
- *Tecumseh was the leader of the Shawnee Tribe.*
- *Tenskwatawa was Tecumseh's brother, also known as The Prophet.*
- *Tecumseh and his brother left Ohio and set up a camp near the Tippecanoe River with their followers.*
- *The camp became known as Prophet's Town.*
- *Settlers wanted to build on Indiana's land and call it their own.*

Complete each question below by writing the main idea and details from the appropriate paragraphs in the lesson. Remember that the main idea might not be stated in one sentence. You might need to figure out what the main idea of the paragraph is. The first one has been done for you.

What is the main idea of paragraph 1? *Two American Indian brothers, Tecumseh and Tenskwatawa, made a plan to drive the settlers out of American Indian land.*

List two details from paragraph 1:

1. _____

2. _____

What is the main idea of paragraph 6? 1 pt *The Indian tribes prepared for a battle that would keep the settlers from taking over their lands.*

List two important details from paragraph 6: 2 pts *Accept any of the following: Tecumseh and the Prophet worked hard to get other American Indians to join them to fight; nearly one thousand American Indians joined together; many tribes had been influenced by the settlers; Tecumseh and the Prophet encouraged them to give up things they had adopted from the settlers.*

Write two details or facts that you read about William Henry Harrison in Paragraph 3: 2 pts

Accept any of the following: Harrison used his popularity to run for President; Harrison died after serving only one month as president; On second attempt, Harrison became president using the slogan "Tippecanoe and Tyler Too;" or any other appropriate response.

Write three details or facts that you read about Prophet's Town on Page 1: 3 pts

Accept any of the following: He was Governor of Indiana; He led an army to destroy Prophet's Town; He met representatives of the Prophet; or any other appropriate response.

Accept any of the following: It was named after Tenskwatawa, the Prophet; It was the home of Tecumseh and his followers; Many American Indians trained there to fight the settlers; Native Americans left Prophet's Town after the battle; or any other appropriate response from page 1.

4

Sequence Lesson A: *Jonathan Jennings* (Study Skill)

Reading Difficulty: 5.0 **Scaffolding/Guided Reading Boxes★:** 2

Vocabulary

Text Feature Vocabulary:

- signal words
- text

Lesson Vocabulary:

- congress
- politics

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.1.6* - Explain how key individuals and events influenced the early growth of the new state of Indiana.
- *4.1.13* - Organize and interpret timelines that show relationships among people, events, and movements in the history of Indiana.
- *4.2.4* - Identify major state offices and the duties and powers associated with them - such as governor, lieutenant governor, chief justice, state senators, and state representatives - and how they are chosen, such as by election or appointment.
- *4.3.10* - Read and interpret thematic maps - such as transportation, population, and products - to acquire information about Indiana in the present and the past.

Background Prompt

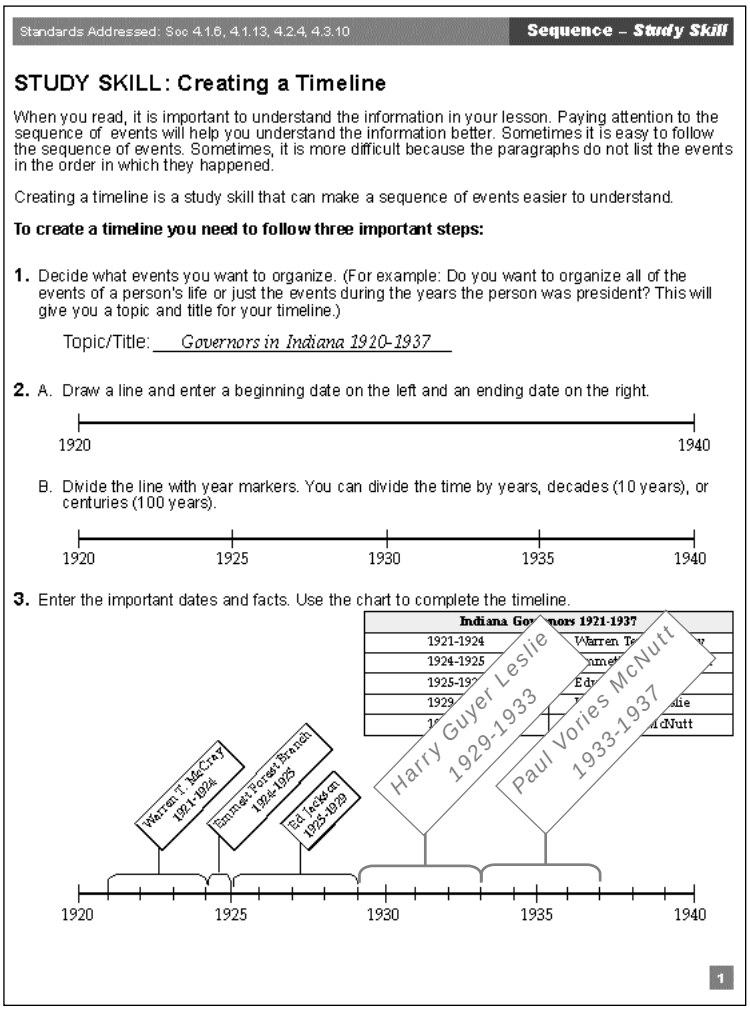
- What steps do you think someone has to take to become a teacher (or a member of the student council, etc.)? *Write student responses on the board.* Did we leave anything out? Do we have the steps in the right order? *Help students organize the information into a timeline.*

Sequence Lesson A: *Jonathan Jennings* (Study Skill)

Think About! Discussion Points Following the Lesson

- Look at your timelines. How do you know if events happened *before*, *after*, or *at the same time* when you are looking at a timeline? *(Usually lines run left to right with later dates on the right; others may run from top to bottom)*
- Look at Guided Reading Box B and Review Question #1. Why are titles important when you create a timeline? *(They limit the type and amount of information to be included.)* What are some differences between these two timelines? (*One is about public life, one about private; one has 4 important dates, one has 6 important dates, etc.)*
- Look at Review Question #1 and Review Question #3. Do you think the timeline or the list of events is easier to read? (*Answers will vary--remind students that different people learn differently.)* What does each one emphasize? *(one emphasizes dates, the other emphasizes details)*

Sequence Lesson A: *Jonathan Jennings* (Study Skill)



Standards Addressed: Soc 4.1.6, 4.1.13, 4.2.4, 4.3.10 — **Sequence – *Study Skill***

STUDY SKILL: Creating a Timeline

When you read, it is important to understand the information in your lesson. Paying attention to the sequence of events will help you understand the information better. Sometimes it is easy to follow the sequence of events. Sometimes, it is more difficult because the paragraphs do not list the events in the order in which they happened.

Creating a timeline is a study skill that can make a sequence of events easier to understand.

To create a timeline you need to follow three important steps:

1. Decide what events you want to organize. (For example: Do you want to organize all of the events of a person's life or just the events during the years the person was president? This will give you a topic and title for your timeline.)

   Topic/Title: *Governors in Indiana 1920-1937*

2. A. Draw a line and enter a beginning date on the left and an ending date on the right.

   1920 — 1940

   B. Divide the line with year markers. You can divide the time by years, decades (10 years), or centuries (100 years).

   1920 — 1925 — 1930 — 1935 — 1940

3. Enter the important dates and facts. Use the chart to complete the timeline.

Indiana Governors 1921-1937	
1921-1924	Warren T. McCray
1924-1925	Emmett Forest Branch
1925-1929	Ed Jackson
1929-1933	Harry Guyer Leslie
1933-1937	Paul Vories McNutt

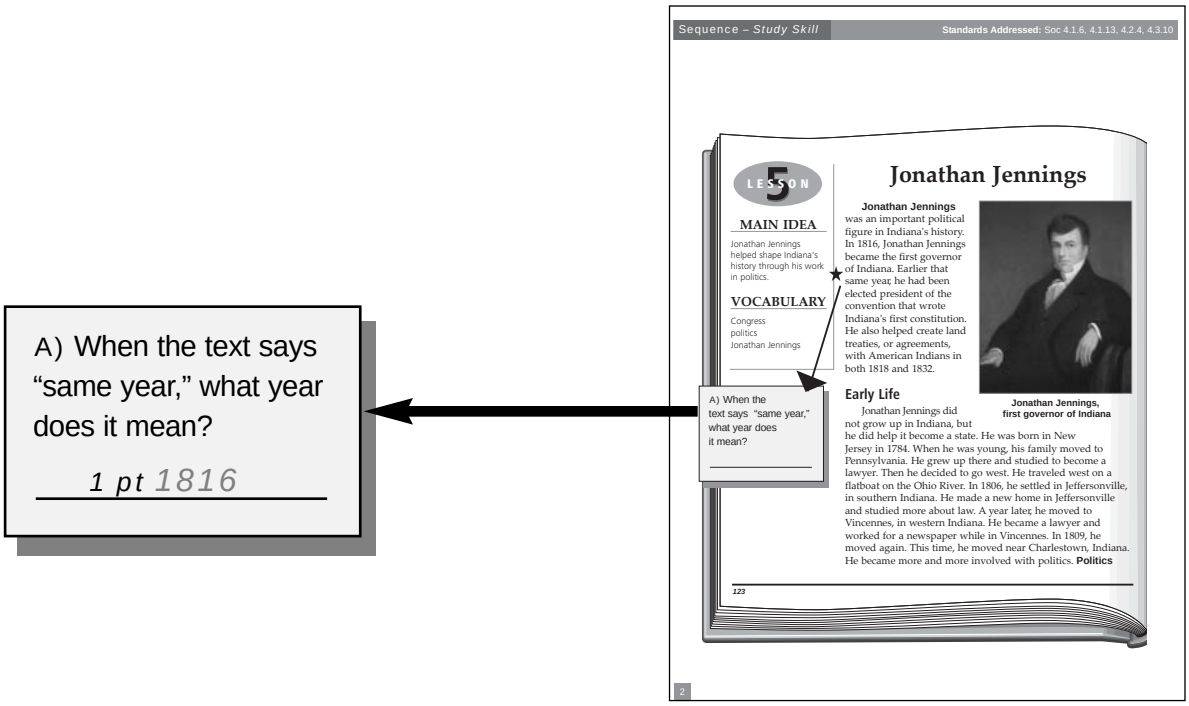
1

Follow-Up Activities

Additional Practice:

- Take a timeline from a textbook and have students write a paragraph using signal words. Tell students to title their timelines appropriately.
- Take a sequence paragraph from a textbook and have students create a timeline to match it. Also consider choosing different titles, so students must make choices about the events they include.
- Create a number of cards describing events that could apply to a number of timelines. Have students sift through the cards in order to choose the events that are appropriate for the title of the timeline you've given them. This can also be done in small groups.

Sequence Lesson A: *Jonathan Jennings* (Study Skill)

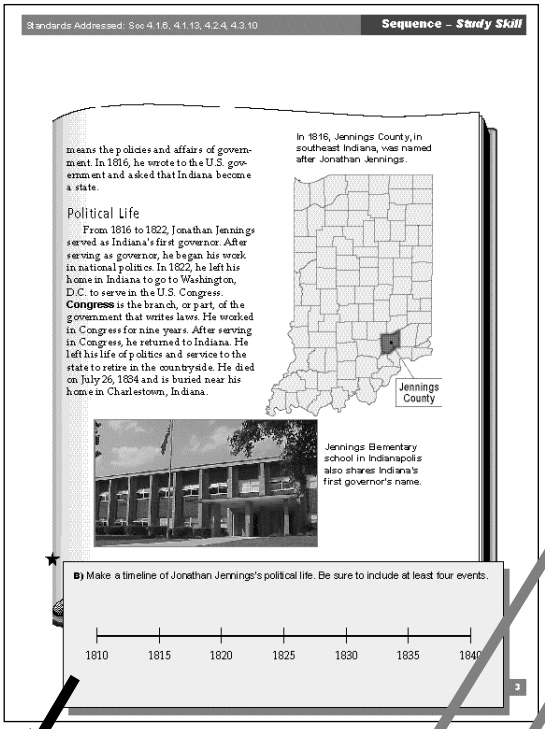


Follow-Up Activities (cont.)

Extension:

- Have students create and combine timelines of the lives of two historical figures in order to compare and contrast their lives.
- Have students create timelines for the following: making a recipe, historical events, doing a science experiment. Have students compare and contrast the different kinds of timelines they've created (for example, differences in time frame and purpose. Have students trade their timelines with other students and have those students turn them into narratives. Have students in pairs compare any changes to their information (Did something important get left out? Was something important added?).

Sequence Lesson A: *Jonathan Jennings* (Study Skill)



4 pts

B) *Political timeline should include:*

- *1816–asks that Indiana become a state, becomes governor*
- *1818–helps create land treaty with American Indians*
- *1822–left Indiana to serve in Congress*
- *1832–helped create land Treaty with American Indians*

B) Make a timeline of Jonathan Jennings's political life. Be sure to include at least four events.

1810 1815 1820 1825 1830 1835 1840

Cross-Curricular Ties

- *Math 4.3.8* - Plot and label whole numbers on a number line up to 100. Estimate positions on the number line.

Suggested Activity: Estimate positions on a number line. Create number lines that skip count by decades, centuries, etc.

- *Soc 4.3.2* - Estimate distances between two places on a map, using a scale of miles, and use cardinal and intermediate directions when referring to relative location.

Suggested Activity: Find the distance between Corydon, Indiana and Washington, D.C.

Sequence Lesson A: *Jonathan Jennings* (Study Skill)

7 pts 1pt for drawing the timeline correctly, 1 pt for an appropriate title, (JJ's early life, JJ's personal life, or any other appropriate response), and one each for any five of the following six items. Personal Life Timeline should include:

- *1784–born in New Jersey*
- *1806–moved to Jeffersonville, IN*
- *1807–moved to Vincennes*
- *1809–moved to Charlestown, IN*
- *1822–moved to Washington, D.C.*
- *1834 died*

Sequence – *Study Skill* **Standards Addressed:** So

Review Questions

1. Use this space to make a timeline listing the events of Jennings's persona to complete number two below. You should include at least five events. R timeline a title.

2. Below are some events in Jonathan Jennings's life. Write them on the lines below in the correct order. Write the earliest event on line 1.

dies in Indiana	*moves to Jeffersonville, Indiana*
serves as governor of Indiana	*works on a newspaper*
lives in Pennsylvania	*helps write Indiana's constitution*

1. *1 pt Lives in Pennsylvania*
2. *1 pt Moves to Jeffersonville, Indiana*
3. *1 pt Works on a newspaper*
4. *1 pt Helps write Indiana's constitution*
5. *1 pt Serves as governor of Indiana*
6. *1 pt Dies in Indiana*

4

Sequence Lesson B: *The Cycle of the Tulip Poplar* (Sci)

Reading Difficulty: 4.6 **Scaffolding/Guided Reading Boxes★:** 6

Vocabulary

Text Feature Vocabulary:

- diagram
- graphic
- paragraph

Lesson Vocabulary:

- botanist
- germinate
- samara

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.2.5* - Explain that Indiana is one of 50 states in the United States and that other countries are also made up of smaller units, such as states, provinces, or territories.

Science Standards Addressed:

- *4.4.3* - Observe and describe that organisms interact with one another in various ways, such as providing food, pollination, and seed dispersal.
- *4.4.5* - Observe and explain that most plants produce far more seeds than those that actually grow into new plants.
- *4.6.4* - Observe and describe that some features of things may stay the same even when other features change.

Background Prompt

- How do you think a seed grows into a tree? What steps do you think have to take place? *Write student answers on the board.* Are any steps missing? Are the steps in the right order? How do you know?

Sequence Lesson B: *The Cycle of the Tulip Poplar* (Sci)

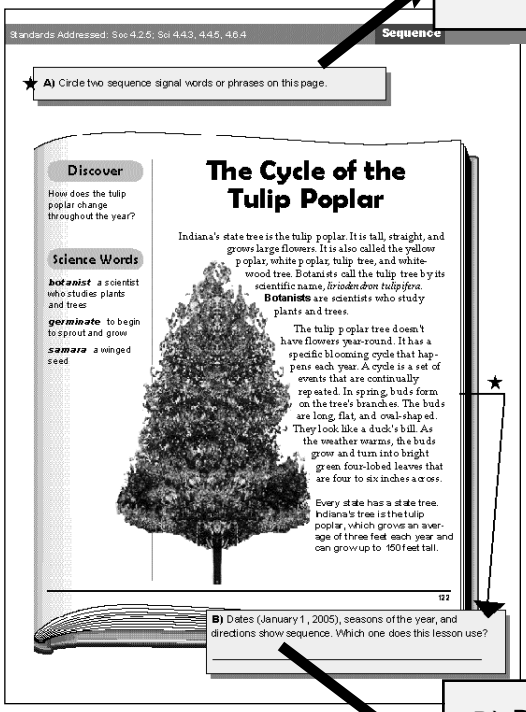
Think About! Discussion Points Following the Lesson

- Look at Guided Reading Boxes A and F! Where in the sentence do the sequence words appear? *(Often they are at the beginning.)* Why are sequence words often at the beginning of the sentence? *(They introduce the action of the sentence; they help you understand when the action of the sentence took place; etc.)* What are some ways you can skim for sequence words and better understand difficult lessons? *(Look for sentences that begin with sequence signal words.)*
- Look at the graphic on the top of page 2. Do the four leaves tell about the four seasons? *(No. They are in a line, but they are not from the same tree.)* How is the graphic being used? *(It shows four types of leaves rather than four seasons; it shows differences/similarities, etc.)* How can graphics be used to illustrate difficult ideas? *(Sometimes it is easier to look at a picture than to read a paragraph; the graphic makes the description in the text easier to understand; you can see differences quickly etc.*)

Sequence Lesson B: *The Cycle of the Tulip Poplar* (Sci)

A) Circle two sequence signal words or phrases on this page.

2 pts *1 pt for each signal word. Accept: each year, in spring, as the weather warms, turn into, continually, or year-round.*



B) Dates (January 1, 2005), seasons of the year, and directions show sequence. Which one does this lesson use?

1 pt *seasons of the year*

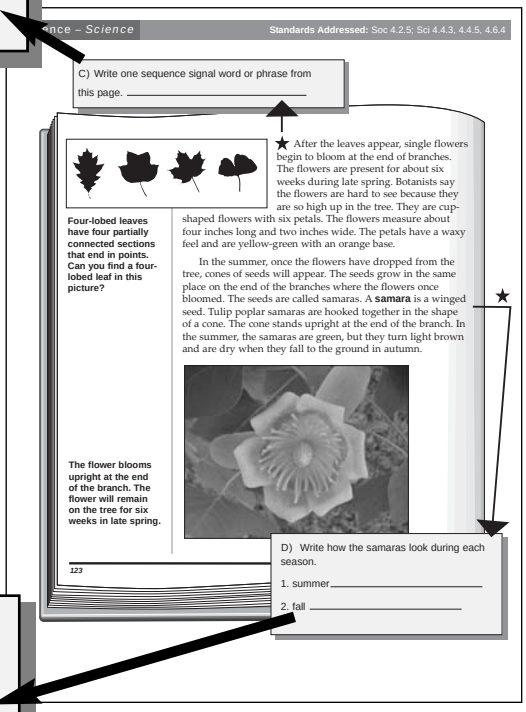
Follow-Up Activities

Additional Practice:

- Have students go through a different ITRI lesson or a sequence lesson in their textbooks and identify sequence words. Have students number the lines 1-5 (or 10) in a notebook and write the events or items in sequential order.
- Find a textbook page that uses many introductory dependent clauses with sequence words. Have students rewrite the sentences so the clauses are no longer introductory ("In winter, the tulip poplar has no leaves" changes to "The tulip poplar has no leaves in winter"). Place the sentences in sequential order.
- Copy a chapter that has a number of out-of-order events that students need to understand. Ask students to highlight the events that are most important in the sequence of events. Write each of the events on an index card and shuffle. Have students put them in order without help from the textbook.

Sequence Lesson B: *The Cycle of the Tulip Poplar* (Sci)

C) Write one sequence signal word or phrase from this page. _1 pt_ *Accept: after the leaves appear, in the summer, once the flowers have dropped from the tree, when they fall to the ground, in autumn, or in late spring.*



D) Write how the samaras look during in each season.

1. summer _1 pt_ *green samaras*

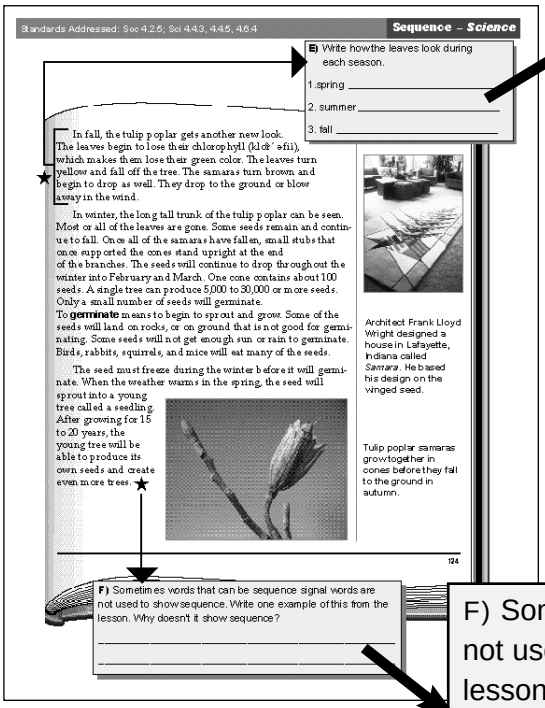
2. fall _1 pt_ *brown samaras or seeds fall*

Follow-Up Activities

Extension:

- Have students write a sequence passage using introductory dependent clauses using common sequence words (*before pouring water into the jar… next, you should…, at the same time that Indiana became a state…*). Next, pair students and have them attempt to rewrite the sequence passage without using any introductory dependent clauses.
- Have students write a paragraph that mixes up the order of the events from a social studies textbook. Have students trade papers and put the sentences in order using signal words.

Sequence Lesson B: *The Cycle of the Tulip Poplar* (Sci)



Standards Addressed: Soc 4.2.5; Sci 4.4.3, 4.4.5, 4.6.4

Sequence – *Science*

E) Write how the leaves look during each season.

1. spring _____
2. summer _____
3. fall _____

In fall, the tulip poplar gets another new look. The leaves begin to lose their chlorophyll (klôr' ə fil), which makes them lose their green color. The leaves turn yellow and fall off the tree. The samaras turn brown and begin to drop as well. They drop to the ground or blow away in the wind.

In winter, the long tall trunk of the tulip poplar can be seen. Most or all of the leaves are gone. Some seeds remain and continue to fall. Once all of the samaras have fallen, small stubs that once supported the cones stand upright at the end of the branches. The seeds will continue to drop throughout the winter into February and March. One cone contains about 100 seeds. A single tree can produce 5,000 to 30,000 or more seeds. Only a small number of seeds will germinate. To **germinate** means to begin to sprout and grow. Some of the seeds will land on rocks, or on ground that is not good for germinating. Some seeds will not get enough sun or rain to germinate. Birds, rabbits, squirrels, and mice will eat many of the seeds.

The seed must freeze during the winter before it will germinate. When the weather warms in the spring, the seed will sprout into a young tree called a seedling. After growing for 15 to 20 years, the young tree will be able to produce its own seeds and create even more trees.

Architect Frank Lloyd Wright designed a house in Lafayette, Indiana called *Samara*. He based his design on the winged seed.

Tulip poplar samaras grow together in cones before they fall to the ground in autumn.

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F) Sometimes words that can be sequence signal words are not used to show sequence. Write one example of this from the lesson. Why doesn't it show sequence?

_____

_____

E) Write how the leaves look during each season.

1. spring *1 pt buds, bright green*
2. summer *1 pt green*
3. fall *1 pt yellow or fall off*

F) Sometimes words that can be sequence signal words are not used to show sequence. Write one example of this from the lesson. Why doesn't it show sequence?

1 pt fall (used as a verb)

1 pt Accept any reasonable explanation related to the word or phrase chosen above.

Cross-Curricular Ties

- *Soc 4.5.4* Describe the role of Indiana artists in American visual arts, literature, music, dance, and theatre.

Suggested Activity: Study other state symbols such as the state song. Discover the seasons portrayed in Theodore Clement Steele's landscape paintings.

- *Math 4.6.1* Represent data on a number line and in tables, including frequency tables.

Suggested Activity: Graph the number of tulip poplars (or other trees) in the vicinity of the school.

- *E/LA* 4.5.3 Write informational reports that ...

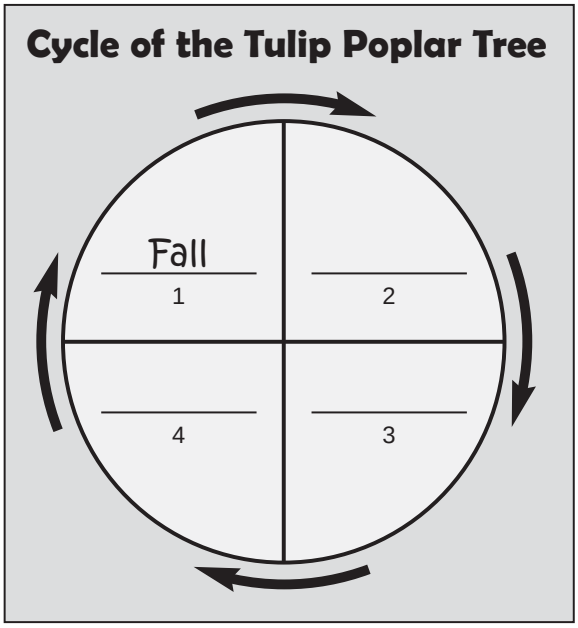
Suggested Activity: Create a photo/drawing essay about an Indiana tree. Use pictures and text to describe the tree in each season. Describe how the tree changes throughout the year, and which characteristics of the tree remain the same.

Sequence Lesson B: *The Cycle of the Tulip Poplar* (Sci)

Sequence – *Science* **Standards Addressed:** Soc 4.2.5; Sci 4.4.3, 4.4.5, 4.6.4

Review Questions

The diagram below illustrates the cycle of the tulip poplar. This diagram starts with fall. Complete the diagram by writing the names of the seasons in sequential order, beginning with number 2. Then for each question, fill in the name of the season and choose two answers from the list below that describe what happens during that season. The first one has been done for you.



1 pt each for a total of 9 pts

1. SEASON: fall
   - A. samaras fall
   - B yellow leaves

2. SEASON: *Winter*
   - A. *few or no leaves*
   - B. *seeds drop*

3. SEASON: *Spring*
   - A. *buds grow*
   - B. *yellow-green flowers*

4. SEASON: *Summer*
   - A. *green samaras*
   - B. *flowers fall*

winter	green samaras	30,000 seeds
spring	two-winged samaras	~~yellow leaves~~
summer	oval-shaped leaves	buds grow
~~fall~~	150 feet tall	~~samaras fall~~
few or no leaves	yellow-green flowers	blooming cycle
flowers fall	seeds drop	

Sequence Lesson C: *Indiana Becomes a State* (Soc)

Reading Difficulty: 4.3 **Scaffolding/Guided Reading Boxes★:** 4

Vocabulary

Text Feature Vocabulary:

- signal words

Lesson Vocabulary:

- The Enabling Act of 1816
- Indiana Territory
- The Land Ordinance of 1785
- ordinance
- treaty
- Treaty of Greenville
- Treaty of Paris of 1763

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.

Social Studies Standards Addressed:

- *4.1.3* - Explain the importance of the Revolutionary War and other key events and people that influenced Indiana's development.
- *4.1.4* - Explain the significance of key documents in Indiana's development from a United States territory to statehood.
- *4.3.10* - Read and interpret thematic maps - such as transportation, population, and products - to acquire information about Indiana in the present and the past.

Background Prompt

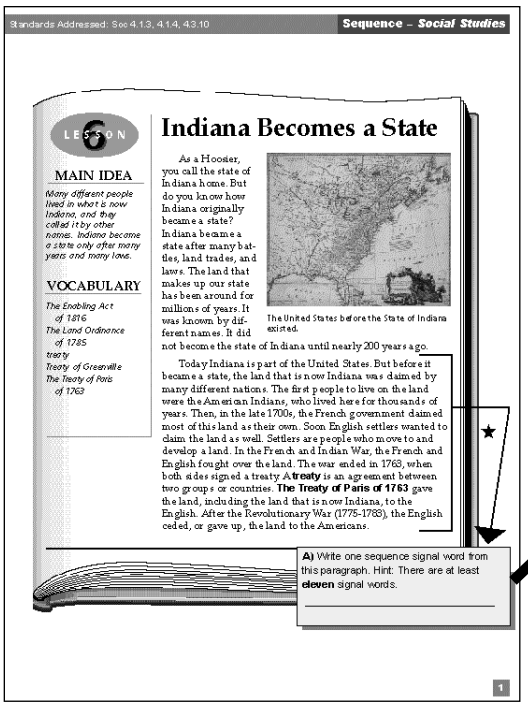
- How do you think Indiana became a state? *Record student answers on the board.* Did we leave anything out? Do we have the events in the right order? What kind(s) of sequence signal words would we use if we wanted to make this into a paragraph? Why? You may want to *return to these answers after the lesson to see if students can clarify or add to them.*

Sequence Lesson C: *Indiana Becomes a State* (Soc)

Think About! Discussion Points Following the Lesson

- Look at Guided Reading Boxes C and D. How are the graphics in this lesson similar? *(All of them are about Indiana becoming a state, and they help explain text, add new information, etc.)* How are they different? *(They show different things: maps, charts, pictures, etc.)* What captions do they have? *(See captions.)*
- How do the graphics use numbers? *(Page 1: not applicable; numbers on page 2 chart show how townships are divided; page 3 map uses numbers to date the maps. The township graphic on page 2 is tricky–it's numbered, but does not show sequence: it shows placement.)* Do numbers always show sequence? *No. Sequence has to do with time and order. Numbers do not always show time or order.)* Look at the numbers that show the laws of the Northwest Territory on page 2. Do they show sequence? *(No.)* Why not? *(The numbers on page 2 are just part of a list. The order is not important; they do not show time. Students might notice, however, that the text in number four contains the sequence signal word "once" and does indicate sequence)*
- Look at Guided Reading Box E. How does the territory and statehood graphic show sequence? *(It shows dates, changes in the maps, uses a caption, etc.)* Can you use signal words with this graphic? How? *(Use them to describe changes over time.)* What signal words would you use to describe this graphic? *(You could use any of the dates from the maps and other signal words such as* before, after, at the same time as, *etc.)*

Sequence Lesson C: *Indiana Becomes a State* (Soc)


Standards Addressed: Soc 4.1.3, 4.1.4, 4.3.10

Sequence – *Social Studies*

LESSON 6

Indiana Becomes a State

MAIN IDEA

Many different people lived in what is now Indiana, and they called it by other names. Indiana became a state only after many years and many laws.

VOCABULARY

The Enabling Act of 1816
The Land Ordinance of 1785
treaty
Treaty of Greenville
The Treaty of Paris of 1763

As a Hoosier, you call the state of Indiana home. But do you know how Indiana originally became a state? Indiana became a state after many battles, land trades, and laws. The land that makes up our state has been around for millions of years. It was known by different names. It did not become the state of Indiana until nearly 200 years ago.

The United States before the State of Indiana existed.

Today Indiana is part of the United States. But before it became a state, the land that is now Indiana was claimed by many different nations. The first people to live on the land were the American Indians, who lived here for thousands of years. Then, in the late 1700s, the French government claimed most of this land as their own. Soon English settlers wanted to claim the land as well. Settlers are people who move to and develop a land. In the French and Indian War, the French and English fought over the land. The war ended in 1763, when both sides signed a treaty. A **treaty** is an agreement between two groups or countries. **The Treaty of Paris of 1763** gave the land, including the land that is now Indiana, to the English. After the Revolutionary War (1775-1783), the English ceded, or gave up, the land to the Americans.

A) Write one sequence signal word from this paragraph. Hint: There are at least **eleven** signal words.

1

A) Write one sequence signal from this paragraph. Hint: There are at least **eleven** signal words.

1 pt Accept: before, then, ended, when, after, first, soon, now, after, in the late 1700s, or in 1763.

Follow-Up Activities

Additional Practice:

- Choose graphics from a textbook that show sequence. Have students use signal words to write a few sentences about the sequence that graphics shows.
- Have students retell a historical event from a lesson their textbooks using sequence words. Each student can add one sentence to the retelling. (This can also be played as a game in which each student must remember and repeat the earlier parts of the story before adding to it.)
- Have each student write a sequential paragraph about his or her life. Specify that the paragraph should include "x" number of sequence signal words. Make a class timeline that includes the top three events from each student's life.

Sequence Lesson C: *Indiana Becomes a State* (Soc)

B) Write what happened in these years on the timeline.

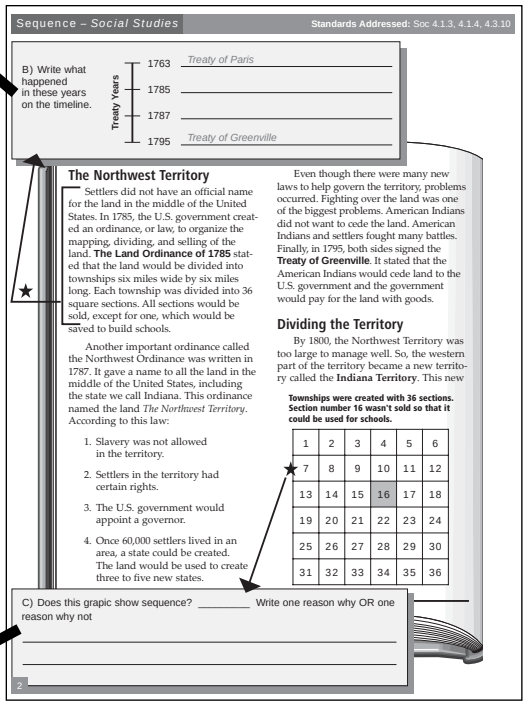
Treaty Years

1763 — *Treaty of Paris*

1785 — *1 pt* *The Land Ordinance of 1785*

1787 — *1 pt* *The Northwest Ordinance*

1795 — *Treaty of Greenville*



Sequence – *Social Studies*

Standards Addressed: Soc 4.1.3, 4.1.4, 4.3.10

B) Write what happened in these years on the timeline.

Treaty Years

1763 *Treaty of Paris*

1785

1787

1795 *Treaty of Greenville*

The Northwest Territory

Settlers did not have an official name for the land in the middle of the United States. In 1785, the U.S. government created an ordinance, or law, to organize the mapping, dividing, and selling of the land. **The Land Ordinance of 1785** stated that the land would be divided into townships six miles wide by six miles long. Each township was divided into 36 square sections. All sections would be sold, except for one, which would be saved to build schools.

Another important ordinance called the Northwest Ordinance was written in 1787. It gave a name to all the land in the middle of the United States, including the state we call Indiana. This ordinance named the land *The Northwest Territory*. According to this law:

1. Slavery was not allowed in the territory.
2. Settlers in the territory had certain rights.
3. The U.S. government would appoint a governor.
4. Once 60,000 settlers lived in an area, a state could be created. The land would be used to create three to five new states.

Even though there were many new laws to help govern the territory, problems occurred. Fighting over the land was one of the biggest problems. American Indians did not want to cede the land. American Indians and settlers fought many battles. Finally, in 1795, both sides signed the **Treaty of Greenville**. It stated that the American Indians would cede land to the U.S. government and the government would pay for the land with goods.

Dividing the Territory

By 1800, the Northwest Territory was too large to manage well. So, the western part of the territory became a new territory called the **Indiana Territory**. This new

Townships were created with 36 sections. Section number 16 wasn't sold so that it could be used for schools.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

C) Does this grapic show sequence? _____ Write one reason why OR one reason why not

2

C) Does this graphic show sequence? *1 pt* *No.* Write one reason why OR one reason why not.

1 pt *It only shows how the sections were numbered, or any other appropriate response.*

Follow-Up Activities (cont.)

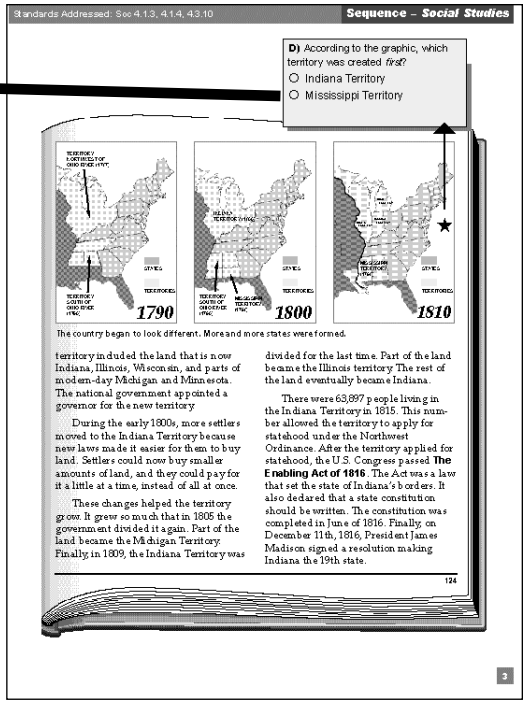
Extension:

- After reading a science experiment or a lesson using sequence, have students create a graphic that shows sequence.
- Have each student create a "How it Happened" or "How-to" essay to explain an event or activity. Stress that the steps and events need to be presented in chronological order. Two examples of titles could be, "How to Make Persimmon Pudding" or "How the Indiana Flag was Chosen."

Sequence Lesson C: *Indiana Becomes a State* (Soc)

D) According to the graphic, which territory was created *first*?

- ○ Indiana Territory
- ● Mississippi Territory



Cross-Curricular Ties

- *Soc 4.1.15* - Using primary source and secondary source material, generate questions, seek answers, and write brief comments about an event in Indiana history.

Suggested Activity: Have students look at some of the original documents such as treaties that can be found on the World Wide Web at http://www.statelib.lib.in.us/www/ihb/amerindians/findingtreaties.html. Look at the original signatures, explore the wording, etc. Have students record their thoughts about these documents in a short paragraph or two.

- *E/LA 4.5.6* - Write for different purposes (information, persuasion) and to a specific audience or person.

Suggested Activity: Read about the Fall of Sackville. Pretend that you are George Rogers Clark. Write a letter telling about the battle to colonists in the east.

Sequence Lesson C: *Indiana Becomes a State* (Soc)

Sequence – *Social Studies* **Standards Addressed:** Soc 4.1.3, 4.1.4, 4.3.10

Review Questions

How well did you understand the sequence of events? Look at the events below. Reread the lesson **Indiana Becomes a State** and decide if the events happened at the same time, before, or after each other. Write your answers in the middle column.

1 pt each for total of 5 pts

	Event A	same time/before/after	Event B
1.	Indiana became a state	*After*	the Indiana constitution was written
2.	buying land was easier for settlers	*Before*	the number of settlers was over 60,000
3.	American Indians lived on the land	*Same Time*	settlers claimed the land
4.	Indiana Territory was formed	*Before*	the Northwest Territory was formed
5.	the Revolutionary War was fought	*Before*	the Treaty of Greenville was made

Look at all the events above. Put the events above in the correct order. The event that happened first is number 1, and it has been completed for you. Hint: writing the dates next to the events will help you check your work.

1 pt each for total of 9 pts

1. *American Indians lived on the land.*
2. *Settlers claim the land*
3. *Revolutionary War begins*
4. *Northwest Territory forms*
5. *Treaty of Greenville is made*
6. *Indiana Territory forms*
7. *Buying land is easier for settlers*
8. *Number of settlers is over 60,000*
9. *Indiana constitution is written*
10. *Indiana becomes a state*

Compare & Contrast Lesson A: *Telescopes & Microscopes*

Reading Difficulty: **Scaffolding/Guided Reading Boxes★:** 2

Vocabulary

Text Feature Vocabulary:

- paragraph
- sentence

Lesson Vocabulary:

- lens
- microscope
- telescope

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.5* - Compare and contrast information on the same topic after reading several passages or articles.

Science Standards Addressed:

- *4.1.1* - Observe and describe that scientific investigations generally work the same way in different places.
- *4.1.4* - Describe how people all over the world have taken part in scientific investigation for many centuries.
- *4.1.5* - Demonstrate how measuring instruments, such as microscopes, telescopes, and cameras, can be used to gather accurate information for making scientific comparisons of objects and events. Note that measuring instruments, such as rulers, can also be used for designing and constructing things that will work properly.
- *4.1.8* - Recognize and explain that any invention may lead to other inventions.
- *4.4.1* - Investigate, such as by using microscopes, to see that living things are made mostly of cells.
- *4.4.7* - Describe that human beings have made tools and machines, such as x-rays, microscopes, and computers, to sense and do things that they could not otherwise sense or do at all, or as quickly, or as well.

Background Prompt

- Have you ever used a microscope or a telescope? What kinds of things can you see with a microscope? With a telescope?

Note: You may want to have students use the information from the background prompt to make a Venn diagram prior to beginning the lesson.

Compare & Contrast Lesson A: *Telescopes & Microscopes*

In-Class Grading Session Discussion Points:

- Why do you think a Venn diagram is such a popular way to compare and contrast? *(It is easy to make/read.)* How could a Venn diagram be used as a study tool?*(Making a diagram for new lessons will make new ideas easier to understand by showing how they are related, and it is a good way to quickly review material for a test because the information is displayed clearly.)*
- How are titles important in graphics such as Venn diagrams? *(Titles limit the scope of what the diagram contains, and they help you understand what is being compared/contrasted.)* Look at the titles and subjects in the lesson. How would the information be different if the Venn diagram title for "Scopes" was "Seeing Details?" *(The subtitles might change to "big details," "small details," etc.)* Can you create a new Venn diagram based on a different title? *If students are able to answer this question and the next correctly, then they probably understand the role of diagram titles.* What would it include? *(Answers will depend on the titles that the students choose.)*

Compare & Contrast Lesson A: *Telescopes & Microscopes*

Standards Addressed: Sci 4.1.1, 4.1.4, 4.1.5, 4.1.8, 4.4.1, 4.4.7 **Compare & Contrast – *Study Skill***

STUDY SKILL: Venn Diagram

A Venn diagram is a type of graphic organizer that is helpful for showing similarities and differences between two subjects. A Venn diagram is made of two circles. The circles overlap like this:

Venn Diagram

In section A
write the information that describes your first subject.

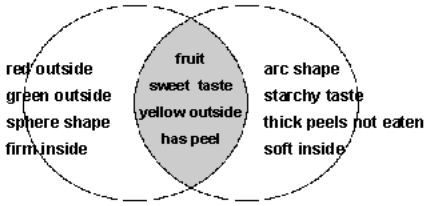
In section B
write the information that describes your second subject.

In section C
write information that describes both subjects.

When the diagram is complete, the center section (C) will show similarities and the outer sections (A and B) will show the differences.

Look at the Venn diagram below.

Title: Apples and Bananas



Student directions: Add these facts to the correct area in the Venn diagram above:

- white inside
- thin peel eaten

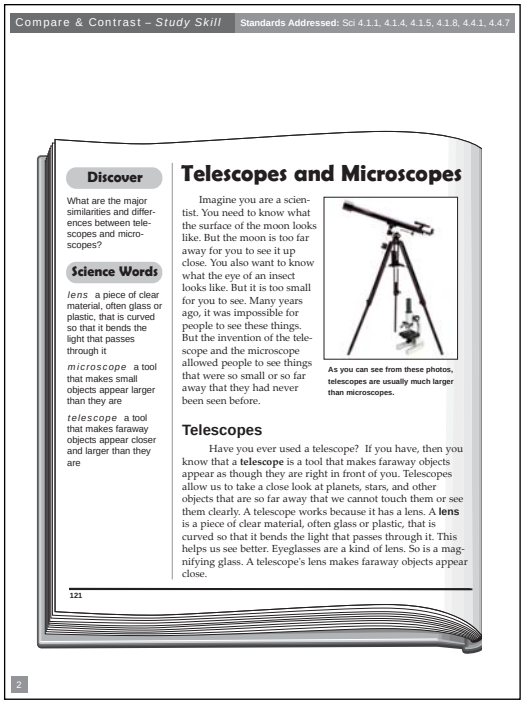
1 pt each

Follow-Up Activities

Additional Practice:

- Use two hula hoops to make a 3-D Venn diagram. Using objects, pictures, or words written on index cards, have the class complete the diagram.
- Have students work in pairs to compare their shoes/pencils/library books, etc. to their partner's. Have them make a Venn diagram to show the results.

Compare & Contrast Lesson A: *Telescopes & Microscopes*



Compare & Contrast – *Study Skill* **Standards Addressed:** Sci 4.1.1, 4.1.4, 4.1.5, 4.1.8, 4.4.1, 4.4.7

Discover

What are the major similarities and differences between telescopes and microscopes?

Science Words

lens a piece of clear material, often glass or plastic, that is curved so that it bends the light that passes through it

microscope a tool that makes small objects appear larger than they are

telescope a tool that makes faraway objects appear closer and larger than they are

Telescopes and Microscopes

Imagine you are a scientist. You need to know what the surface of the moon looks like. But the moon is too far away for you to see it up close. You also want to know what the eye of an insect looks like. But it is too small for you to see. Many years ago, it was impossible for people to see these things. But the invention of the telescope and the microscope allowed people to see things that were so small or so far away that they had never been seen before.

As you can see from these photos, telescopes are usually much larger than microscopes.

Telescopes

Have you ever used a telescope? If you have, then you know that a **telescope** is a tool that makes faraway objects appear as though they are right in front of you. Telescopes allow us to take a close look at planets, stars, and other objects that are so far away that we cannot touch them or see them clearly. A telescope works because it has a lens. A **lens** is a piece of clear material, often glass or plastic, that is curved so that it bends the light that passes through it. This helps us see better. Eyeglasses are a kind of lens. So is a magnifying glass. A telescope's lens makes faraway objects appear close.

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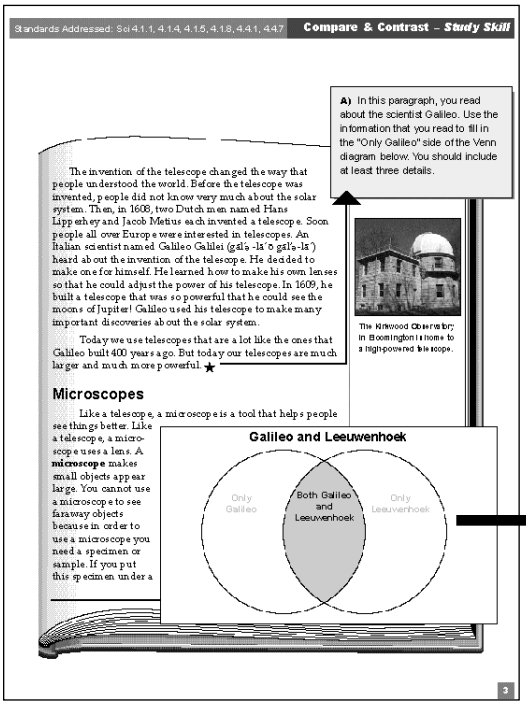
2

Follow-Up Activities (cont.)

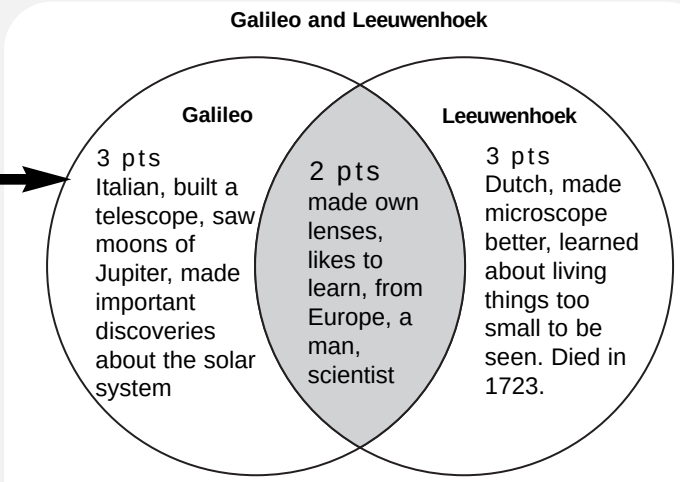
Extension:

- Ask students to create three Venn diagrams about the same lesson, each with a different title and appropriate details. Have students discuss which Venn diagram has the most information that might be on a lesson or chapter test. Have students discuss whether the headings and subheadings can be useful in helping to focus a Venn diagram's subject matter.
- Have students write their own compare/contrast papers on a topic of their choosing.

Compare & Contrast Lesson A: *Telescopes & Microscopes*



A) In this paragraph you will read about the scientist Galileo. Use the information that you read to fill in the "Only Galileo" side of the Venn diagram below. You should include at least three details.



or any other appropriate response

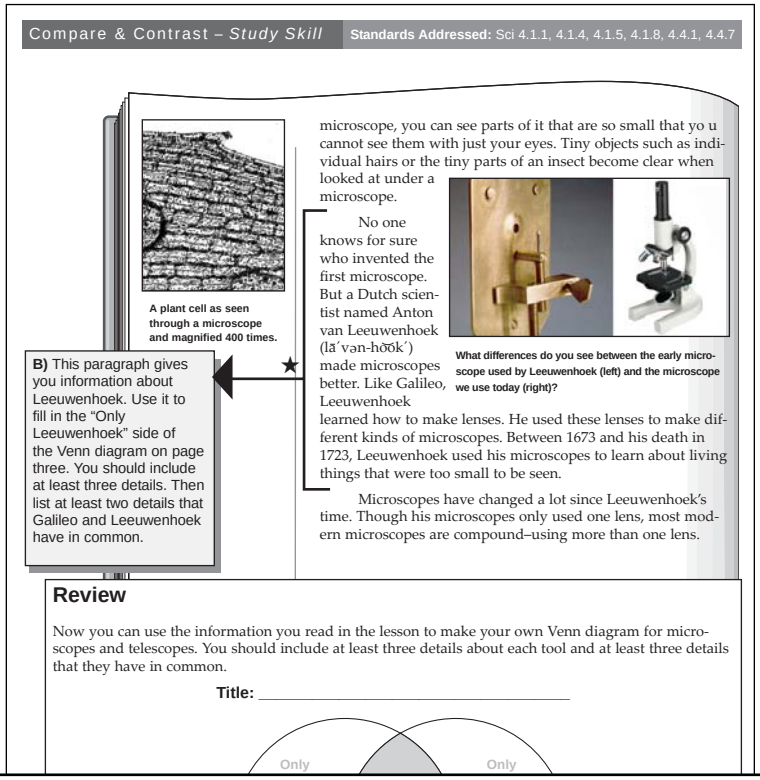
(8 pts total)

Cross-Curricular Ties

- *E/LA 4.6.3* - Create interesting sentences by using words that describe, explain, or provide additional details and connections, such as adjectives, adverbs, appositives, participial phrases, prepositional phrases, and conjunctions.

Suggested Activity: Have students look at prepared slides through a microscope. (Alternately, use pictures created through telescopes and microscopes such as those found in science textbooks). Have them write interesting sentences to describe what they see.

Compare & Contrast Lesson A: *Telescopes & Microscopes*



Compare & Contrast – *Study Skill* **Standards Addressed:** Sci 4.1.1, 4.1.4, 4.1.5, 4.1.8, 4.4.1, 4.4.7

A plant cell as seen through a microscope and magnified 400 times.

microscope, you can see parts of it that are so small that yo u cannot see them with just your eyes. Tiny objects such as individual hairs or the tiny parts of an insect become clear when looked at under a microscope.

No one knows for sure who invented the first microscope. But a Dutch scientist named Anton van Leeuwenhoek (lä´vən-hōōk´) made microscopes better. Like Galileo, Leeuwenhoek learned how to make lenses. He used these lenses to make different kinds of microscopes. Between 1673 and his death in 1723, Leeuwenhoek used his microscopes to learn about living things that were too small to be seen.

What differences do you see between the early microscope used by Leeuwenhoek (left) and the microscope we use today (right)?

Microscopes have changed a lot since Leeuwenhoek's time. Though his microscopes only used one lens, most modern microscopes are compound–using more than one lens.

B) This paragraph gives you information about Leeuwenhoek. Use it to fill in the "Only Leeuwenhoek" side of the Venn diagram on page three. You should include at least three details. Then list at least two details that Galileo and Leeuwenhoek have in common.

Review

Now you can use the information you read in the lesson to make your own Venn diagram for microscopes and telescopes. You should include at least three details about each tool and at least three details that they have in common.

Title: _____

Only

Only

Review

Now you can use the information you read in the lesson to make your own Venn diagram for microscopes and telescopes. You should include at least three details about each tool and at least three details that they have in common.

10 pts total

Title: *1 pt Microscopes and Telescopes, Scopes, or any other appropriate response*

3 pts *microscope*: *see things too small to see with eyes, is a small machine that can be held, made better by Leeuwenhoek, made in Holland*

Only Microscopes

3 pts both: *Use lenses, see things you can't see with your own eyes, are metal, used in science, made in Europe, etc.*

Only Telescopes

3 pts *telescope:* *sees things too far away to be seen with eyes, can be as big as a house, created by Galileo, made in Italy, or any other appropriate response*

Compare & Contrast Lesson B: *Indiana Insects* (Sci)

Reading Difficulty: 5.2 **Scaffolding/Guided Reading Boxes★:** 6

Vocabulary

Text Feature Vocabulary:
- paragraph
- sentence
- signal word

Lesson Vocabulary:
- bioluminescence
- carnivore
- herbivore

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.5* - Compare and contrast information on the same topic after reading several passages or articles.

Science Standards addressed:

- *4.2.4* - Use numerical data to describe and compare objects and events.
- *4.3.11* - Investigate, observe, and explain that things that give off light often also give off heat. (Studying the exception)
- *4.6.4* - Observe and describe that some features of things may stay the same even when other features change. (Metamorphosis)

Background Prompt

- Have you ever caught fireflies or grasshoppers? What do you know about these insects? What would you like to know about them. *Return to student answers after the lesson. See if they learned the answers to their questions.*

Compare & Contrast Lesson B: *Indiana Insects* (Sci)

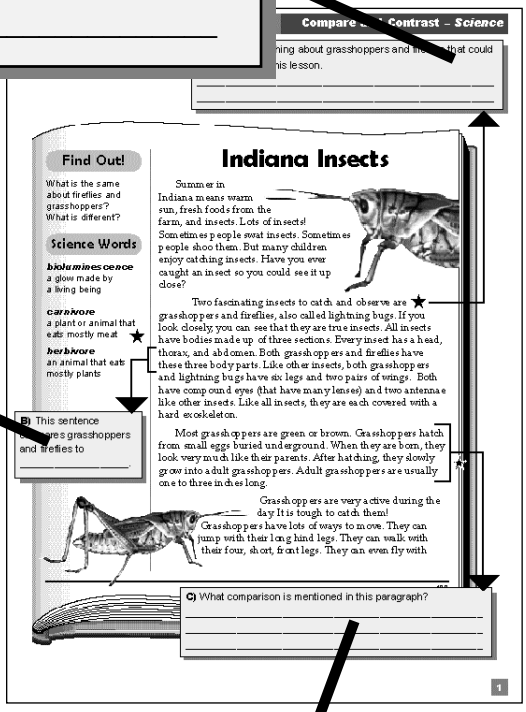
Think About! Discussion Points Following the Lesson

- Look at Guided Reading Box A. How did you make your prediction? *(Answers will vary. Students should have looked at headings, graphics, bolded vocabulary words, etc.)*
- Look at Guided Reading Box D: How can something as simple as two words be compared? *(You can look back at the paragraph and the definitions to see what the meanings have in common.) Talk about root words and give additional examples (hydrosphere, atmosphere, lithosphere, biosphere; antonym, synonym; etc.).*

Compare & Contrast Lesson B: *Indiana Insects* (Sci)

A) Predict something about grasshoppers and fireflies that could be compared in this lesson.

1 pt appearance, bodies, eyes, colors, or any other appropriate response.



B) This sentence compares grasshoppers and fireflies to

1 pt other insects, each other

C) What comparison is mentioned in this paragraph?

1 pt each for baby grasshoppers and adult grasshoppers

Follow-Up Activities

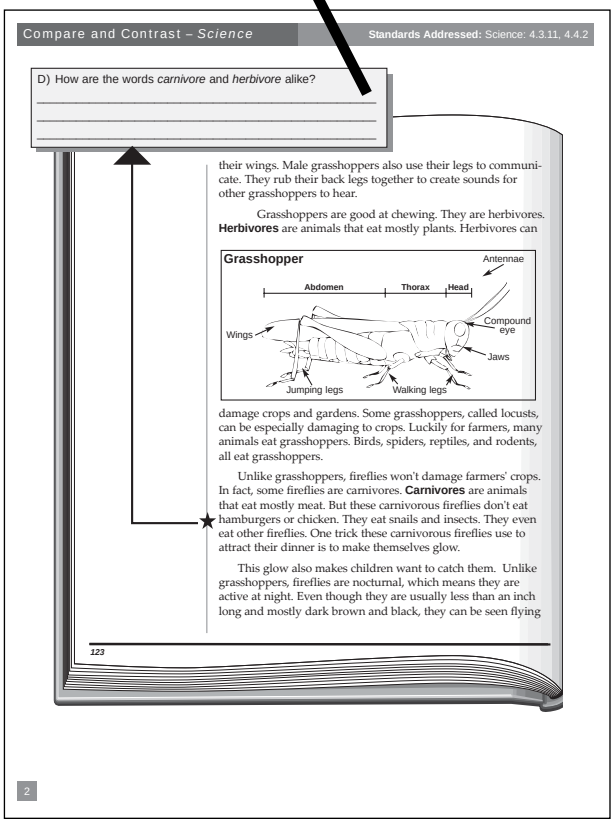
Additional Practice:

- Help students understand that when comparing two or more items, many of the attributes being compared and contrasted can be grouped into general categories. Have students brainstorm the attributes and categories that might be compared if they were reading a lesson comparing animals. (They might explore categories such as habitat, predators, lifespans, diet, etc.) Have students brainstorm categories for comparing people (age, birthplace, and employment), events (dates, locations, duration), two schools (language spoken, pupils per teacher, etc.), or any other subject.
- Have students highlight a sentence or fact about the grasshopper in the lesson. Have them look for a coordinating contrasting or comparable fact about the firefly. Highlight this fact in the same color. Proceed through the lesson until students have numerous pairs of sentences. Point out that the comparisons and contrasts are not always next to each other in the text.

Compare & Contrast Lesson B: *Indiana Insects* (Sci)

D) How are the words *carnivore* and *herbivore* alike?

1 pt. Accept any of the following: they both end in 'vore;' they both explain what an animal eats; they both have nine letters; or any other appropriate response.



Follow-Up Activities (cont.)

Extension:

- Have students research a third insect. Add information learned about the insect to the grasshopper and firefly comparison charts.
- Catching and observing grasshoppers and fireflies is also popular with students in Japan. Have students compare and contrast the types of insects found in Japan (or another country) with those found in Indiana. Have students create their own chart with categories for comparison and contrast.

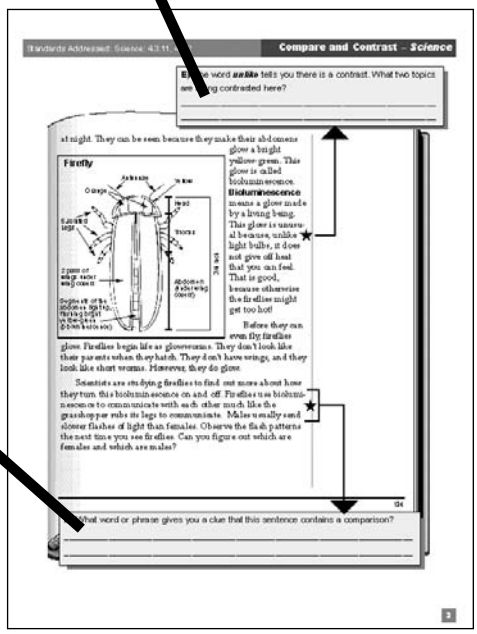
Compare & Contrast Lesson B: *Indiana Insects* (Sci)

E) The word ***unlike*** tells you there is a contrast. What two topics are being contrasted here?

2 pts: 1 pt each for light bulb and bioluminescence

F) What word or phrase gives you a clue that this sentence contains a comparison?

1 pt much like or like



Cross-Curricular Ties

- *E/LA 4.3.5* - Define figurative language, such as similes, metaphors, hyperbole, or personification, and identify its use in literary works.

  Suggested Activity: Have students read several different literary works in which insects are personified (*James and the Giant Peach, Charlotte's Web, Anansi*, etc.), and have them engage in comparative literature studies.

- *E/LA 4.3.1* - Describe the differences of various imaginative forms of literature including fantasies, fables, myths, legends, and fairy tales.

- *E/LA 4.5.6* - Write for different purposes (information, persuasion) and to a specific audience or person.

  Suggested Activity: Compare fables and legends that use insects as characters (Aesop's fables, "The Grasshopper and the Ant," and the folktale legend *Why Mosquitoes Buzz in People's Ears* by Verna Aardema. Have students write their own fables or legends such as "How the Firefly got its Light" or "The Firefly and the Moth."

- *E/LA 4.5.6* - Write for different purposes (information, persuasion) and to a specific audience or person.

- *Soc. 4.2.8* - Use a variety of information resources to research and write brief comments about the position or course of action on a public issue relating to Indiana's past or present.

  Suggested Activity: Some cities in Texas no longer have fireflies. If this happened in cities in Indiana, should fireflies be purposefully re-introduced? Have students write a brief position paper supporting their beliefs. If students differ dramatically in their responses, you may consider dividing them into small groups and conducting debates about the issue.

Compare & Contrast Lesson B: *Indiana Insects* (Sci)

Sequence – *Science* **Standards Addressed:** Science: 4.3.11, 4.4.2

Review Questions

Below are two charts that will help you compare and contrast grasshoppers and fireflies. Use information from the lesson to fill in the blanks, then use the chart to answer the questions below. Some of the information has been provided for you.

What do Grasshoppers and Fireflies Look Like?

	Color	Names of Body Parts	Full Grown Size
Grasshoppers	*1 pt green or brown*	*1 pt head, thorax, abdomen*	*1-3 inches*
Fireflies	*1 pt black, orange, yellow, green, brown*	*1 pt head, thorax, abdomen*	*1 pt 3/4 inch*

How do Grasshoppers and Fireflies Live?

	Types of Food they Eat	Most Active Time	Ways they Communicate
Grasshoppers	*mostly plants*	*1 pt day*	*1 pt rub legs together*
Fireflies	*1 pt mostly meat*	*1 pt night*	*1 pt bioluminescence, flashing light*

1. Which of these two insects is usually bigger as an adult? *1 pt grasshoppers*

2. Other than size, what is one thing that is different about grasshoppers and fireflies?
1 pt They eat different foods; they are different colors; grasshoppers don't glow; grasshoppers are most active during the day and fireflies at night; or any other appropriate response.

3. What is one thing that is the same?
1 pt Both are insects; both live in Indiana, both have a head, thorax, and abdomen; both communicate; both have compound eyes/two antennae/hard exoskeletons; or any other appropriate response.

Compare & Contrast Lesson C: *Cultural Groups* (Soc)

Reading Difficulty: 5.2 **Scaffolding/Guided Reading Boxes★:** 4

Vocabulary

Text Feature Vocabulary:
- chart
- signal word

Lesson Vocabulary:
- cultural group
- employ
- Hispanic
- immigrant
- pacifism
- utopia

Skills and Standards

E/LA Focus:

- *4.2.1* - Use the organization of informational text to strengthen comprehension.
- *4.2.2* - Use appropriate strategies when reading for different purposes.
- *4.2.5* - Compare and contrast information on the same topic after reading several passages or articles.

Social Studies Standards Addressed:

- *4.1.7* - Explain the roles of various individuals, groups, and movements in the social conflicts leading to the Civil War.
- *4.1.11* - Identify important events and movements that changed life in Indiana in the twentieth century.
- *4.1.13* - Organize and interpret timelines that show relationships among people, events, and movements in the history of Indiana.
- *4.4.1* - Give examples of the kinds of goods and services produced in Indiana in different historical periods.
- *4.5.3* - Define the term cultural group and give examples of the challenges faced by diverse cultural groups in Indiana history.

Background Prompt

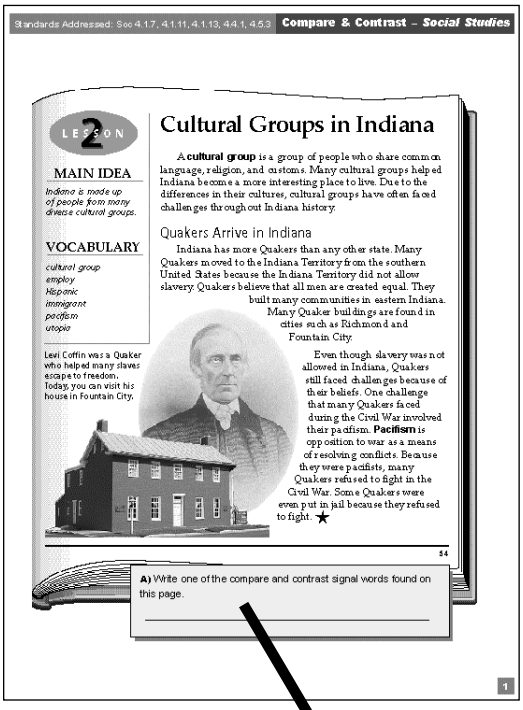
- Does everyone in Indiana dress the same, believe the same things, and speak the same language? Why or why not? What are some things that are the same about everyone who lives in Indiana? What are some things that are different about everyone who lives in Indiana? *You may want to return to these answers after the lesson to see if students can clarify or add to them.*

Compare & Contrast Lesson C: *Cultural Groups* (Soc)

Think About! Discussion Points Following the Lesson

- Where do most of the signal words appear in the sentences? *(The compare/contrast signal words usually appear in the beginning or middle of the sentences).* How can you skim a page to see if a lesson is organized by compare/contrast? *(Look for charts that organize information about two or more things; look for photographs of two or more things next to each other; scan to see if the lesson is divided to provide information about one object/idea then similar kinds of information about other objects/ideas.)*
- Look at the pictures and the chart. Can graphics can be used to compare and contrast? (*Yes. A photo or illustration of a single image probably does not show compare and contrast, but multiple images next to each other can convey similarities and differences, as can charts and graphs).* Where would the signal words go if a graphic showed comparisons and contrasts? *(The signal words might appear in the caption, but they might also be left out so that the reader can draw his or her own conclusions.)* Can you describe the graphics using compare and contrast signal words? *(If they can, then the graphic most likely shows some kind of comparison or contrast.)*

Compare & Contrast Lesson C: *Cultural Groups* (Soc)


Standards Addressed: Soc 4.1.7, 4.1.11, 4.1.13, 4.4.1, 4.5.3 Compare & Contrast – *Social Studies*

LESSON 2

Cultural Groups in Indiana

MAIN IDEA

Indiana is made up of people from many diverse cultural groups.

VOCABULARY

cultural group
employ
Hispanic
immigrant
pacifism
utopia

A **cultural group** is a group of people who share common language, religion, and customs. Many cultural groups helped Indiana become a more interesting place to live. Due to the differences in their cultures, cultural groups have often faced challenges throughout Indiana history.

Quakers Arrive in Indiana

Indiana has more Quakers than any other state. Many Quakers moved to the Indiana Territory from the southern United States because the Indiana Territory did not allow slavery. Quakers believe that all men are created equal. They built many communities in eastern Indiana. Many Quaker buildings are found in cities such as Richmond and Fountain City.

Levi Coffin was a Quaker who helped many slaves escape to freedom. Today, you can visit his house in Fountain City.

Even though slavery was not allowed in Indiana, Quakers still faced challenges because of their beliefs. One challenge that many Quakers faced during the Civil War involved their pacifism. **Pacifism** is opposition to war as a means of resolving conflicts. Because they were pacifists, many Quakers refused to fight in the Civil War. Some Quakers were even put in jail because they refused to fight. ★

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A) Write one of the compare and contrast signal words found on this page.

1

A) Write one of the compare and contrast signal words found on this page.

1 pt Accept any of the following: share, common, differences, more, or diverse.

Follow-Up Activities

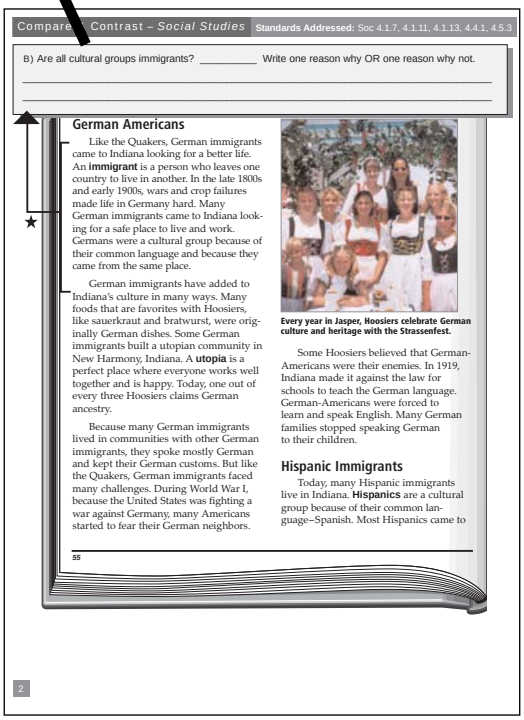
Additional Practice:

- Choose two or three items from a textbook lesson to compare. Have students create a chart to help them categorize differences and similarities. Ask them to pay special attention to how the headings are used to show the items being compared and contrasted.
- Students often have difficulty finding similarities between seemingly dissimilar objects. Place a number of items, such as a pencil, a piece of paper, a wooden ruler, lunchbox, ball, etc., in a bag. Ask students to take two items out of the bag and write a sentence stating how the two items are similar. (e.g., The ruler and the paper both come from a tree.) After this activity, move to reading two paragraphs and have students state how the ideas in both paragraphs are similar.

Compare & Contrast Lesson C: *Cultural Groups* (Soc)

B) Are all cultural groups immigrants? *1 pt Yes/No* Write one reason why OR one reason why not.

1 pt All of the groups discussed in the lesson came to America from somewhere else; the Quakers moved to Indiana from the Southern United States; Native Americans are a cultural group that isn't made of immigrants; or any other appropriate response that corresponds to the yes/no answer given above.


Compare & Contrast – *Social Studies* **Standards Addressed:** Soc 4.1.7, 4.1.11, 4.1.13, 4.4.1, 4.5.3

B) Are all cultural groups immigrants? _____ Write one reason why OR one reason why not.

German Americans

Like the Quakers, German immigrants came to Indiana looking for a better life. An **immigrant** is a person who leaves one country to live in another. In the late 1800s and early 1900s, wars and crop failures made life in Germany hard. Many German immigrants came to Indiana looking for a safe place to live and work. Germans were a cultural group because of their common language and because they came from the same place.

German immigrants have added to Indiana's culture in many ways. Many foods that are favorites with Hoosiers, like sauerkraut and bratwurst, were originally German dishes. Some German immigrants built a utopian community in New Harmony, Indiana. A **utopia** is a perfect place where everyone works well together and is happy. Today, one out of every three Hoosiers claims German ancestry.

Because many German immigrants lived in communities with other German immigrants, they spoke mostly German and kept their German customs. But like the Quakers, German immigrants faced many challenges. During World War I, because the United States was fighting a war against Germany, many Americans started to fear their German neighbors.

Every year in Jasper, Hoosiers celebrate German culture and heritage with the Strassenfest.

Some Hoosiers believed that German-Americans were their enemies. In 1919, Indiana made it against the law for schools to teach the German language. German-Americans were forced to learn and speak English. Many German families stopped speaking German to their children.

Hispanic Immigrants

Today, many Hispanic immigrants live in Indiana. **Hispanics** are a cultural group because of their common language–Spanish. Most Hispanics came to

55

2

Follow-Up Activities (cont.)

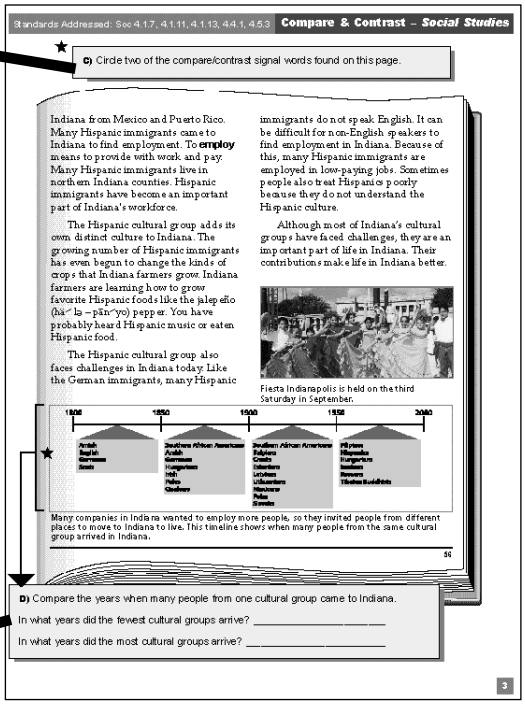
Extension:

- Have students find or create two graphics (one, but not both can be a chart) that show three points of comparison and contrast. Then have students trade graphics and see if they can also identify how comparison/contrast is being shown. Ask students to use signal words to describe them.
- Have students do some brief research about other figures who were active in the abolition movement and/or the Underground Railroad (e.g., Frederick Douglas, William Lloyd Garrison, Harriet Tubman). Have them compare these figures to the Coffins either through a chart, a Venn diagram, or a short paragraph.

Compare & Contrast Lesson C: *Cultural Groups* (Soc)

C) Circle two of the compare/contrast signal words found on this page.

2 pts Accept any of the following for 1 pt each: like, also, distinct, most, different, or same.


Standards Addressed: Soc 4.1.7, 4.1.11, 4.1.13, 4.4.1, 4.5.3 **Compare & Contrast – *Social Studies***

C) Circle two of the compare/contrast signal words found on this page.

Indiana from Mexico and Puerto Rico. Many Hispanic immigrants came to Indiana to find employment. To **employ** means to provide with work and pay. Many Hispanic immigrants live in northern Indiana counties. Hispanic immigrants have become an important part of Indiana's workforce.

The Hispanic cultural group adds its own distinct culture to Indiana. The growing number of Hispanic immigrants has even begun to change the kinds of crops that Indiana farmers grow. Indiana farmers are learning how to grow favorite Hispanic foods like the jalapeño (hä" lə –pēn"yō) pepper. You have probably heard Hispanic music or eaten Hispanic food.

The Hispanic cultural group also faces challenges in Indiana today. Like the German immigrants, many Hispanic immigrants do not speak English. It can be difficult for non-English speakers to find employment in Indiana. Because of this, many Hispanic immigrants are employed in low-paying jobs. Sometimes people also treat Hispanics poorly because they do not understand the Hispanic culture.

Although most of Indiana's cultural groups have faced challenges, they are an important part of life in Indiana. Their contributions make life in Indiana better.

Fiesta Indianapolis is held on the third Saturday in September.

Many companies in Indiana wanted to employ more people, so they invited people from different places to move to Indiana to live. This timeline shows when many people from the same cultural group arrived in Indiana.

D) Compare the years when many people from one cultural group came to Indiana.

In what years did the fewest cultural groups arrive? _____

In what years did the most cultural groups arrive? _____

D) Compare the years when many people from one cultural group came to Indiana.

In what years did the fewest cultural groups arrive? *1 pt 1800-1850*

In what years did the most cultural groups arrive? *1 pt 1900-1950*

Cross-Curricular Ties

- *E/LA 4.7.1* - Ask thoughtful questions and respond orally to relevant questions with appropriate elaboration.

Suggested Activity: Invite classroom guests that can talk about other cultures. Ask students to write down questions to ask the speaker.

- *Soc 4.5.2* - Identify the different types of social groups to which people belong and the functions these groups perform.

Suggested Activity: Discuss other groups that students may be members of (e.g.g. Boy Scouts, temples, softball, etc.) Compare social groups to cultural groups.

- *E/LA 4.7.3* - Identify how language usage (sayings and expressions) reflects regions and cultures.

Suggested Activity: Compare and contrast how sayings and words are used in various parts of the state and country (i.e., *pop/soda*, *pocketbook/purse/handbag*, *bathroom/restroom*, *grammar school/elementary school*, *backpack/knapsack*, *water fountain/drinking fountain/bubbler*, etc.).

Compare & Contrast Lesson C: *Cultural Groups* (Soc)

Compare & Contrast – *Social Studies* **Standards Addressed:** Soc 4.1.7, 4.1.11, 4.1.13, 4.4.1, 4.5.3

Review Questions *1 pt each for a total of 7 pts*

Below is a chart that will help you compare and contrast the three cultural groups that you read about. Use information from the lesson to fill in the blanks. Some of the blanks have been done for you. Then use the chart to answer the questions below.

WHO	*The Quakers*	*German Immigrants*	*Hispanic Immigrants*
WHEN did the most members of the cultural group arrive in Indiana?	*Heaviest immigration 1850-1900*	*1880-1929*	*1980 - today*
WHERE	*Eastern Indiana, Richmond, Fountain City, etc.*	*all over Indiana: especially Northern Indiana*	*Throughout Indiana, especially northern Indiana*
WHY	*came to the Indiana Territory because it did not allow slavery*	*to find jobs, for food, to escape war, find a better life*	*come to Indiana to find employment; to find a better life*
HOW did they contribute to Indiana?	*helped slaves escape to freedom; built buildings*	*foods (sauerkraut, etc.) utopian community*	*supply Indiana with workers; Hoosiers today eat Mexican foods and enjoy Hispanic music*
WHAT challenges did they face?	*refused to fight in civil war, pacifism, etc.*	*fear of Germans during World War I; German language banned in Indiana schools in 1919*	*language difficulties, low paying jobs, etc.*

1. Which two cultural groups faced challenges because of their language?

2 pts *Germans and Hispanics*

2. Write one thing that made the Quakers different from the German immigrants. _____

3. What is one thing that is the same about the Quakers and Hispanic immigrants? What is one thing that is different?

4. Write one reason why all three cultural groups came to Indiana. *1 pt* *All cultural groups wanted to make a living in Indiana, have a better life, or any other appropriate response*

4

1 pt *Any of the following: they spoke English; they moved to Indiana from the Southern US (they didn't come directly from another country); they settled primarily in Eastern Indiana; they came to Indiana because it didn't allow slavery; the challenges they faced were different (they were against slavery and refused to fight in the Civil War).*

1 pt Same: Both groups were looking for a better life; both groups faced challenges; both live in Indiana today; or any other appropriate response.
1 pt Different: Quakers were already living in the U.S.; Hispanics came here from other countries; they spoke different languages; most of the Quakers in Indiana came in the 19th century–most of the Hispanic immigrants came in recent years; they live in different parts of Indiana; Quakers came to avoid slavery–Hispanics came to find employment/work; their contributions to Indiana are different; or any other appropriate response.

Appendix A

100%

INCREASE IN
SOCIAL STUDIES

80% in Science

Vocabulary:

- Grade four students must learn twice as many vocabulary words per page in social studies and nearly twice as many in science.
- Vocabulary includes only words identified by textbook publishers as vocabulary words that students must know for chapter tests.

Difficult Words in Context:

- In order to understand their lessons, grade four students must grapple with almost three times as many difficult words in their science books and more than twice as many in their social studies books.
- Difficult words in context are words that are defined or pronounced within the text but not identified by the publishers as vocabulary words.

167%

INCREASE IN
SCIENCE

129% in Social Studies

77%

INCREASE IN
SOCIAL STUDIES

15% in Science

Number of Words Per Page:

- Grade four students must read an additional 92 words per page in social studies and 20 words per page in science.
- To accomodate these additional words, grade four social studies textbooks use significantly smaller type and leave less space between letters.

Difficult Syntax:

- In order to understand their lessons, grade four students must unravel a far greater number of syntactically difficult sentences per page in order to understand their lessons
- These are defined by the number of complex and compound sentences.

77%

INCREASE IN
SOCIAL STUDIES

57% in Science

135%

INCREASE IN
SOCIAL STUDIES

107% in Science

Left Embedded Syntax:

- Grade four students must grapple with nearly two and a half as many syntactically complex sentences in social studies and more than twice as many in science.
- These include sentences beginning with subordinate clauses or other left-embedded syntax structures which are difficult for developing readers.

Indiana-Adopted Textbooks

Appendix A

Used in Research

Social Studies

Harcourt School. *Indiana*, Grade 4, 1997
Harcourt School. *Living in Our World*, Grade 3, 1997
Houghton Mifflin. *Explore Indiana,* Grade 4, 1997.
Houghton Mifflin. *Share Our World,* Grade 3, 1997.
Macmillan/McGraw-Hill. *Indiana,* Grade 4, 1997.
Scott Foresman Social Studies. *Communities,* Grade 3, 2003.
Scott Foresman Social Studies. *Indiana,* Grade 4, 2003.
Silver Burdett Ginn. *Indiana USA,* Grade 4, 1997.

Science

McGraw-Hill. *Science*, Grade 3, 2000.
McGraw-Hill. *Science*, Grade 4, 2000.
Scott Foresman. *Discover Science,* Grade 3, 1993.
Scott Foresman. *Discover Science,* Grade 4, 1993.
Scott Foresman. *Discover the Wonder,* Grade 3, 1996.
Scott Foresman. *Discover the Wonder*, Grade 4, 1996.
Scott Foresman. *Science,* Grade 3, 2000.
Scott Foresman. *Science,* Grade 4, 2000.
Silver Burdett Ginn. *Discovery Works*, Grade 4, 1999.

Appendix B

The Scientifically-Based Reading Research (SBRR) Behind ITRI

ITRI incorporates seven scientifically proven reading comprehension strategies identified by the National Reading Panel.

The National Reading Panel identified proven reading comprehension strategies such as comprehension monitoring, cooperative learning, graphic organizers, question answering, question generating, summarization, and the use of multiple strategies. ITRI incorporates all of these strategies.

- **Comprehension monitoring** involves making students aware of the text so that they can use appropriate comprehension strategies. It asks students to engage in "thinking about thinking." Comprehension monitoring has been proven to improve performance on standardized tests of reading comprehension. ITRI incorporates this strategy through the teaching of text structure and by drawing student attention to the features of information text.
- **Cooperative learning** encourages students to work together to increase comprehension. Cooperative learning has been scientifically proven to increase comprehension and to boost performance on standardized tests. Each ITRI lesson begins with a large group activity aimed at activating prior knowledge and closes with a group grading and discussion section in which students share their answers and reading strategies and learn from each other.
- **Graphic organizers** help students visualize the relationships between important ideas. They have been proven to improve memory and to boost performance in social studies and science. ITRI incorporates a number of graphic organizers as study skills, including webs, concept maps, cause and effect diagrams, time lines, and KWL charts.
- **Question answering** is a strategy in which teachers pose questions and guide students to the appropriate answers. It has been proven effective in increasing comprehension in grades three through eight. ITRI models this strategy through the use of Guided Reading Boxes which pose questions and guide students to the appropriate passages of the text. Teachers facilitate this process through the in-class discussion session which follows each ITRI lesson.
- **Question generating** encourages students to ask who, what, where, when, why, and how questions as they read. The Guided Reading Boxes that appear in all ITRI lessons model this strategy by asking students the kinds of questions that proficient readers ask themselves. ITRI is designed so that students will internalize the process of generating questions and begin to employ it independently when reading.
- **Summarization** involves picking out the main idea of a passage and identifying the degree of importance of the supporting details. Although this skill is usually measured in grades five and six, Grade Four ITRI prepares students to succeed in later grades by emphasizing main idea and detail as one important reading skill area.

- **Multiple strategies** approaches encourage students to employ multiple comprehension strategies simultaneously. Studies have shown that students whose teachers use demonstrations, guiding, modeling, and scaffolding show improvement on standardized tests. ITRI lessons employ multiple strategies through a variety of Guided Reading Boxes, which help mediate student reading of the text. ITRI also encourages the teacher to adopt multiple strategies during pre-reading activities and post-reading discussions and extension activities.

Source:

National Reading Panel (2000), Report of the National Reading Panel, Washington, D.C.

ITRI incorporates those skills that have been identified as most important to elementary school students.

Research consistently demonstrates that skilled readers ask themselves questions about content, are aware of narrative organization and the design of the page, think about what they do and do not know about a subject, and actively apply what they read to their own experiences. Research has also demonstrated that these skills can be directly taught. ITRI uses Guided Reading Boxes, which help model effective reading strategies. ITRI also focuses student attention on text structure through an emphasis on signal words and common text structures such as main idea and details or compare and contrast. It also encourages students to focus on text features such as graphics, headings, boldface print, etc. A teacher-led in-class grading discussion reinforces these skills by encouraging students to share reading strategies and learn from one another.

Sources:

Bakken, J. P., and C. K. Whedon. 2002. Teaching text structure to improve reading comprehension. *Intervention in School and Clinic* 37:229-33.

Olson, M. W., and T. C. Gee. 1991. Content reading instruction in primary grades: perception and strategy. *The Reading Teacher* 45:298-307.

Pressley, M., and R. Wharton. 1997. Skilled comprehension and its development through instruction. *School Psychology Review* 26:448-67.

ITRI uses techniques proven to aid in the development of reading comprehension skills.

Study skills, such as graphic organizers and KWL charts, have been proven to help students activate background knowledge, strengthen meta-cognitive skills, promote use of decoding strategies, strengthen a student's ability to construct meaning, and reinforce an understanding of text structure. ITRI teaches eight distinct study skills. Because of the selected focus, which allows multiple opportunities to practice the skill, ITRI maximizes students' familiarity with these skills, thereby promoting increased comprehension.

Sources:

Alverman, D. E. 1981. The compensatory effect of graphic organizers on descriptive text. *Journal of Educational research* 75:44-48.

Armbruster, B., and W. Nagy. 1992. Vocabulary in content area lessons. *The Reading Teacher* 45:550-51.

Olson, M. W., and T. C. Gee. 1991. Content reading instruction in primary grades: perception and strategy. *The Reading Teacher* 45:298-307.

ITRI uses methods proven to help students improve vocabulary acquisition.

Studies demonstrate that students learn vocabulary better when they are given instruction on how to use the text itself to make sense of challenging words. ITRI has two sets of vocabulary lessons, both of which focus on strategies to help students make sense of challenging words. Because ITRI was designed to model Indiana's adopted textbooks in the number of words, vocabulary terms, and difficult words not identified as vocabulary terms per page, as well as in syntactical difficulty, skills learned though ITRI are easily transferable to the textbook.

Sources:

Armbruster, B., and W. Nagy. 1992. Vocabulary in content area lessons. *The Reading Teacher* 45:550-51.

ITRI Instructional Tool in Alphabetical Order	Standards in Social Studies	Standards in Science
The Battle of Tippecanoe (MD)	4.1.2, 4.1.3, 4.3.10	
Catching a Cold (CE)	4.4.1	4.1.7, 4.4.10, 4.4.11
Changes in Indiana Farming (CE)	4.1.12, 4.4.1, 4.4.8	4.1.7, 4.2.4, 4.4.7
Cultural Groups in Indiana (CC)	4.1.7, 4.1.11, 4.1.13, 4.4.1, 4.5.3	
The Cycle of the Tulip Poplar (S)	4.2.5	4.4.3, 4.4.5, 4.6.4
Dinosaur Water (G)	4.3.7	4.2.4, 4.3.2, 4.5.4
Experiment: Friction (CE)	4.1.11	4.3.12
How Does Popcorn Pop? (CV)	4.4.1, 4.4.5	4.4.4
The Ice Age in Indiana (DW)	4.3.6, 4.3.10	4.3.5, 4.3.7
Indiana Artifacts (SP)	4.1.1, 4.4.1	4.4.8
Indiana Becomes a State (S)	4.1.3, 4.1.4, 4.3.10	
The Indiana Dunes (CV)	4.2.5, 4.3.5	4.3.2, 4.3.5, 4.3.7
Indiana Insects		4.2.4, 4.3.11, 4.6.4
Indiana Limestone: How on Earth? (DW)	4.4.1, 4.4.5	4.3.6
Indiana Tax Dollars (G)	4.4.9	4.2.4, 4.5.4
Indiana Transportation: Railways to Highways (SP)	4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.5.5	4.1.8
Jonathan Jennings (S)	4.1.6, 4.1.13, 4.2.4, 4.3.10	
Our Planet Earth (CV)	4.3.7	4.3.2
Saltwater and Freshwater (MD)		4.3.3, 4.3.5, 4.3.6
State Government (DW)	4.1.4, 4.1.6, 4.2.3, 4.2.4	
Sun and Shadows (G)	4.3.3	4.2.4, 4.3.9, 4.5.4
Telescopes and Microscopes (CC)		4.1.1, 4.1.4, 4.1.5, 4.1.8, 4.4.1, 4.4.7
Waterways to Railways (SP)	4.1.6, 4.1.9, 4.3.8, 4.3.10, 4.4.1	4.1.8
The West Baden Springs Hotel (MD)	4.1.9, 4.1.11, 4.4.1, 4.4.7	4.3.6

Reading Comprehension Skill Code

CC Compare and Contrast
CE Cause and Effect
CV Conceptual Vocabulary
DW Difficult Words
G Graphics
MD Main Idea and Details
S Sequence
SP Skimming and Predicting

Chart of Academic Standards Addressed Across the Curriculum

Appendix D

ITRI Instructional Tool in Order	Standards in English/Language Arts	Standards in Mathematics	Standards in Social Studies	Standards in Science
How Does Popcorn Pop?	4.2.1, 4.2.2		4.4.1, 4.4.5	4.4.4
The Indiana Dunes	4.1.3, 4.2.1,4.2.2, 4.2.5		4.2.5, 4.3.5	4.3.2, 4.3.5, 4.3.7
Our Planet Earth	4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3	4.1.1	4.3.7	4.3.2
The Ice Age in Indiana	4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.4	4.1.1	4.3.6, 4.3.10	4.3.5, 4.3.7
Indiana Limestone: How on Earth?	4.2.1, 4.2.2, 4.2.3, 4.2.4	4.1.1	4.4.1, 4.4.5	4.3.6
State Government	4.1.2, 4.2.1, 4.2.2, 4.2.3		4.1.4, 4.1.6, 4.2.3, 4.2.4	
Sun and Shadows	4.2.1, 4.2.2	4.6.2	4.3.3	4.1.1, 4.2.4, 4.3.9, 4.5.4
Dinosaur Water	4.1.3, 4.2.1, 4.2.2	4.6.1	4.3.7	4.2.4, 4.3.2, 4.5.4
Indiana Tax Dollars	4.2.1, 4.2.2	4.1.8, 4.6.1, 4.6.2, 4.2.10	4.4.9	4.2.4, 4.5.4
Indiana Transportation: Railways to Highways	4.2.1, 4.2.2, 4.2.3		4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.5.5	4.1.8, 4.2.4, 4.5.4
Indiana Artifacts	4.2.1, 4.2.2, 4.2.3	4.1.1	4.1.1, 4.4.1	4.4.8
Waterways to Railways	4.2.1, 4.2.2, 4.2.3		4.1.6, 4.1.9, 4.3.8, 4.3.10, 4.4.1	4.1.8
Catching a Cold	4.2.1, 4.2.2, 4.2.3, 4.2.6		4.4.1	4.1.7, 4.4.10, 4.4.11
Experiment: Friction	4.2.1, 4.2.2, 4.2.3, 4.2.6		4.1.11	4.3.12
Changes in Indiana Farming	4.2.1, 4.2.2, 4.2.3, 4.2.6	4.1.1	4.1.12, 4.4.1, 4.4.8	4.1.7, 4.2.4, 4.4.7
The West Baden Springs Hotel	4.2.1, 4.2.2, 4.2.3	4.1.1	4.1.9, 4.1.11, 4.4.1, 4.4.7	4.3.6
Saltwater and Freshwater	4.2.1, 4.2.2, 4.2.3			4.3.3, 4.3.5, 4.3.6
Battle of Tippecanoe	4.2.1, 4.2.2, 4.2.3	4.1.1	4.1.2, 4.1.3, 4.3.10	
Jonathan Jennings	4.1.3, 4.2.1, 4.2.2	4.2.1	4.1.6, 4.1.13, 4.2.4, 4.3.10	
The Cycle of the Tulip Poplar	4.2.1, 4.2.2	4.1.1	4.2.5	4.4.3, 4.4.5, 4.6.4
Indiana Becomes a State	4.2.1, 4.2.2	4.1.1	4.1.3, 4.1.4, 4.3.10	
Telescopes and Microscopes	4.2.1, 4.2.2, 4.2.5			4.1.1, 4.1.4, 4.1.5, 4.1.8, 4.4.1, 4.4.7
Indiana Insects	4.2.1, 4.2.2, 4.2.5	4.1.1, 4.7.4		4.2.4, 4.3.11, 4.6.4
Cultural Groups in Indiana	4.2.1, 4.2.2, 4.2.5		4.1.7, 4.1.11, 4.1.13, 4.4.1, 4.5.3	

Glossary for Teacher Use

Appendix E

bar graph a graphic that uses parallel bars or rectangles to illustrate how different groups are related. A bar graph makes differences between groups readily apparent.

bold/bolded type thick, dark type that is used to indicate important information. Textbooks sometimes use italics or underline words as well. In ITRI lessons, bold type is used to indicate vocabulary words.

caption written information that appears near a graphic. Captions may summarize or add to the information provided in the printed text, or they may describe the graphic.

chart a graphic that organizes and displays information, often to show how different objects or groups are related. A chart is a useful tool for comparing and contrasting people, objects, and ideas.

column a section of a text that is printed vertically on the page. In ITRI social studies lessons, pages are printed with two columns on a page, separated by white space. ITRI science lessons are printed with only one wide column per page.

definition the meaning of a word.

description a statement that provides details about a person, object, or event.

diagram a graphic that displays information visually.

flow chart a graphic that uses lines or arrows to illustrate the sequence of events or the movement of resources.

glossary a small dictionary included within a book which defines important terms used in the text. Words appear in a glossary in alphabetical order.

graph a chart used to show relationships between numbers.

graphic any illustration or visually-represented information in a text. Graphics include charts, graphs, photographs, illustrations, etc.

graphic organizer a picture that shows the relationship between ideas. Webs and concept maps are kinds of graphic organizers.

Guided Reading Boxes boxes that are outside and separate from the text; used to address a specific E/LA reading skill. Guided Reading boxes help to mediate the student's reading of the text, by modeling questions that students ought to ask as they read, or by directing their attention to important features of the text or to important text structures.

heading a line of text above a paragraph or section. A heading provides a title for the paragraph or section that follows, and often indicates its main idea. Headings help students understand how a lesson is organized.

illustration a graphic. Usually a picture or other visual information that is used to enhance a text. An illustration may add information or clarity to a written text, or it may merely decorate it.

index a list of the information that is contained in a text. An index provides each page number on which specific information appears.

italicized slanted type used to identify words being discussed. For example, "the word *botanist* means a scientist who studies plants and trees."

lesson a unit in a textbook that discusses a specific topic. Each ITRI lesson is approximately three pages long.

map a graphic that illustrates the features of any part of the Earth or sky.

outline a description of the main idea or most important points of a book, chapter, paragraph, lesson, etc.

paragraph the building blocks of a lesson. A paragraph is a group of sentences that are all related to a central topic. A paragraph is made up of a main idea and supporting details.

pie chart a circular chart that shows the relationship of one part to a whole. A pie chart is a fast way to illustrate percentages.

review questions questions that appear at the end of each ITRI lesson. These questions test both the student's understanding of the content of the lesson, and his or her ability to apply the specific E/LA skill.

section the building block of a lesson; lessons are divided into sections, with each section having its own heading (sub-heading). A section may be composed of more than one paragraph.

sentence the building block of a paragraph. A sentence has a noun and a verb and ends with a punctuation mark (period, question mark, or exclamation mark). In ITRI, sentences are usually identified as either main ideas or details.

signal words/phrases words or phrases that provide clues to a text's organization and structure. For example, *before* and *after* are signal words for sequence, while *cause* and *because* are signal words for cause and effect, and *both* and *unlike* are signal words for compare and contrast.

subheading a smaller heading that is used under another heading to divide a section. A subheading signals a move to a slightly different, though related topic. Subheadings help students understand how a lesson is organized.

table of contents a written plan that shows how a book is organized. The table of contents helps students find information and understand how it is organized.

text the written part of a lesson, or the lesson (or book) itself.

title the name given to a book, chapter, or lesson.

topic the subject of a sentence, paragraph, lesson, chapter, book, etc.

Appendix F

Scoring Sheet: ITRI Assessments

CLASS Total									
CLASS Average									

		#1	#2	#3	#4	#5	#6	#7	#8
	Multiple Choice Questions	Conceptual Vocabulary	Difficult Words	Graphics	Skimming and Predicting	Cause and Effect	Main Idea and Details	Sequence	Compare and Contrast
Name									
	Screen Tool								
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Scoring Sheet: ITRI Lessons

Skill Area: _____

Student Name	_____ Study Skill	_____ Science	_____ Social Studies

ITRI Acknowledgments

Abbreviations used to describe placement on the page are as follows: (T) top, (B) bottom, (INS) inset, (C) center, (L) left, and (R) right.

Assessments

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We would also like to thank the following fourth grade teachers who participated in the 2004-2005 field test of the Grade 4 ITRI materials, and whose detailed feedback has been invaluable in improving these materials for classroom use:

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Kathy Lyon, Attica Elementary
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ITRI
INFORMATIONAL TEXT READING INVENTORY

Grade 4

Student Materials

Developed by the Center for Innovation in Assessment in conjunction with the Indiana Department of Education

Main Idea

Levi and Catharine Coffin were famous Hoosiers who helped many slaves reach freedom through the Underground Railroad.

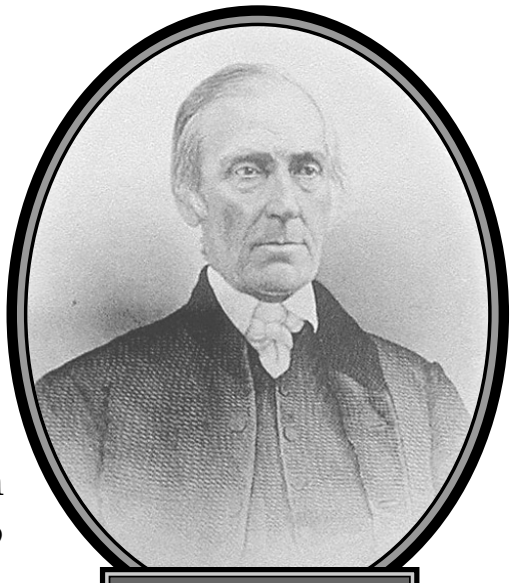
Vocabulary

fugitive slaves

Quaker

Underground Railroad

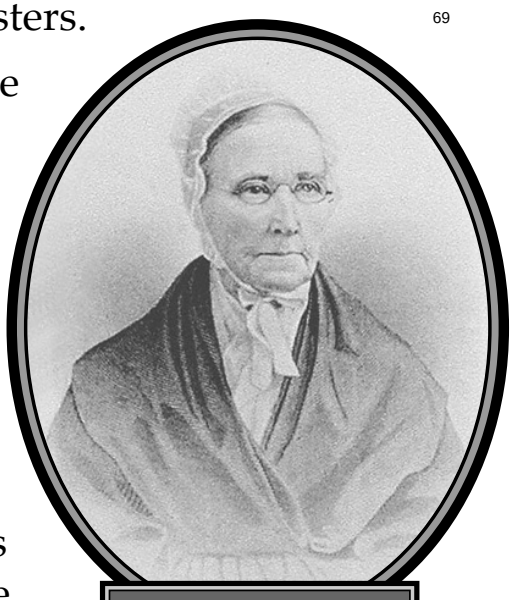
The Coffins



Levi Coffin

Levi Coffin was born in 1789. As a child he lived in the state of North Carolina. There were many slaves there. Levi saw many masters hurting their slaves. It made him sad. Levi wanted to help the slaves. But he didn't know how to help them. Levi knew that he would help the slaves when he grew up. His dream was to help free them from their masters.

69



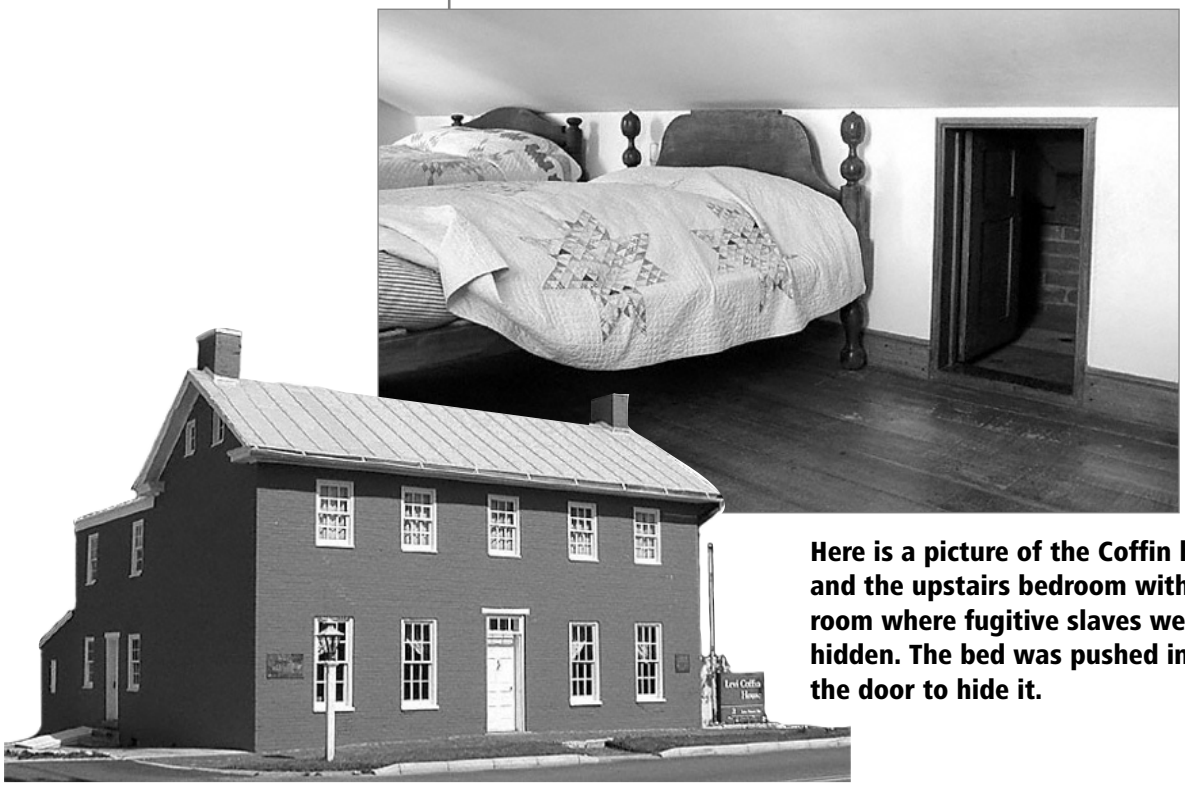
Catharine Coffin

When Levi grew up he met Catharine White. She wanted to help slaves too. They were married in 1824. In 1826 Catharine, Levi, and their son moved to Indiana. They made the town of Newport their home. Today Newport is called Fountain City. The Coffins opened a store and built a house for themselves. They moved to Newport because there were many other people living there who belonged to the Quaker religion.

141

The Coffins were Quakers. **Quakers** call their church the Society of Friends and believe that all people are equal. Most Quakers believed that people should not have slaves. The state of Indiana was called a free state because it did not allow people to own slaves. That was why many Quakers moved to Indiana. 195

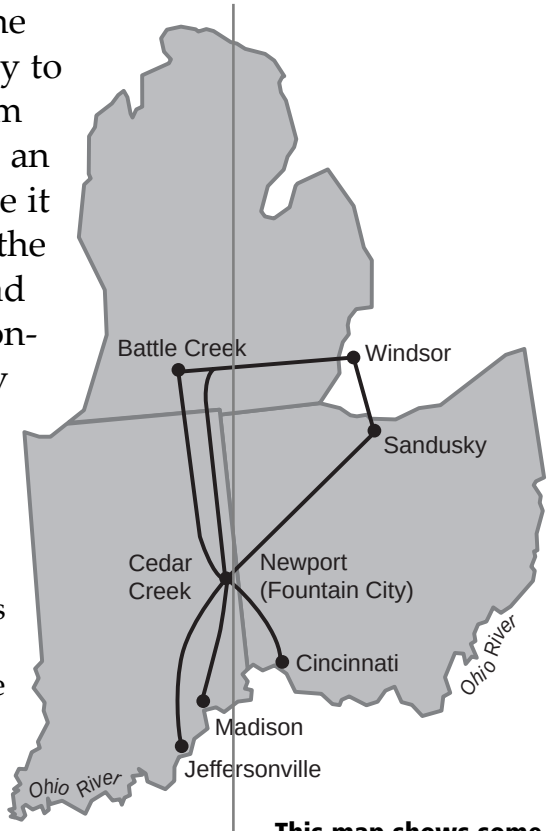
The Coffins began to help slaves escape. They became a part of the Underground Railroad. **The Underground Railroad** was made up of people who helped slaves escape and reach free states or Canada. The Underground Railroad didn't use a train and it wasn't under the ground. It was called *underground* because it was secret or hidden, and *railroad* because, like a real railroad, it had many stops along the way. These stops gave slaves a chance to rest before going to the next stop. 279



Here is a picture of the Coffin house and the upstairs bedroom with a secret room where fugitive slaves were hidden. The bed was pushed in front of the door to hide it.

The Coffin family's house was one stop on the Underground Railroad. It was built especially to hide runaway slaves. There was a secret room where slaves could hide. The house also had an indoor well. This was very important because it allowed the Coffins to get enough water for the many slaves hidden in their home. If they had used an outdoor well, people might have wondered why they needed so much water. They might have been caught. The **fugitive slaves**, or runaway slaves, might have been returned to their masters. 370

The Coffins lived in Newport for 20 years. During that time, they helped more than 2000 slaves escape. The Coffins were very successful in their work for the Underground Railroad. No slaves were ever found in the Coffin's home. The slaves that they helped were not returned to slavery. Levi Coffin was so successful in helping fugitive slaves that he was sometimes known as the president of the Underground Railroad. 440



This map shows some of the major routes on the Underground Railroad.

In 1847, the Coffin family left Indiana. They moved to Cincinnati, Ohio, where Levi worked selling free labor goods. Free labor goods are products that are manufactured without slave labor. These products were sold to abolitionists (people who were against slavery). Abolitionists did not want to buy products that were manufactured using slave labor. They did not want to support slavery. Abolitionists were willing to pay more for products manufactured using free labor. 513

The Coffins continued to help fugitive slaves during their new life in Ohio. They remained an important part of the Underground Railroad. While living in Cincinnati they helped 1300 fugitive slaves reach Canada. This means that the Coffins helped a total of more than 3300 fugitive slaves find freedom. That is equal to the number of people in some small towns in Indiana! 576

Today the Levi Coffin House is a historical building. The State of Indiana bought the house in 1967 because it is such an important part of Indiana state history. Visitors to Fountain City can tour the house and see the indoor well and the secret room that helped the Coffin family hide slaves. 629

Review Questions

1. In this lesson *Quaker* means a person who _____.
   - ○ moves to a new state
   - ○ wears old-fashioned clothes
   - ○ joins the Society of Friends
   - ○ owns a lot of slaves

2. A free state is a state that _____.
   - ○ gives away land for free
   - ○ allows Quakers
   - ○ does not allow slavery
   - ○ makes free trade goods

3. One trick the Coffins used to hide slaves was to _____.
   - ○ hide them under quilts
   - ○ dress them like Quakers
   - ○ push a bed in front of a door
   - ○ cover all of the upstairs windows

4. Which of the following was a bolded vocabulary word in this lesson?
   - ○ manufactured
   - ○ fugitive slaves
   - ○ abolitionist
   - ○ free labor

5. Many Quakers moved to Indiana because _____.
   - ○ it was a free state
   - ○ it had good transportation
   - ○ they liked Indians
   - ○ they wanted to own slaves

6. What was the main idea of this lesson?
   - ○ Quakers believe that all people are equal.
   - ○ Today the Levi Coffin house is a historical building.
   - ○ Abolitionists are people who are against slavery.
   - ○ Levi and Catharine Coffin helped many slaves escape.

7. What happened last? Levi Coffin _____.
   - ○ lived in Cincinnati
   - ○ moved to Indiana
   - ○ lived in North Carolina
   - ○ became part of the Underground Railroad

8. One thing that was different about the Coffins' lives after they left Indiana and moved to Ohio was that they _____.
   - ○ were Quakers
   - ○ were abolitionists
   - ○ helped slaves escape
   - ○ sold free labor goods

Discover

What causes day and night? What causes the seasons?

Science Words

axis an imaginary line that runs through the Earth from the South Pole to the North Pole

rotate to spin all the way around

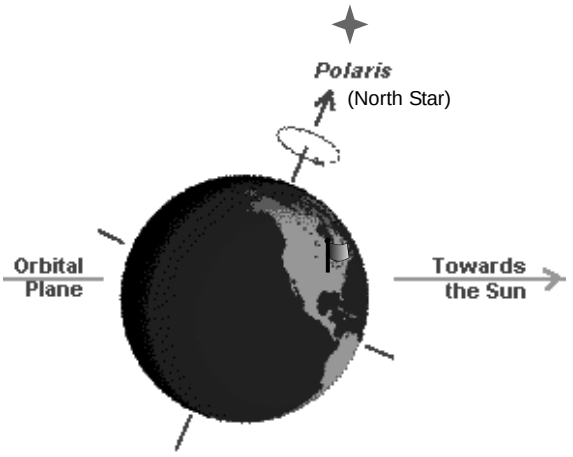
revolve to move in a circle around something

Earth and Sun System

You probably have a favorite season. You may like to play in the leaves in the fall or in the snow in the winter. Or you may like to plant flowers and vegetables in the spring or go swimming in the summer. All four of these seasons are the result of the position of the Earth and the sun. So are night and day.

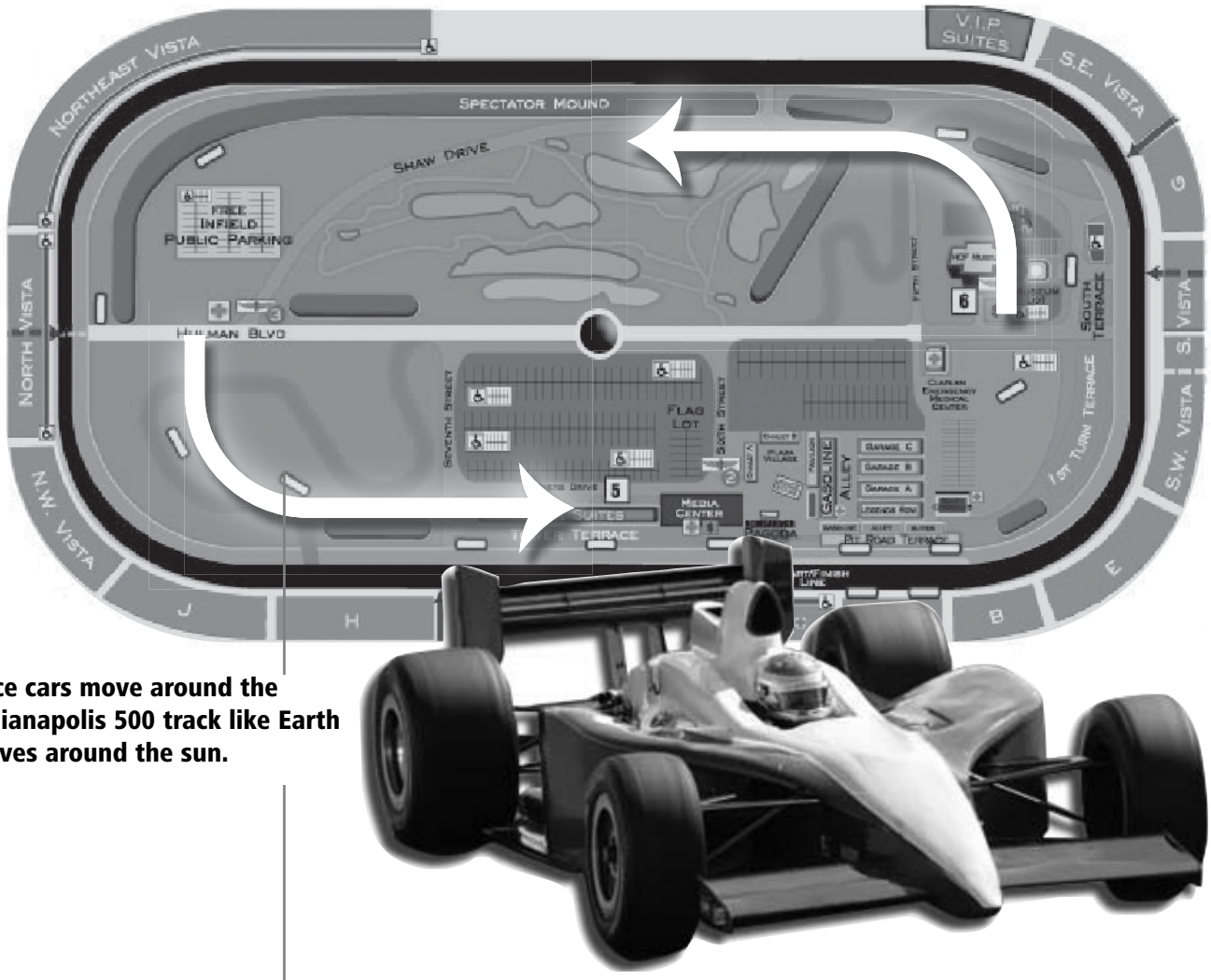
Earth's Rotation Causes Night and Day

The Earth is always moving. Earth rotates, or spins all the way around, every 24 hours. As the Earth rotates, different parts of it face the sun at different times. When Indiana faces the sun, for example, we have daylight. We have nighttime when Indiana is turned away from the sun. When it is nighttime in Indiana, it is daytime on the other side of the Earth. Since Japan is on the other side of the Earth, what time do you think it is in Japan when you are eating your lunch?



Earth rotates every 24 hours. It is daytime in Indiana in this picture.

Look at the picture above. Earth turns around on its axis. The axis is an imaginary line that runs through the Earth from the South Pole to the North Pole. Earth rotates around its axis. As you can see from the picture, Earth's axis points toward the North Star. Because the Earth tilts, or leans to one side, as it rotates, the axis points toward the North Star at a tilt. The position of the axis never changes, even as Earth rotates.



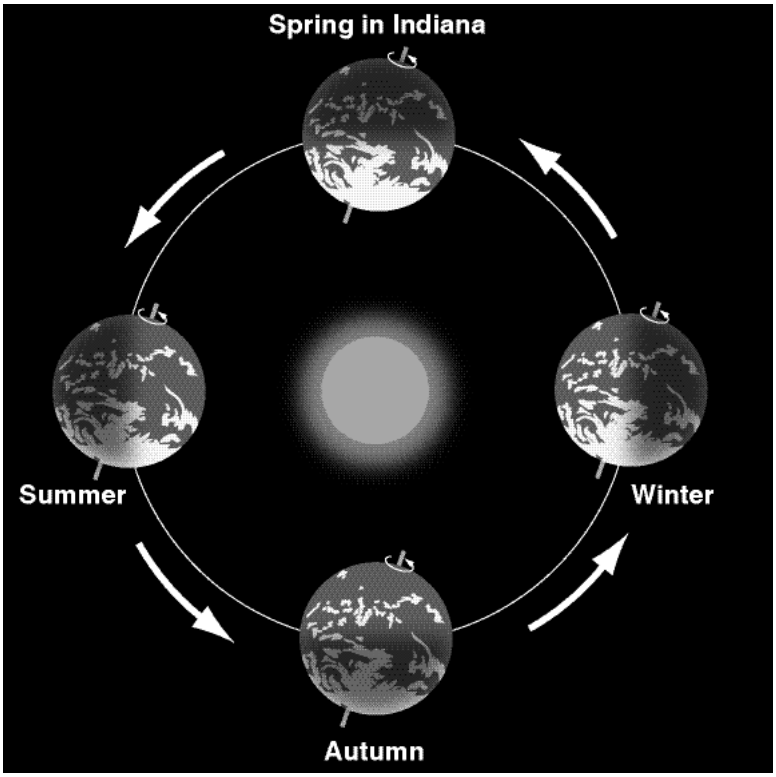
Race cars move around the Indianapolis 500 track like Earth moves around the sun.

Earth's Revolution Causes the Seasons

Although it only takes Earth 24 hours to rotate on its axis, it takes 365 days for Earth to revolve around the sun. To revolve means to move in a circle around something. Imagine a race car circling the track at the Indianapolis 500. The car revolves around the center of the track just like Earth revolves around the sun. Earth's path around the sun is much bigger than a race track.

The Earth revolves around the sun on a path called its orbit. Earth's orbit looks like a giant circle that is slightly squished. It goes all the way around the sun. Since Earth tilts

on its axis, different parts of the Earth will be tilted away from the sun at different places in the orbit. Sometimes the northern part of the Earth will tilt further away from the sun. Sometimes the southern part will tilt further away. Indiana is on the northern half of the Earth. When the northern half of the Earth is tilting farther from the sun, it is winter in Indiana. Spring comes to Indiana when it begins to tilt back toward the sun. When the northern part of Earth is tilting closest to the sun, it is summer in Indiana. How do you think the northern half of Earth is tilting when it is fall in Indiana?



As Earth revolves on its orbit around the sun, the seasons change.

Think About It:
Where on Earth is Indiana?

Review Questions

Name:_____

1. *Revolve* means to _____.
   - ○ spin around something backwards
   - ○ move very fast in a straight line
   - ○ spin all the way around
   - ○ move in a circle around something

2. *Tilt* means to _____.
   - ○ lie down
   - ○ revolve around
   - ○ lean to one side
   - ○ be straight up and down

3. Another name for the North Star is _____.
   - ○ Axis
   - ○ Polaris
   - ○ The sun
   - ○ North Pole

4. If you were skimming this lesson, you would find the definitions of new vocabulary under _____.
   - ○ the title
   - ○ *Discover*
   - ○ the headings
   - ○ *Science Words*

5. When Indiana tilts away from the sun, what is the season?
   - ○ fall
   - ○ winter
   - ○ spring
   - ○ summer

6. What is the main idea of this lesson?
   - ○ Earth rotates and revolves to create days and seasons.
   - ○ Earth uses Polaris to create days and seasons.
   - ○ Earth rotates on its axis every 24 hours of every day.
   - ○ Earth uses more than 365 days to revolve around the sun.

7. Which of the following best describes how the northern half of the Earth is tilting when it is fall in Indiana?
   - ○ tilting closer to the sun
   - ○ tilting farthest from the sun
   - ○ beginning to tilt close to the sun
   - ○ beginning to tilt away from the sun

8. One difference between Japan and Indiana is that _____.
   - ○ only Indiana experiences seasons
   - ○ they are on opposite sides of Earth
   - ○ Japan doesn't have daytime
   - ○ the North Star points to Indiana

Main Idea

Many different American Indian tribes lived in the United States before the pilgrims arrived.

Vocabulary:

longhouses

tepees

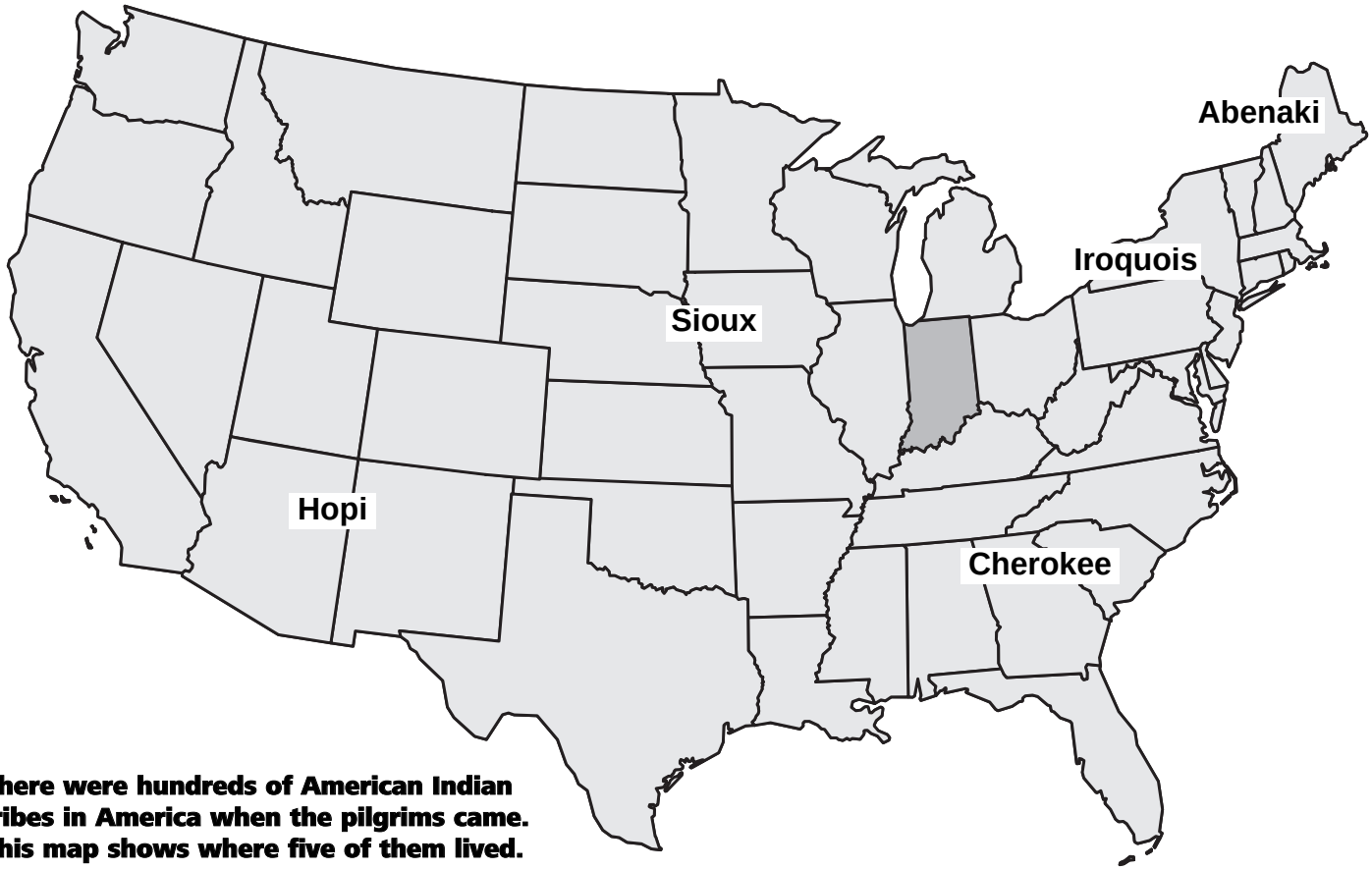
wigwam

American Indian Tribes

When the pilgrims arrived in America, there were already thousands of American Indian tribes living there. A tribe is a group of people who speak the same language and live in similar ways. Five of the tribes who were living in America when the pilgrims arrived were the Abenaki, Cherokee, Hopi, Iroquois, and the Sioux. You will read about how these tribes used to live.

The Abenaki

The Abenaki tribe lived in the northeastern United States. Most Abenaki Indians lived in small villages. In the summer, they lived next to the ocean. In the winter, they lived under trees. Most Abenaki lived in homes called wigwams. In



There were hundreds of American Indian tribes in America when the pilgrims came. This map shows where five of them lived.

You can see a wigwam at the Indiana State Museum in Indianapolis.

order to make a **wigwam**, the Abenaki bent the trunks of young trees into a dome. Then they covered the dome of the wigwam with tree bark and dried grass.

The Abenaki hunted deer, rabbit, and bear. They also fished for food in the summer. The Abenaki also planted crops including corn, beans, and squash.

In order to travel, the Abenaki walked or rode in boats that they made from birch wood.

The Abenaki are famous for the shell belts and necklaces that they made. They used these shells as money when they traded with the pilgrims.

The Cherokee

The Cherokee lived in the southeastern United States. They lived in towns of 30 to 60 houses. Like the Abenaki, the Cherokee lived in houses that looked like upside down baskets. To make these houses, the Cherokee wove together twigs and branches to make a frame. Then they covered the frame with mud or clay.

A Hopi Kachina

The Cherokee ate many of the same foods as the Abenaki. They hunted deer, rabbit, and bear. They also planted corn, squash, and beans.

In order to travel, the Cherokee walked or rode in canoes made out of logs.

The Cherokee are famous for creating a written language, known as "Talking Leaves."

The Hopi

The Hopi Indians lived in the desert in the southwestern United States. A desert is land that gets very little rain. They lived in large villages called pueblos. Sometimes the Hopi are known as "Pueblo People." The Hopi built their homes out of dry clay and stone.

Like many other tribes, the Hopi grew corn, beans, and squash. They also raised turkeys and hunted buffalo.

The Hopi are famous for making religious dolls called Kachinas. They also made blankets, rugs, and clothing from the cotton that they grew.

The Iroquois

The Iroquois lived in the northeastern United States. They lived in one place all year. They lived in longhouses. **Longhouses** are long rectangular homes made from young trees covered with bark and animal skins.

The Iroquois hunted deer, rabbit, and bear. They also planted corn, squash, and beans.

In order to travel, the Iroquois walked. In winter, they used snowshoes to walk on the snow. They also built boats to travel on the water.

Like the Abenaki, the Iroquois are famous for the shell belts and necklaces that they made. They too used these shells as money when they traded with the pilgrims.

This is what an Iroquois longhouse looked like.

The Sioux

The Sioux Indians lived on the American plains. They lived in homes called tepees. **Tepees** are made of many long poles that lean together and are wrapped in a buffalo hide. The Sioux liked tepees because they were easy to carry. The Sioux needed to be able to carry their homes because they were nomads. A nomad is a person who does not live in one place. Instead, nomads travel to different places. The Sioux followed the buffalo over the plains because they depended on them for food.

In addition to buffalo, the Sioux gathered nuts and berries from the woods. Unlike many other American Indians, they did not plant vegetables.

In order to travel, the Sioux walked. Later, they discovered wild horses. Once they caught the horses, they rode them instead of walking. The Sioux are famous for their ability to tame and ride horses.

The Sioux made their tepees from buffalo hide.

Review Questions

Name:_____

1. A wigwam is a home that is _____.
   - ○ easy to carry
   - ○ built by the Sioux
   - ○ shaped like a dome
   - ○ covered with mud or clay

2. Kachinas are a kind of _____.
   - ○ doll
   - ○ home
   - ○ blanket
   - ○ clothing

3. Which two tribes lived closest together?
   - ○ the Abenaki and the Hopi
   - ○ the Sioux and the Iroquois
   - ○ the Sioux and the Cherokee
   - ○ the Abenaki and the Iroquois

4. If a section about the Navajo Indians were added to the lesson, what information would you expect to find there?
   - ○ the number of Navajo living in the United States today
   - ○ what foods the Navajo hunted and planted
   - ○ what traditional Navajo clothing looks like
   - ○ what games Navajo children play

5. Why were the Sioux nomads?
   - ○ Their families were large.
   - ○ They depended on buffalo.
   - ○ They wanted to start farming.
   - ○ Their tepees were easy to carry.

6. This lesson is mostly about _____.
   - ○ American Indian homes
   - ○ how American Indians used to live
   - ○ how the Pilgrims changed America
   - ○ American Indians of the northeastern United States

7. When the Sioux made their tepees, they set up poles. What did they do next?
   - ○ covered the poles with dried grass
   - ○ unrolled a blanket under the poles
   - ○ bent young trees around the poles
   - ○ wrapped the poles in buffalo hide

8. Which three tribes rode in boats?
   - ○ Cherokee, Abenaki, and Iroquois
   - ○ Sioux, Cherokee, and Abenaki
   - ○ Hopi, Iroquois, and Cherokee
   - ○ Abenaki, Hopi, and Sioux

Vocabulary

What are vocabulary words?

★ **Vocabulary words** are the words that you are expected to learn in a lesson. Sometimes **vocabulary words** are highlighted or printed in a darker type called **bold** print.
★ Science and social studies **vocabulary words** are about big ideas. Because science and social studies **vocabulary words** are big ideas, sometimes your textbook will use more than one sentence to define them.
★ Science and social studies **vocabulary words** do not often have synonyms, or words that mean the same. For example, *sad*, *unhappy*, and *down* all mean about the same thing. But, there are not many words that mean the same thing as words like *erosion*, *atmosphere,* or *volume*.

Where will you find vocabulary words?

➜ Look to see if the **vocabulary words** are listed on the first page of the lesson. Sometimes **vocabulary words** will be defined on the side or bottom of a page.
➜ Skim the lesson for words that are in **bold** print or are marked in some way.

How can you learn vocabulary words?

➜ Look in the lesson for a definition for the **vocabulary word**.
➜ Look in the glossary of your textbook to see if the **vocabulary word** is there. The glossary should have a definition. You can also use a dictionary.
➜ Read all the sentences around the **vocabulary word**. These sentences may help you understand what the vocabulary word means.
➜ Look at all of the words used in the definition of the **vocabulary word**. If there are words in the definition of the vocabulary word that you do not understand, look them up too.
➜ Sometimes there will be questions at the end of a lesson about the **vocabulary words**. You can use these questions to test your understanding of **vocabulary words**.
➜ Ask someone to explain a **vocabulary word**.

Why learn vocabulary words?

★ **Vocabulary words** in science and social studies can be about big ideas.
If you learn vocabulary words, it will be easier for you to read your textbooks.

Difficult Words in Context

What are difficult words?

★ **Difficult words** are words you don't understand or that you don't know how to pronounce.

Where will you find difficult words?

➜ You will find **difficult words** when you read about new topics. Sometimes when you read a new vocabulary word, your book will use **difficult words** to describe it.

How can you learn difficult words?

There are many ways to find out the meaning of **difficult words**.

- ➜ Look to see how the **difficult word** is used. Look to see if the **difficult word** is *defined in the sentence or paragraph*. Try to figure out the *meaning of the word* by reading the words around it.
- ➜ Look up the **difficult word** in the *glossary* of your book or in a *dictionary*.
- ➜ Ask someone to explain the **difficult word** to you.
- ➜ *Write the definition* of the **difficult word** on a piece of paper so you will remember it. Keep the paper with your textbook.

Why learn difficult words?

★ **Difficult words** often tell about important ideas. **Difficult words** help you understand the definitions of vocabulary words in your textbooks. The more **difficult words** you know, the easier it will be for you to learn important ideas. You will do better on your tests.

Graphics

What are graphics?

★ **Graphics** are the pictures, photos, drawings, charts, and graphs in your textbook.
★ **Graphics** can show you different kinds of information.
★ **Graphics** can show you information more quickly than the text.
★ **Graphics** can show you the same information as the text.

How can you understand the graphics in your textbook?

➜ Look carefully at **graphics** such as graphs, charts, and maps. They can help you see and learn information and number data quickly.
➜ Some **graphics**, such as drawings and diagrams, explain part of the text. These types of **graphics** can make it easier for you to understand the text.
➜ Some **graphics** are in your book to make it interesting or colorful, but they don't give you facts about the lesson.
➜ *Captions* are words used to describe graphics. Sometimes you may need to understand the caption in order to understand the graphic.
➜ Skim the **graphics** in a lesson to help predict what it is about. If you glance at the **graphics** before you read, you may be able to predict what the lesson is going to be about.

Why is it important to learn about graphics?

★ Using **graphics** will help you skim your textbook.
★ You can learn material quickly when you know which **graphics** are most important.
★ Understanding **graphics** will make it easier to learn difficult ideas in your textbook. Graphics can help you remember information better.

Skimming & Predicting

What is skimming and what is predicting?

★ **Skimming** means glancing at the lesson before you read. **Skimming** gives you an idea of what you will learn.
★ **Predicting** means using what you know to make a smart guess. When you **predict** while reading your textbook, you guess what you will learn.

How do you skim?

➜ Look for the words in **bold** print. These are important words.
➜ Read the titles and headings of the lesson. These will help you outline the lesson.
➜ Read the captions under the pictures and/or graphics. These tell more about the graphics.
➜ Read the questions at the end of the lesson. These will help you know what you should learn.

How do you predict?

➜ **Skim** the lesson.
➜ Make a smart guess about what you will learn in each section.
➜ Write down what you think you will learn.
➜ Read the lesson.
➜ See if what you predicted is correct.

Why are skimming and predicting important?

★ **Skimming and predicting** can help you plan ahead when you read.
★ **Predicting** can introduce you to the lesson.
★ **Skimming and predicting** help you know what you should learn.

Cause & Effect

What is a cause and what is an effect?

★ 1. A **cause** happens before an **effect**.
2. An **effect** happens as a result of a **cause**.

★ 1. A **cause** can tell you *why* something happened.
2. An **effect** can tell you *what* happened.

★ 1. When you read about *why* something happened, you are reading about a **cause**. Sometimes an event will have more than one **cause**.
2. When you read about *what* happened because of something else, you are reading about an **effect**. Sometimes there will be more than one **effect** of a single **cause**.

When will you find cause and effect writing?

➜ Most of the time, you will see **causes** and **effects** in the same lesson.

➜ **Cause and Effect** *signal words* let you know that the author wants you to learn about **causes** and **effects**. When you see these words, you will know to pay careful attention to **causes** and **effects**. The chart below shows some common **cause** and **effect** *signal words*:

Common Cause & Effect Signal Words		
as a result	if (…then)	so
because	makes	then
cause/causes	reason	when
due to	since	effect/effects

Why is it important to understand cause and effect?

★ Understanding **cause** and **effect** helps you connect events that you learn about in your lessons. You can think about why events happened and what happened because of an event.

★ If you understand what **caused** something to happen in history or in a science experiment, you can predict what might happen when similar events happen in the future.

★ Understanding **causes** and **effects** helps you organize information in your head.

Main Idea & Details

What is a main idea and what are details?

★ The **main idea** is the reason a lesson or a paragraph is written. The **main idea** of a *lesson* tells what the whole lesson is about. The **main idea** of a *paragraph* that tells what the whole paragraph is about.

★ **Details** tell *who, what, when, where, why,* and *how* about the main idea. **Details** support and help you better understand the **main idea**.

Where can you find the main idea and details of a lesson?

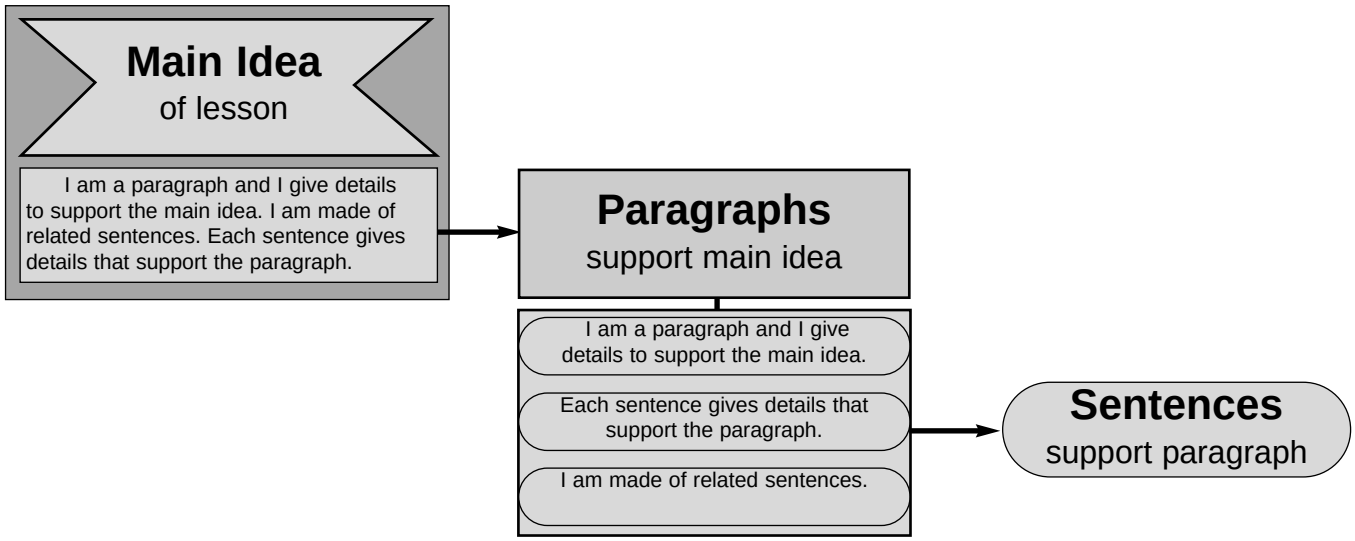
➔ Most of the time, but not always, the **main idea** of a *lesson* is written in the first or last paragraph. Sometimes the **main idea** is never written, but you will know what the **main idea** is because all of the paragraphs tell about one topic.

➔ Sometimes lessons will have a section on the first page that tells you the **main idea** of the lesson**.** This section is often called: *Main Idea*, *Summary*, *Find Out!*, *Focus*, etc.

➔ **Details** can be found in a sentence or groups of sentences in paragraphs. Sometimes, the most important details of the lesson can be found in the headings.

Where can you find the main idea and details of a paragraph?

➔ Most of the time, but not always, the **main idea** of a *paragraph* is in the first sentence. Sometimes the **main idea** is later in the paragraph. Sometimes the **main idea** is never written, but you can figure out the **main idea** by reading the rest of the paragraph.



Why are main ideas and details important?

★ If you understand the **main idea**,you will be able to focus on the important parts of the lesson.

★ If you understand **details**,you will be able to remember important facts about the **main idea**.

Sequence

What is sequence?

★ **Sequence** means order.
★ **Sequence** can mean the order of steps in an experiment or directions; or it can mean the order in which events happened.

When do you need to know sequence?

➔ You need to understand **sequence** when you read about history or steps in a science experiment.
➔ Sometimes you need **sequence** to help you read graphics such as timelines or charts.

How can you understand sequence?

➔ You can understand **sequence** if you put dates (1961), times (4:30 a.m.), and seasons (winter) in order.
➔ You can understand **sequence** if you pay attention to special **sequence** *signal words and phrases*. **Sequence** *signal words and phrases* will tell you if something happens before, after, or at the same time as something else. The chart below shows some common **sequence** *signal words and phrases*.

Common Sequence Signal Words and Phrases

BEFORE	AFTER	AT THE SAME TIME	AT ANY TIME
before begins/beginning earlier first	after ends/ending finally last/lastly later next second, third,... then	at the same time during meanwhile while	**Dates** 1994 • Tuesday **Times** 4:30 a.m. • morning **Seasons** summer • May

Why is sequence important?

★ If something is written in the order in which it occurred, or **sequential order**, you will have an easier time understanding what you read. You will remember how events or steps are related.
★ When you put the ideas or events you read about in **sequential order**, you can remember them better.

Compare & Contrast

What do compare and contrast mean?

★ To **compare** means to find how things are **alike**.
★ To **contrast** means to find how things are **different**.
★ **Compare and contrast** writing shows how two or more things are both alike and different.

How do you know you are reading about comparisons and contrasts?

➔ When an author wants you to understand how things are alike and how things are different, you will see special *signal words*. The chart below shows some common **compare and contrast** *signal words*.

Common Compare and Contrast Signal Words

COMPARE		CONTRAST		
similar	just as	as opposed to	while	but
like	as	difference	rather	most
same	both	unlike	yet	either

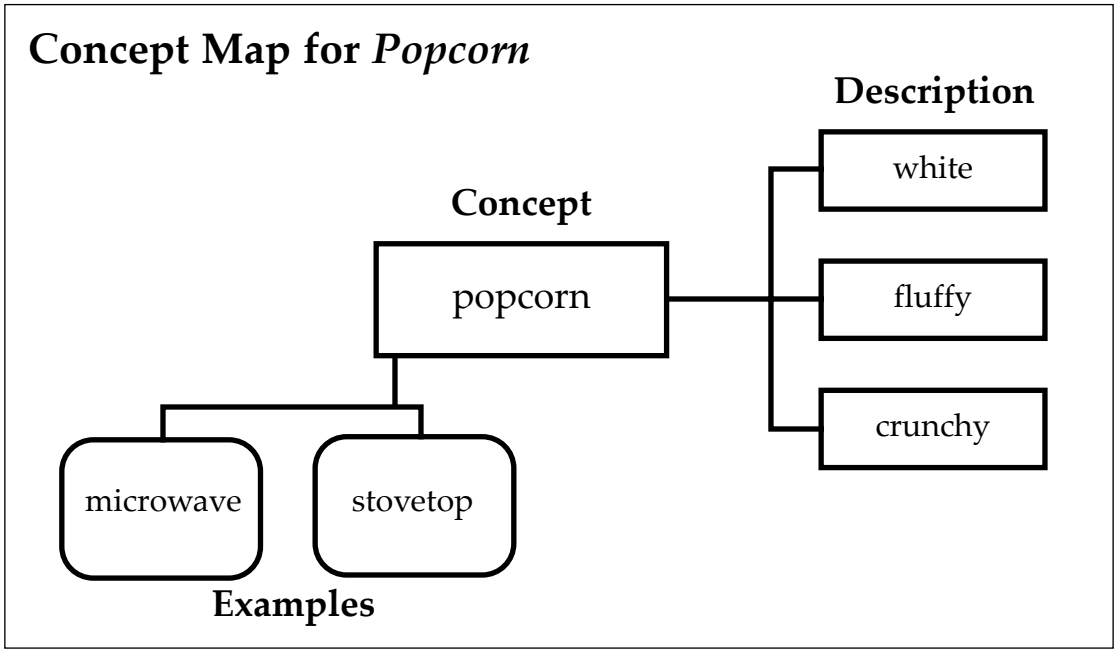
➔ Writers use **compare and contrast** *signal words* to describe two or more things.
➔ You can also **compare and contrast** charts or pictures.
➔ Bar graphs and pie charts show **comparisons** between numbers.
➔ Graphics of two or more things next two each other, or on the same page, can show **comparison and contrast**.

Why are comparison and contrast important?

★ If you **compare** the ideas, people, and events you read about, you will have an easier time understanding and remembering what you read.
★ If you know that something is written to **compare and contrast** two or more things, you can better organize them in your head. You will better remember what you read.

STUDY SKILL: Concept Map

Look at this concept map. A concept map is a picture of a big idea, or concept. Concept maps help you think about and remember big ideas.



1. Use the concept map to help you complete the sentences below.

This concept map is about _____. Two ways to cook popcorn are _____ and _____. The concept map describes popcorn.

It says it is: _____ and _____ and _____.

2. Think of another fact about popcorn. Write your idea in the correct place on the concept map.

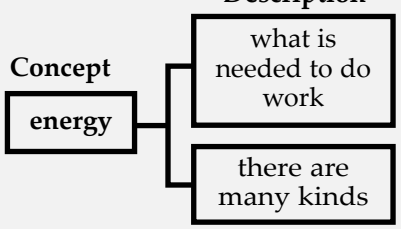
In this lesson, you will learn how to draw your own concept maps. When you create your own concept map, it will answer questions. Not every concept map will look the same, but a concept map may answer:

- What is the concept? (popcorn)
- How can it be described? (crunchy, white)
- What are some examples of it? (microwave, stovetop)
- How do we use it?
- What can we compare it to?

Standards Addressed: Soc 4.4.1, 4.4.5; Sci 4.4.4

A)

1. *Energy* is a bolded vocabulary word. When you see a bolded word, you should begin to draw a concept map like the one here.



2. This is the beginning of a concept map for energy. You will add to it as you learn more about energy.

Discover

How does popcorn pop?

Science Words

energy what is needed to do work

heat a form of energy that is felt as warmth

pressure a force applied to an object by an object that touches it

How Does Popcorn Pop?

Do you like popcorn? Many people enjoy eating popcorn at the movie theaters or at home, but have you ever wondered how popcorn pops? How does it change from a tiny hard kernel to a fluffy piece of popcorn? To understand how popcorn pops, you need to understand energy.

Energy

Energy is what is needed to do work. ★

Our bodies need energy to move. Without energy, we could not work or play. There are many different kinds of energy.

You are probably very familiar with one form of energy–heat!

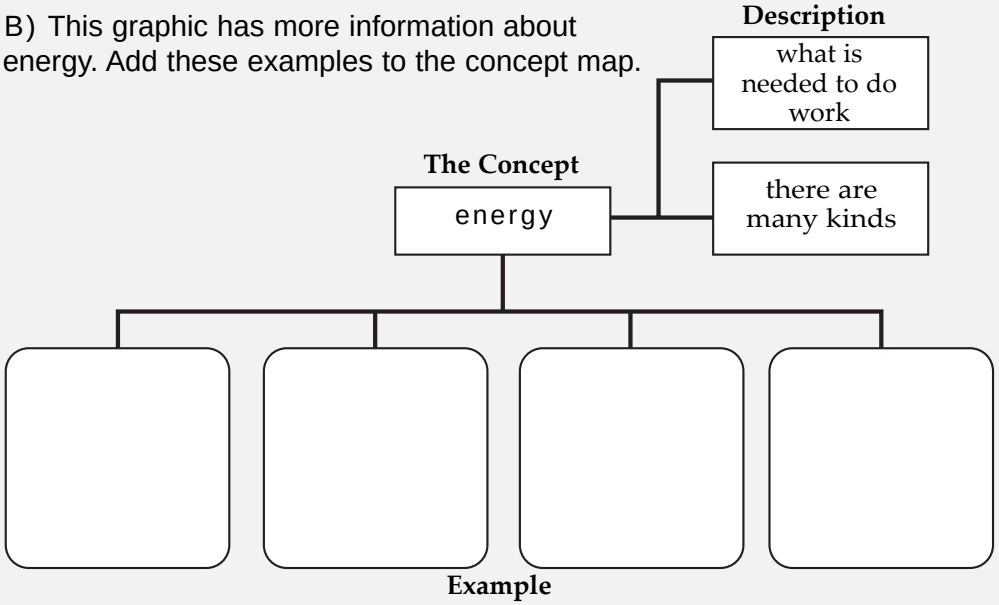
Heat is one form of energy. Some other forms of energy include:

Sound energy: **energy made by anything making noise**

Kinetic energy: **energy made from anything that is moving**

Electrical energy: **energy from the flow of electricity**

B) This graphic has more information about energy. Add these examples to the concept map.



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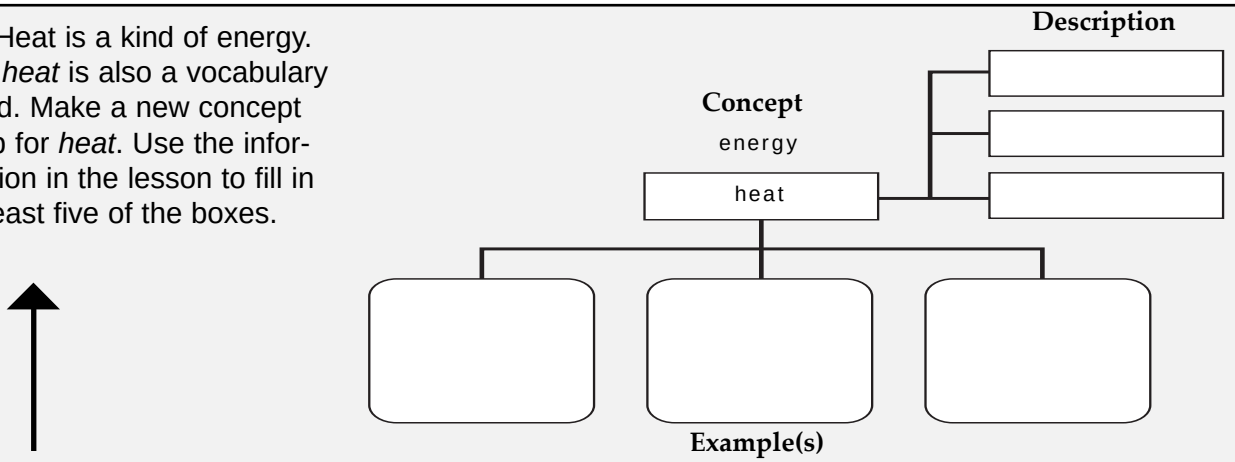
C) Heat is a kind of energy. But *heat* is also a vocabulary word. Make a new concept map for *heat*. Use the information in the lesson to fill in at least five of the boxes.

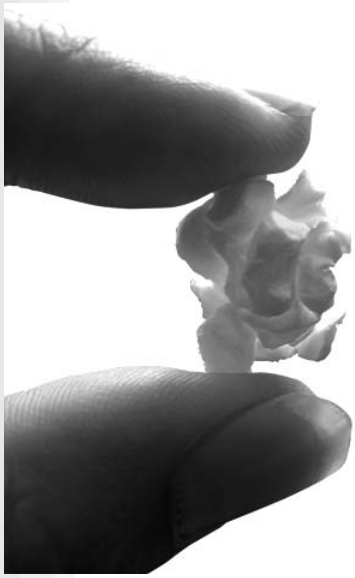


★ **Heat** is a form of energy that feels warm. We can measure heat using temperature. Heat helps us keep warm and cook our food. Heat energy also helps popcorn pop.

Why Do Kernels Pop?

Water is the reason that a kernel explodes into a delicious piece of popcorn.

Inside each kernel of popcorn is a tiny drop of water. When popcorn is heated, the water inside gets so hot it bubbles and turns into steam. Steam is the very hot gas that water turns into when it becomes hot enough to boil. Another term for steam is water vapor.



Steam has more volume than water. Volume is a way of measuring the size of a three-dimensional object. Volume tells how much space an object takes up, like how much water it takes to fill a swimming pool. Since the steam has more volume, it needs more space. It starts pushing against the inside of the kernel.

Hoosier Fact

In 2001, popcorn farmers grew 269 million pounds of popcorn. That's 44 pounds of popcorn for every Hoosier.

Popcorn Folklore:

In a Native American folktale, popcorn popped because a spirit lived inside each kernel. When the kernel homes became hot, the spirit would shake with anger and burst into the air as a puff of steam.

The outside of the kernel is called a hull. The hull is tough and doesn't let steam in or out. Steam takes up more space than water. So when the water in a kernel turns to steam, it needs more space. Since the kernel cannot expand, the steam pushes against the hull. The force on the hull from the steam is called pressure. **Pressure** is force applied to an object by an object that touches it. The force of the steam touches the kernel and pushes against it, creating pressure. Since the hull can't get bigger and since the steam can't escape, the pressure of the steam keeps building until there's an explosion!

The kernel bursts, the steam rushes out, and a delicious piece of popcorn is ready to be eaten. The steam had more volume than the water, so it needed more room. The steam put pressure on the hull that was trapping it. The pressure made the hull burst and turn inside out. The popped corn is much bigger because of the pressure of the steam and the energy of the explosion.

D) Create your own concept map for *pressure*. Include at least two details.

Example(s)	Concept	Description
	pressure	

A) A dune is a hill of sand. Write one other detail about dunes that you learned from the paragraph.

_____

_____

Discover

How do erosion and weathering affect the Indiana Dunes?

Science Words

dune a hill or ridge of sand piled up by the wind

erosion the process by which the products of weathering are moved from one place to another

weathering breaking down of rocks and other materials on Earth's surface by such processes as rain or wind

The Indiana Dunes

Dune Country

When most people think of sand, they think about the ocean and states like California or Florida. But in Indiana, we think of Lake Michigan and the Indiana Dunes. The Indiana Dunes are located in Dune Country—the northwestern corner of Indiana, right next to Lake Michigan. They are in three counties—LaPorte, Lake, and Porter. **Dunes** are hills of sand. The northwest wind carries sand across the surface of Lake Michigan. When the wind carrying the sand across Lake Michigan meets a barrier, such as hills, it slows down and drops the sand it is carrying. The sand piles up. When sand piles up, a dune is born.

The United States Congress made the Indiana Dunes a national park in 1966 in order to preserve them.

Try this: Put your open palm three inches from your mouth. Shape your lips like you're going to whistle, but blow out air instead. Can you feel the air hit the center of your palm and then move across the rest of your palm? The air that moves sideways is not as strong as the air blown directly onto your palm. The air loses force because your palm is in the way. The wind drops the sand in the same way because the hills are in the way.

B) How does this exercise add to your understanding of dunes?

_____

_____

Standards Addressed: Soc 4.2.5, 4.3.5 ; Sci 4.3.2, 4.3.5, 4.3.7

C) How do these graphics add to the definition of *weathering*?

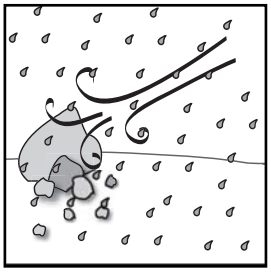
_____

_____

_____

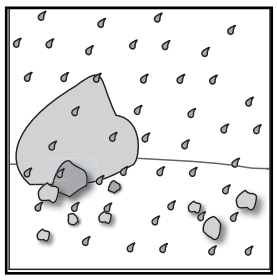
Weathering and Erosion

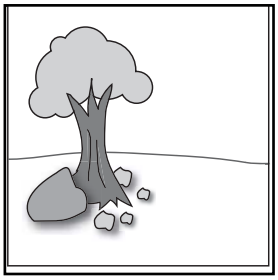
The sand of the Indiana Dunes was created through weathering. **Weathering** is the breaking down of rocks and other materials on Earth's surface by such processes as rain or wind. There are three kinds of weathering. Water and wind weather rocks, wearing away small pieces that become sand. Sand is actually tiny pieces of rock and shells broken apart by rain and wind. **Erosion** is the process by which the products of weathering are moved from one place to another.



Physical Weathering: water and wind breaking down rocks

Chemical Weathering: chemicals, such as acid rain, breaking down rocks





Biological Weathering: plants and animals breaking down rocks

D) What is the difference between weathering and erosion?

_____

_____

_____

_____

_____

_____

_____

When two words describe similar things, how can you show the differences? Draw a Picture!

The difference between weathering and erosion is movement. Weathering only weakens rocks and dirt. If the rocks do not move, they are being weathered; if little pieces of the rock or sand move, then those pieces are eroding. There must be weathering before there can be erosion.

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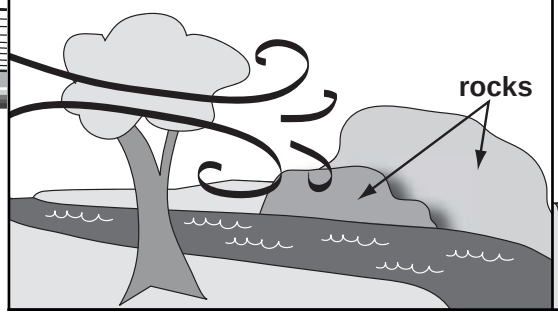
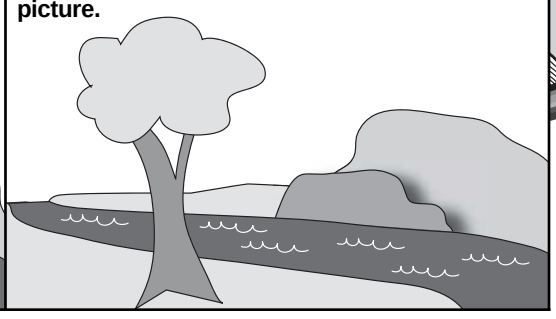
This is a picture of a rock being weathered by wind and water.



Draw a picture of what happens when pieces of rock erode by wind or water. Label your picture.



E) What is a “living” dune?

_____

_____

_____

Sometimes, in a strong wind, dunes change their shapes in minutes. When the wind moves the sand, it is erosion. When you visit the Indiana Dunes, you can watch erosion happen.

The growing dune may gradually travel, or erode, inland, pushed by the wind. Scientists call a moving hill of sand a "living" dune. A living dune may slowly bury bushes, trees, fences, and even houses that stand in its way. Mount Baldy, one of the highest dunes, is a living dune. The wind erodes Mount Baldy so that it moves four or five feet south every year.

Weathering and Roots

Sometimes, roots help prevent weathering and erosion. Other times, they can cause weathering. Roots can even split apart a rock. Have you ever seen weeds growing in cracks in the sidewalk? If you leave the weeds alone, the cracks will get bigger and bigger. Because the roots need more space, they push the rock apart.

The Indiana Dunes show how roots can also slow weathering and erosion. One tree that is especially important to the Indiana Dunes is the cottonwood tree. The cottonwood tree begins growing in a dip in the sand. The tree sends its long roots through the sand in order to get the water it needs to live. When the wind blows the sand over the young tree's limbs, those limbs turn into more roots. But if the wind blows the sand away, the roots will turn back into branches. There are cottonwood trees at the Indiana Dunes that are as tall as 50 feet, but only the very top of the tree shows because the rest of the tree is covered by the dune. The roots of the cottonwood tree help keep the dune from blowing away.

Because the roots of the cottonwood tree grow so long, they actually help keep the dune in place and slow erosion.

G) Circle two vocabulary words on this page.

F) A tree root splitting a rock is an example of

- ○ erosion.
- ○ weathering.

Review Questions

Charts can help you compare difficult words and concepts.

1. Complete the chart below by filling in the empty boxes to describe how weathering and erosion can change rocks.

Rocks

	Weathering	Erosion
Water		Carries sand and small pieces away.
Wind	Blows against the rock and weakens it.	
Roots		Slows down erosion by keeping the earth in place.

2. Now complete the chart below to show the similarities and differences between how different kinds of weathering affect rocks.

	Physical Weathering	Chemical Weathering	Biological Weathering
Who or what does it?		Acid Rain, Chemicals	
Does it carry anything away?	No		No

3. Look at the three types of weathering on page 2. Now draw examples of weathering and erosion in the boxes below. Label your pictures to explain your work.

Draw a picture of roots *weathering* the sidewalk. Be sure to label your picture.	Draw a picture of wind *eroding* a sand dune. Be sure to label your picture.

LESSON 5

Our Planet Earth

MAIN IDEA

Earth is made up of different parts. These parts affect the way Hoosiers live.

VOCABULARY

atmosphere
biosphere
hydrosphere
lithosphere

A) Why does the lesson list vocabulary words here?

_____

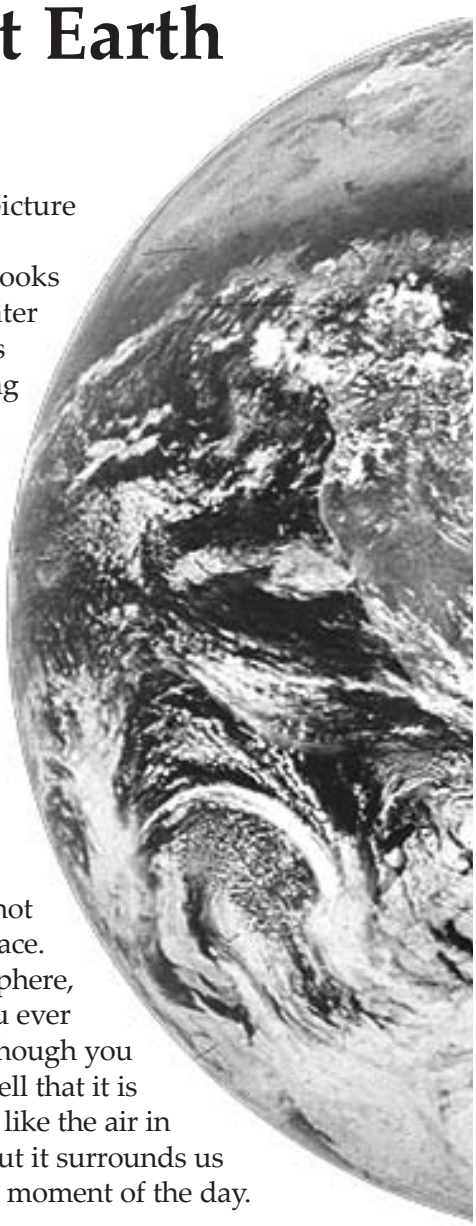
_____

_____

_____

Earth is a Sphere

Have you ever seen a picture of Earth from outer space? Because Earth is round, it looks like a big ball with blue water and green land. A sphere is another name for something that is round. A ball is a sphere, and a marble is a sphere. Special words are used by scientists to define parts of the Earth. Many of them have the word *sphere* in them.



The Atmosphere

★ The **atmosphere** is made of gases that surround Earth, including the air we breathe. Because the gases are invisible, you cannot see the atmosphere from space. Looking through the atmosphere, you can see Earth. Have you ever blown up a balloon? Even though you cannot see the air, you can tell that it is there. Earth's atmosphere is like the air in the ballon. We can't see it, but it surrounds us and we breathe its air every moment of the day.

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B) Write the definition of the word *atmosphere* in the space below.

_____

_____

C) If *hydro* means water, what does *hydro* + *sphere* mean?

_____

_____

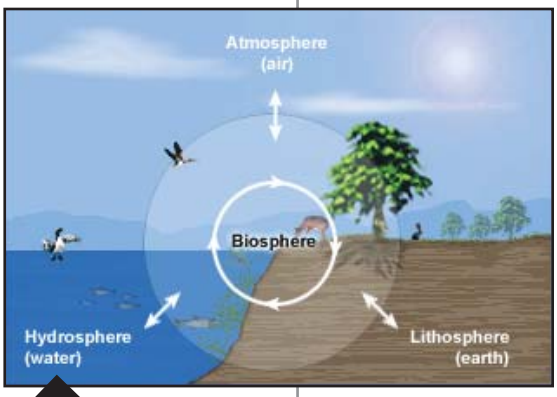
Have you ever been outside on a windy day? Did you know that wind is part of the atmosphere? Wind is air that moves across the Earth. When the wind blows, we can feel the atmosphere even though we can't see it.

The Hydrosphere and Lithosphere

Clouds are one part of the atmosphere that we can see. Clouds are made of tiny drops of water. Because they are made of water, clouds are also part of the hydrosphere**.** Can you guess what hydrosphere means?

The **hydrosphere** is all the water on Earth's surface including the water that is part of the water cycle. The rain that falls from clouds is part of the hydrosphere. So are the puddles on the ground after it rains. The hydrosphere also includes oceans, lakes, rivers, and streams. Because oceans and big lakes cover most of Earth, it looks blue from space.

Can you imagine a world without birds or rain? Each of Earth's spheres is important to your life.



Litho means stone. What do you think the lithosphere is? The **lithosphere** is the soil and rock that form Earth's surface. All plants and animals live on top of the lithosphere. The dirt on the bottom of your shoe is part of the lithosphere. The rocks and cliffs and sand are part of the lithosphere. We grow food in and build houses on the lithosphere.

D) Does this graphic help you understand vocabulary from the lesson? ____

Give one reason why OR one reason why not. _____

_____

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E) What does *litho* mean? Write the definition here.

_____

_____

F) Can you guess what *bio* means? Hint: If something is alive, it is...

L_____

The Biosphere ★

The **biosphere** is all the plants and animals—everything that is alive—on the Earth. It includes all living things. You, your teacher, your friends, your parents, poison ivy, all the fish, pigs, lions, and dandelions are part of the biosphere. Can you think of more things that live near you?

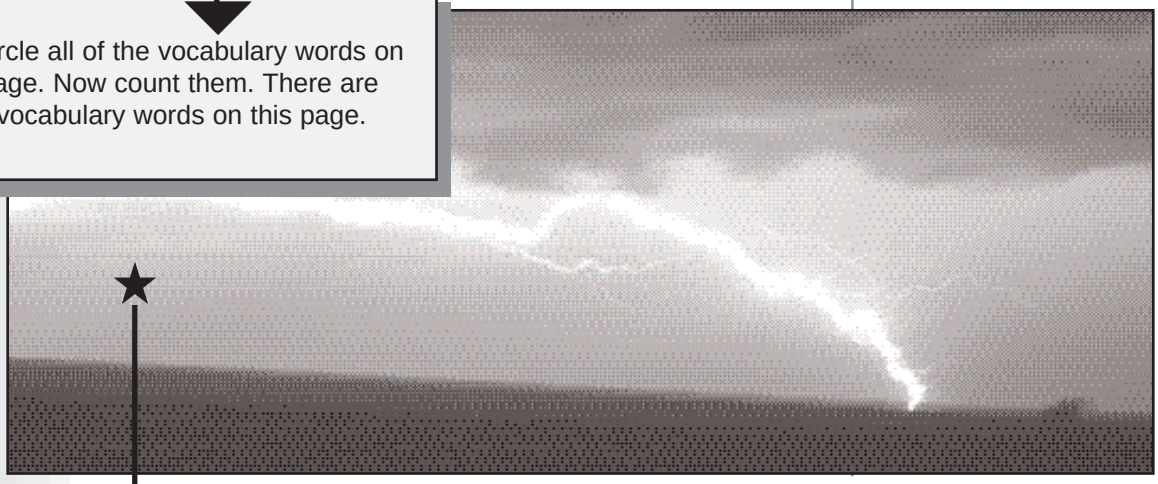
The atmosphere, hydrosphere, lithosphere, and biosphere all affect how you live. The lithosphere supports everything – the atmosphere flows around the rocks and dirt. The weather is carried to Indiana and other places by the atmosphere. Winds bring storms, and storms bring rain. The rain is part of the hydrosphere. Without water, the plants and animals couldn't survive. The biosphere needs water to live.

Can you imagine what life in Indiana would be like if these parts of Earth didn't work together? What would Indiana be like if there were no storms and no rain? How would farmers grow soybeans and raise cattle if the lithosphere became too full of rain? ★

Every plant and animal is important to the biosphere. ★

The hydrosphere waters the lithosphere and helps make plants grow.

G) Circle all of the vocabulary words on this page. Now count them. There are ____ vocabulary words on this page.



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H) Because clouds are water that is found in the air, they belong to both

the _____ sphere

and the _____ sphere.

I) Write two examples of things that are part of the biosphere.

_____

_____

Review Questions

The atmosphere is made of many layers of gas. Below are four of these layers. All of the names of the layers end in the word *sphere*. Read the definitions of the first parts of the words. Then read the descriptions of each layer. Match the names of the layers with the correct description.

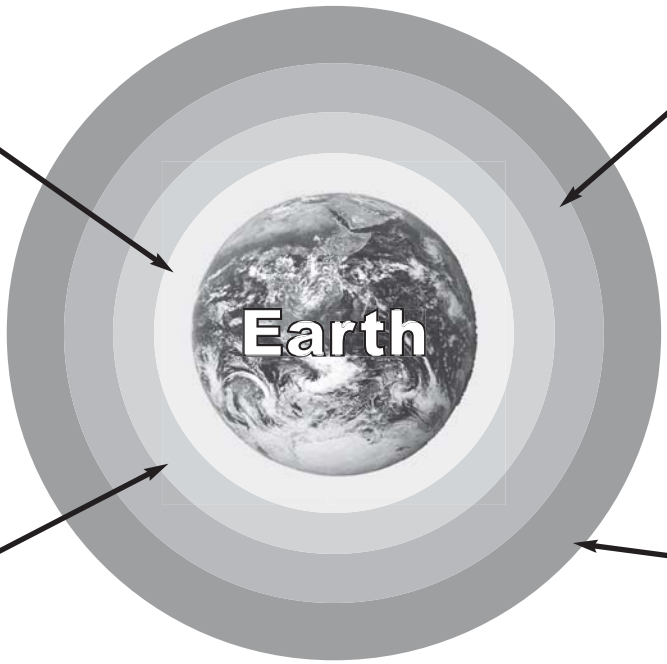
Meso means middle. This is the layer between Earth and space.
Tropo means change or turning. This is the layer planes fly in.
Strato means to stretch and extend. This layer stretches over the troposphere.
Thermo means heat. This layer becomes hot very quickly.

_____sphere

This is the first layer of atmosphere. It got its name from the quick change in temperature that happens there. This layer is the air we breathe and it holds the clouds. Planes also fly in this layer.

_____sphere

This is the second layer of atmosphere. It blocks the UV rays from the sun and keeps us safe. It got its name because it stretches over the troposphere.



_____sphere

This is the third layer of the atmosphere. It is in the middle. It got its name because it is in the center. It is between the stratosphere and the thermosphere.

_____sphere

This is the last layer of the atmosphere. It gets hot on this layer. It got its name because of its heat. This is where satellites/space shuttles usually orbit.

Now that you know the meaning of some word parts, you can figure out what these words mean without a dictionary!

What does *hydropower* mean? _____

Because *–ology* means "to study," what does...

biology mean? _____

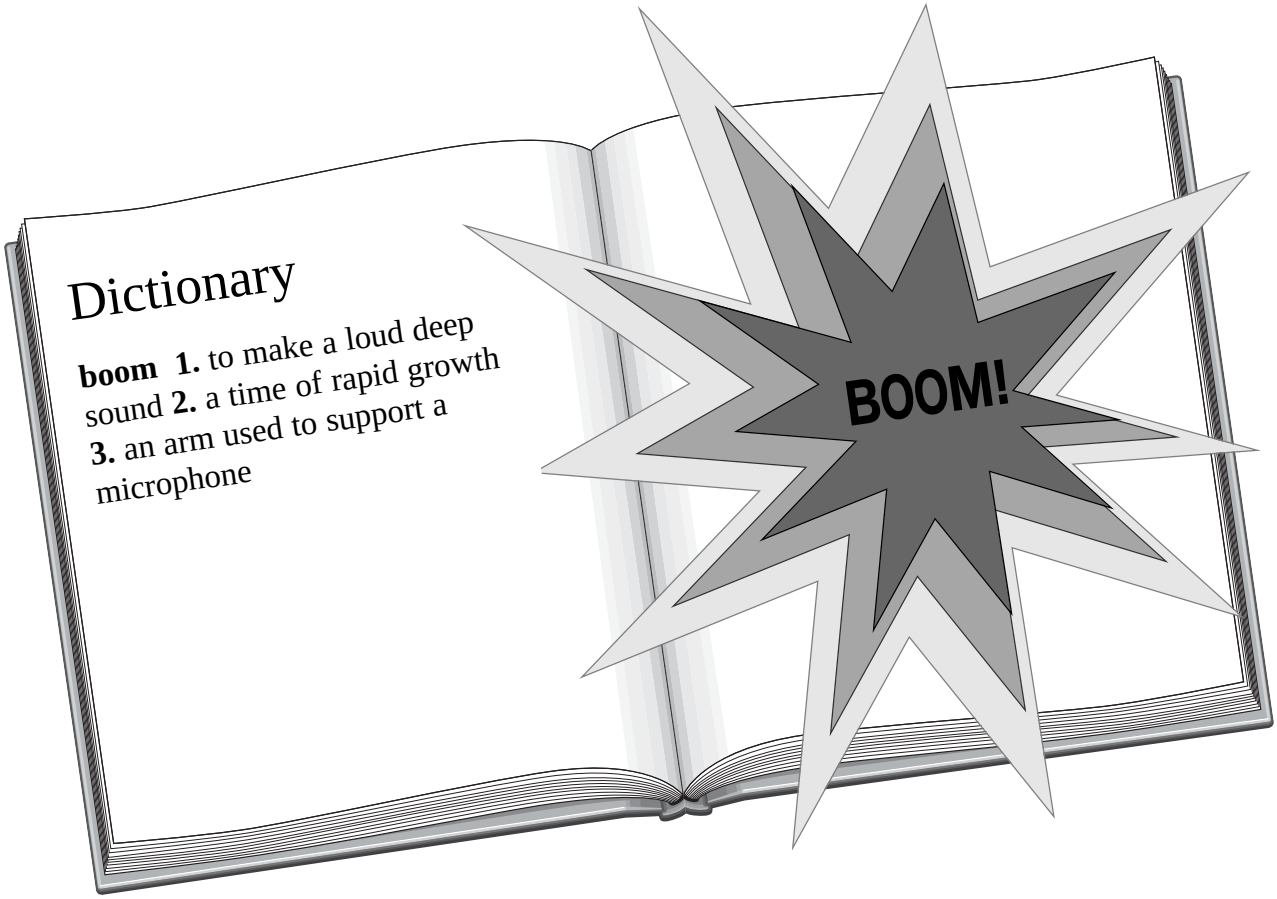
hydrology mean? _____

STUDY SKILL: Using Dictionaries

When you read, it is important to understand the difficult words in your textbook. You can look up the meaning of difficult words in a dictionary. If the dictionary entry shows more than one meaning, you must choose the meaning that makes the most sense. Look at the sentence below.

During the oil *boom*, many people moved to east central Indiana.

When you read the word *boom*, you probably think of a loud noise. That is the first definition in the dictionary below. But it doesn't make sense in the sentence. Now look at the other definitions.



Of these three definitions, only the second one makes sense in the sentence:

During *a time of rapid growth* in the oil business, many people moved to east central Indiana.

Sometimes, the dictionary will not list the exact word or phrase that you need to know. But it may list the words that make up the difficult word or phrase. Try putting these words together to form a definition that makes sense. Use the dictionary above to write a definition for *boom town*. How did you come up with your answer?

_____

_____

_____

Standards Addressed: Sci 4.3.5, 4.3.7; Soc 4.3.6, 4.3.10

A) HINT: As you read this lesson, pay attention to words you don't know. Look at the words near the difficult words. Then try to decide what the new words mean. Circle at least three difficult words in the lesson. Remember that a difficult word can be one that you don't know how to pronounce.

Discover

How did glaciers change the land of Indiana?

Science Words

glacier a giant sheet of ice that moves across land

Ice Age a period of time two to three million years ago in which ice covered the northern half of Earth

sediment broken parts of plants, trees, rocks, and dirt mixed with water

The Ice Age in Indiana

Why Does Indiana Look the Way It Does?

Have you ever wondered how a hill became a hill? Where did valleys come from? Why are some boulders flat and others round? Indiana's landscape looks the way it does because of glaciers. **Glaciers** (glā′-shərz) are giant sheets of ice that move across land. Glaciers move very slowly. Sometimes they travel only four feet in a year. Today glaciers are only in very cold places. Millions of years ago, glaciers were in Indiana. These glaciers created the hills and valleys we call Indiana today.

C) According to the pronunciation key, *Pleistocene* rhymes with which of the following words?

- **spine**
- **ocean**
- **creation**
- **machine**

Glaciers Invade Indiana

Glaciers advanced, or moved forward, into Indiana from the north during a period called the Ice Age. The Ice Age is also known as the Pleistocene (plī′-stə-sēn′) Period. The **Ice Age** began two to three million years ago and ended about 10,000 years ago. During the Ice Age, glaciers covered the northern half of the Earth. As the glaciers advanced southward, they mowed down anything that was in their way–plants, trees, rocks, dirt, and hills. Broken parts of all of these things mixed together and became sediment. **Sediment** is broken parts of plants, trees, rocks, and dirt that are moved

B) The lesson does not give you the definition of *landscape*. Look at the dictionary entry below. Underline the correct definition.

How did you know that you chose the correct defintion?

_____

_____

_____

_____

landscape
1. a kind of art that shows scenes from nature
2. the landforms that are characteristic of an area
3. to improve an area by planting flowers or trees

D) The lesson does not give you the definition of *weathering*. Look it up in a dictionary and write the definition here. How did you know that you chose the correct definition?

_____

_____

from one place to another by wind, water, or ice (glaciers). When sediment is left by a glacier, it is called till.

Some valleys and hills disappeared and others formed as glaciers pushed sediment forward.This movement of sediment is a form of erosion, or the process by which the products of weathering are moved from one place to another.

Glaciers Create Kettle Lakes

In northern Indiana, there are many kettle lakes, which are lakes created by the glaciers. Kettle lakes formed when sediment covered huge blocks of ice for many years. When the blocks of ice finally did melt, they left behind big depressions in the Earth called kettle holes. When a kettle hole fills with water, it is called a kettle lake. Indiana has two state parks with many kettle lakes--Chain O'Lakes State Park and Pokagon State Park. Hoosiers enjoy boating, fishing, and swimming in these kettle lakes. You may even have visited a kettle lake without knowing it!

E) The lesson does not give you the definition of *depression*. Look at the dictionary entry below. Underline the correct definition.

How did you know that you chose the correct defintion?

_____

_____

_____

_____

depression
1. the condition of being sad or depressed
2. a time of economic hardship
3. an area that is sunk below its surroundings

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Signs of the Glaciers

How do we know that glaciers were in Indiana? The evidence is all around us, in the soil, the rocks, the trees and plants, the hills, the valleys, the plains, the rivers and streams and lakes. Northern Indiana is filled with lakes from the glaciers. Central Indiana is flat and full of sediment from the glaciers. And because the glaciers stopped just south of Indianapolis, southern Indiana is full of the hills that the glaciers pushed up and didn't flatten. We can tell by looking at these things that the glaciers were in Indiana.

F) Sometimes graphics may contain difficult words. Look up the word *moraine* in a dictionary and write the definition below.

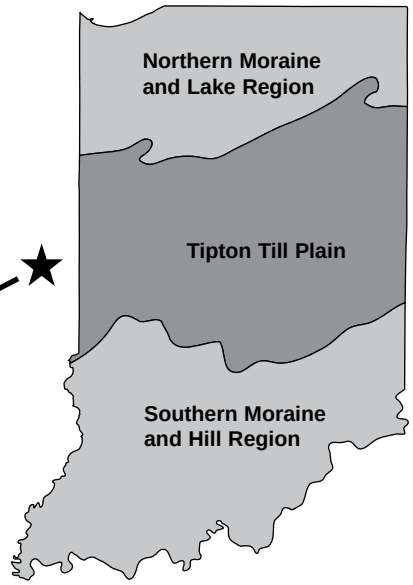
_____

_____

What kinds of rocks would you expect to find in Northern and Southern Indiana?

_____

_____



Glaciers created Indiana's landforms: lakes and moraines in the north, the central flatlands, or till plain, in the middle, and hills in the south.

Review

1. a. Read the paragraph after the heading 'Glaciers Create Kettle Lakes.' Can you tell from the words in those sentences what the word *kettle lake* means? Write your definition below:

_____

_____

b. Now look at the dictionary entry for *kettle*.

kettle
1. A metal pot used for boiling. **2.** A tea kettle. **3.** A kettledrum. **4.** A hole formed by the melting of a glacier. **5.** A pothole.

There are five definitions. Choose the definition that goes with *kettle lake* and write it here. How did you know that you chose the correct definition?

_____

_____

2. Write down another word from the lesson that you do not know. Then find and write the dictionary definition. If there are no unfamiliar words, choose a word that you do know, and use a dictionary to find another definition for that word.

Word: _____

Dictionary definition: _____

A) Find out what *value* means and write the definition here.

_____

_____

Discover

What is Indiana limestone?

Science Words

limestone a kind of rock that is at least half calcite

mineral anything that exists naturally on Earth and is not an animal or vegetable

natural resource something made by Earth that is of value for humans

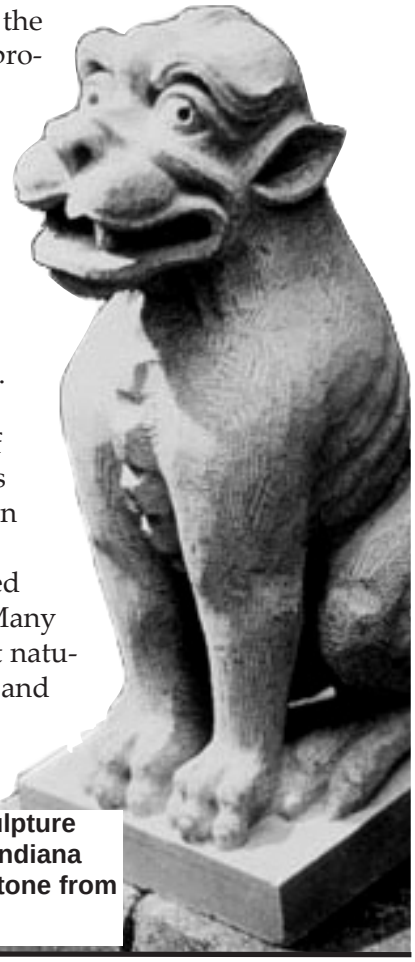
rock a solid mass made of one or more minerals

Indiana Limestone: How on Earth?

Did you know that limestone is the state rock of Indiana? Indiana limestone is a natural resource. A **natural resource** is something made by the Earth that is of value, or useful, for humans. Indiana produces about half of all the building limestone in the United States. In fact, Indiana produces so much limestone that builders call one kind of limestone "Indiana limestone." What is limestone?

Limestone Is a Kind of Rock

The Earth is made of layers. The outside layer, called the Earth's crust, is made mostly of rock and minerals. A **mineral** is anything that exists naturally on Earth and is not an animal or a vegetable. Scientists have named over 2,000 minerals on Earth. Many of these minerals are important natural resources. Gold, silver, salt, and iron are all minerals. Different minerals come together to make rock.



This gargoyle sculpture was made by an Indiana artist using limestone from Indiana.

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B) What is the name of the outer layer of the Earth?

_____

What is this layer made of?

_____

_____

_____

Standards Addressed: Soc 4.4.1, 4.4.5 ; Sci 4.3.6

C) Find out what *sedimentary* means and write the definition.

_____

_____

D) Use clues in the paragraph to write the definition of *calcite.*

_____

_____

_____

_____

Rocks are solid masses made of one or more minerals. Different combinations of minerals make different kinds of rocks. There are many different types of rocks. Indiana **limestone** is one kind of rock. It is a sedimentary rock, which means that it is made up of small pieces of minerals mixed with fragments of shells and other materials.

Limestone is Made of Minerals

Calcite is a mineral found in limestone. It is one of the most common minerals in the world. The amount of the mineral calcite in a rock determines whether it can be called limestone. How do scientists know if a rock contains calcite? If you have a piece of limestone, you can do an experiment. Put the limestone in a glass of vinegar. It will start to fizz and bubble. It fizzes because of the calcite in the limestone and the acid in the vinegar. Calcite bubbles and becomes carbon dioxide– the same kind of bubbles in a can of pop. Scientists only call a rock "limestone" if at least half of it is the mineral calcite. Indiana limestone, also known as "Salem Limestone," is almost all calcite.

oolitic limestone

Calcite makes rocks easy to shape and cut. The more calcite a rock has, the easier it is to shape and cut. Because Indiana limestone has so much calcite in it, it is prized by builders throughout the world.

F) Find out what *Salem Limestone* means and write the definition here.

_____

_____

_____

_____

E) Find out what *acid* means and write the definition here.

_____

_____

G) Write one reason why the letters *oo* in *oolitic* are a good way to remember what *oolitic* means.

_____

What is one other way that you can remember what a difficult word means? _____

_____

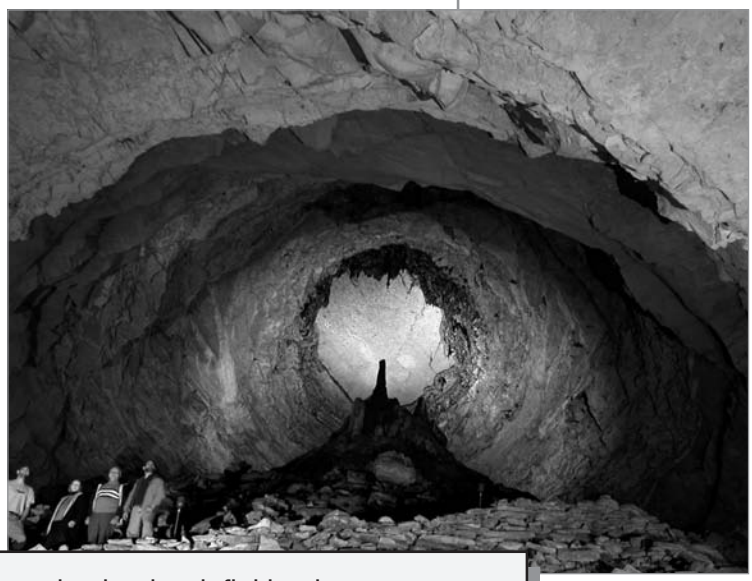
Salem Limestone is an oolitic (o´ə-lĭt´ĭk) stone. Oolitic is one of seven types of limestone. Oolitic limestone is full of small, round shapes that look like the double-O in the word "OOlitic." These round pieces give Indiana limestone a smooth texture that can be easily cut and looks nice.

Where Limestone Is Found

Although you can find Indiana limestone in buildings all over the country, most of Indiana's limestone is found in just three counties–Lawrence, Monroe, and Owen.

Most of Indiana's limestone production occurs in the area that we call the "stone belt." The stone belt is near Bedford and Bloomington. Limestone is found in beds that can be a few centimeters to three meters thick. It is very easy to scratch or cut limestone with a knife. However, it takes heavy machinery to cut and pull the limestone blocks used for buildings from the Earth.

The next time you take a trip, look at the buildings around you–you may be looking at a part of Indiana!



Limestone caves, like Wyandotte Cave in Southeastern Indiana, form when rainwater dissolves minerals.

H) Find out what *stone belt* means and write the definition here:

_____

_____

What is one way you could remember this definition?

_____

_____

Review Questions

When you look up words in a dictionary or glossary, you learn their meanings. One way to check your understanding of these definitions is to use the words in a sentence. If you can write a sentence using a difficult word, you probably understand what the word means. Use the following words from the lesson to complete the sentences below. You may need to look back at the definitions that you wrote earlier in the lesson.

value	calcite	Salem Limestone
acid	stone belt	oolitic limestone

1. The fourth grade class took a field trip to the _____.

2. On their trip students saw many different Indiana rocks including _____, which is a kind of _____.

3. They learned about a mineral called _____.

4. They used _____ to help them identify the rocks that they found.

5. The students decided that their trip had a high _____ because they had a lot of fun and learned a lot.

6. Now use at least two other difficult words from the lesson to write a sentence (or sentences) of your own.

_____

_____

7. Why is it important to learn the difficult words in a lesson even if they are not bolded vocabulary words?

_____

_____

A) This lesson uses a lot of difficult words. Circle all the words you do not know. Write one place you could look to find out what the words mean.

_____

_____

B) This paragraph explains the word *constitution*. Underline the definition in the paragraph and write it here.

_____

_____

LESSON 1

State Government

MAIN IDEA

Indiana is governed by a three-part government.

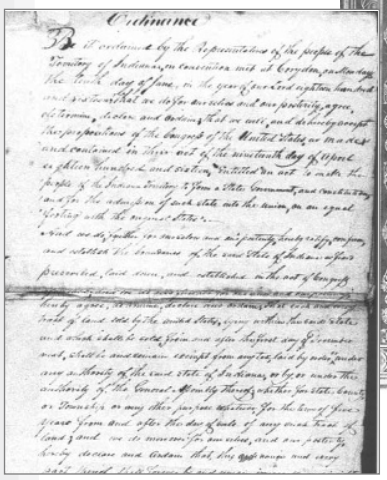
VOCABULARY

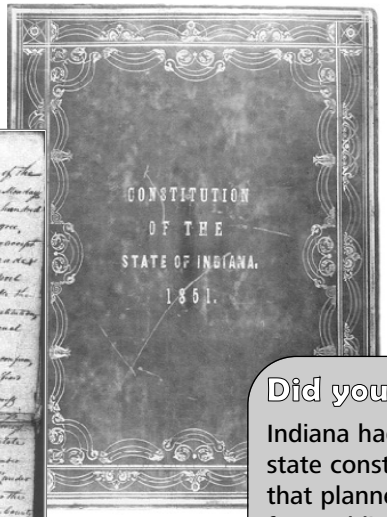
appoint
bill
executive branch
government
judicial branch
legislative branch

All Hoosiers have a state government to protect and serve them. A **government** is a group of people who make and enforce laws. Our state government is made up of people who want to make Indiana the best state it can be.

Beginnings of State Government

In 1816, Indiana's state government began. That same year Indiana became a state. In June of 1816, Indiana's first constitution was written to set some basic laws for the state. It also explained how Indiana's government should be organized. In 1851, a second state constitution was written to include some new ideas. Although some changes, or amendments, have been made, the Constitution of 1851 is the constitution our state still uses.





Copies of the original 1816 Indiana Constitution and the cover of the 1851 Constitution.

State Government Organization

The constitution explains how the government of Indiana should be organized. The constitution states that the Indiana state government should be divided into three separate parts. Each part has a specific job and no part should ever be more powerful than the other parts.

Did you know?

Indiana had the first state constitution that planned for free public schools.

C) This paragraph tells more about Indiana's constitution. Write another fact this paragraph tells you about Indiana's constitution.

_____

_____

D) Write a definition of *General Assembly* that includes at least two details. (Hint: Remember to read all the sentences around the words.)

_____

_____

_____

F) Sometimes words are defined in the text. A synonym for *represent* is

_____

The parts of the government are called branches of government. The three parts are the legislative branch, the executive branch, and the judicial branch. Though they are all part of the same state government, each branch is responsible for different jobs.

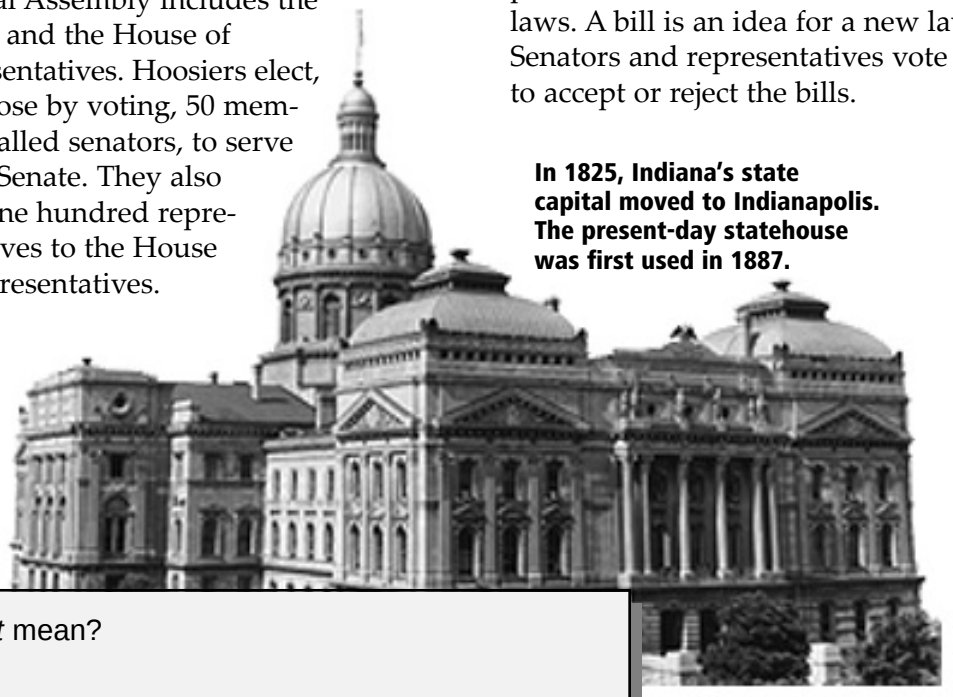
The Legislative Branch

The **legislative branch** is the branch of the government that creates laws. Indiana's legislative branch is also called the General Assembly. The General Assembly includes the Senate and the House of Representatives. Hoosiers elect, or choose by voting, 50 members, called senators, to serve in the Senate. They also elect one hundred representatives to the House of Representatives.

Representatives and senators represent, or speak for, all the people in their area of Indiana. Senators serve for four years and representatives serve for two years after each election.

The General Assembly creates laws that affect the daily lives of Indiana's residents. These include laws about state taxes, services, and budgets. The General Assembly even makes laws about state parks.

The General Assembly meets to present ideas that can be made into laws. A bill is an idea for a new law. Senators and representatives vote to accept or reject the bills.



In 1825, Indiana's state capital moved to Indianapolis. The present-day statehouse was first used in 1887.

E) What does *elect* mean?

_____

_____

G) Write two facts the lesson tells you about the governor. This is the beginning of a definition.

_____

_____

The Executive Branch

The **executive branch** of the government is the branch that makes sure laws are carried out. The executive branch includes the governor, lieutenant governor, and other state officials. Like the senators and representatives, the state officials in the executive branch are elected. The governor and lieutenant governor are elected as a team for a four-year term.

The governor has many jobs. The governor meets with other state governors and the President of the United States to help the country work together. The governor also works to make sure the state of Indiana is a safe place to live. The governor accepts or rejects the bills the General Assembly approves. If the governor accepts the bill, it becomes a law for the state. If the governor disagrees with the bill, he or she vetoes, or rejects, it. The General Assembly may overturn the governor's veto with enough votes.

This is Indiana's first state capital in Corydon. On November 4th, 1816 at 9 a.m., the first meeting of the General Assembly was held. There were 10 senators and 29 representatives.

H) What does *veto* mean? _____

_____

Write a synonym for *veto* here: _____

I) Look at the words you circled at the beginning of the lesson. Choose one of the words and write a definition using clues from the words and sentences around it.

Word: _____

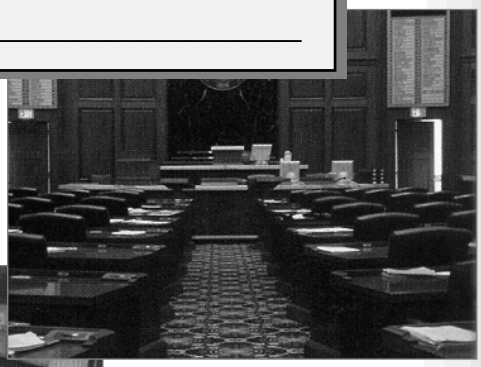
Definition: _____

_____

_____

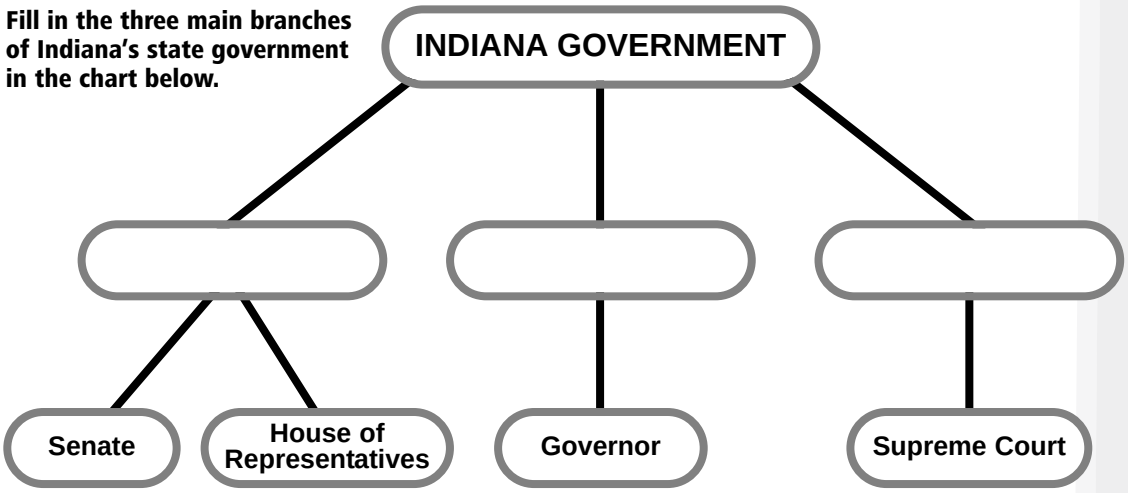
The Judicial Branch

The Supreme Court and other state courts make up the judicial branch. The **judicial branch** is the branch of government that is responsible for enforcing justice. The Supreme Court decides if laws are fair and in keeping with Indiana's constitution. Five judges serve on Indiana's Supreme Court. These judges are not elected. The governor **appoints**, or chooses, the judges, including the Chief Justice.



You can visit the Indianapolis state house to see your government at work. Both the Senate and House of Representatives have special seats for visitors so they can watch what is happening.

Fill in the three main branches of Indiana's state government in the chart below.



J) *Chief Justice* is not in the glossary, but *chief* is. See if you can figure out what *chief justice* means. Write your definition here:

_____

_____

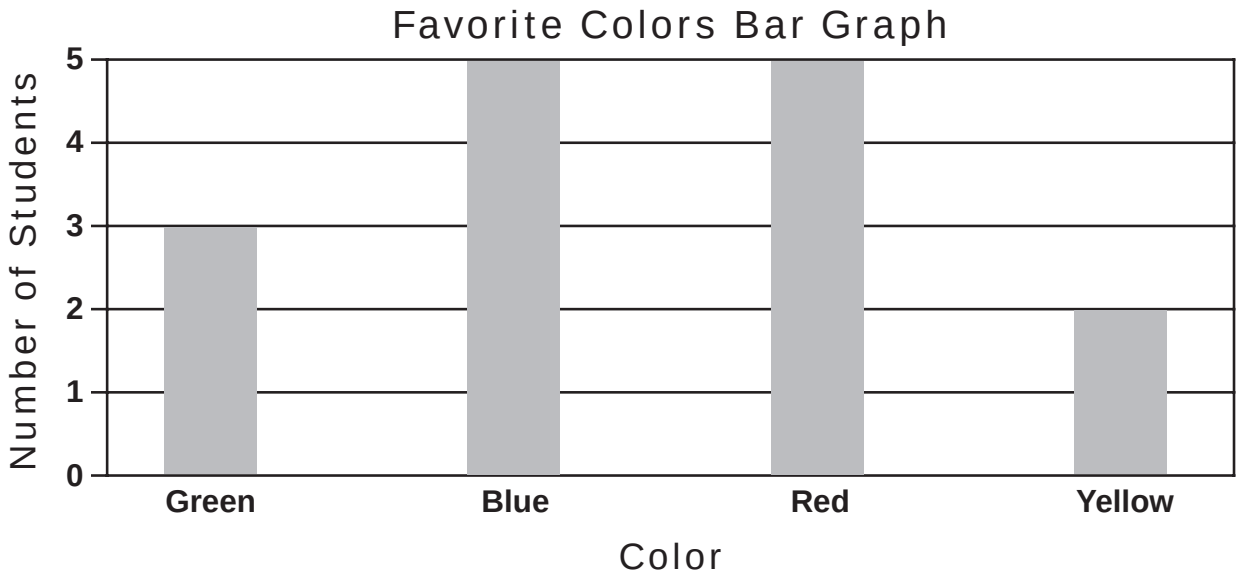
Write a synonym for *justice*:

_____

STUDY SKILL: Transforming Graphics into Narratives

When you read, it is important to understand graphics. One way to show that you understand a graphic is to explain it in your own words.

Look at the graphic below:



If you wanted to write about this graphic, you could write:

Fifteen students listed their favorite colors. Three of the students chose _____ as their favorite color. _____of the students chose yellow as their favorite color. Five students chose red and five chose blue as their favorite color. The least popular color was _____. The most popular colors were _____ and blue.

When you read, make sure you can explain the graphics and understand what the captions mean.

Standards Addressed: Soc 4.3.3; Sci 4.2.4, 4.3.9, 4.5.4

Discover

What makes shadows change throughout the day?

Science Words

rotate to spin all the way around

shadow a surface area from which light is blocked

Sun and Shadows

Do shadows scare you or make you laugh? A **shadow** occurs when light is blocked from reaching a surface. In the daytime, shadows are created by objects blocking sunlight. When you are outside on a sunny day and see your shadow on the ground, you are blocking sunlight from reaching Earth.

You can create pictures by blocking light and creating shadows.

Have you ever wondered why sometimes your shadow is bigger than you and other times smaller than you? Lars and Jayda did an experiment to learn about shadows and the sun. They watched the shadow made by a stick.

SHADOW EXPERIMENT

Materials:

- Sunlight
- Chalk or pencil
- A stick at least 12 inches long.

Steps:

1. Place the stick upright in flat ground so that it creates a visible shadow.
2. Measure and record the height of the stick above ground.
3. Trace and measure the shadow that the stick makes. Record the time next to the shadow. Wait one to two hours.
4. Repeat Step #3 at least four times.

A) Write three things this graphic tells you.

_____

_____

_____

_____

B) Write two reasons Lars and Jayda chose to make a chart of their information instead of a paragraph. Hint: look back at your *Graphics* card.

_____

_____

The students discovered that the shadow of the stick moved even though the stick stayed firmly in the ground. It moved because the stick was in Earth and Earth was rotating. Earth is always **rotating**, or spinning all the way around, on its axis. When Earth rotates, everything on Earth rotates with it. You move too.

Imagine that you put a sticker on a ball and then rotated the ball. The sticker would rotate with the ball even though it stayed stuck in one place. The same type of movement happens to you. You, and everything "stuck" to Earth, slowly turn as Earth rotates. If you stand still, you can tell Earth is rotating by watching your shadow move on the ground throughout the day.

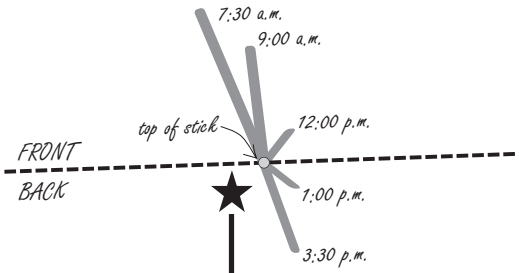
Sundials are clocks that use shadows to mark the time.

In the experiment, the shadow's length changed because as Earth rotated, the part of Earth with the stick moved to a different position from the sun. As Earth rotates, it looks like the sun moves across the sky. Even though it looks like

LAB RESULTS:

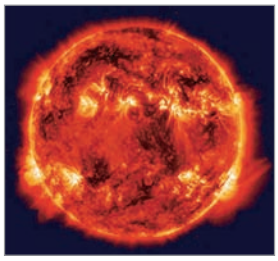
Stick = 10"

TIME	SHADOW DIRECTION	SHADOW LENGTH
7:30 a.m.	in front, to the left	28"
9:00 a.m.	in front	13"
12:00 p.m.	in front, to the right	2"
1:00 p.m.	behind, to the right	2"
3:30 p.m.	behind, to the right	9"



C) Explain this graphic in words. This experiment measured three things: _____, _____, and shadow length. At 7:30 a.m., the shadow was in front and to the _____. At _____, the shadow was 2 inches long. At 1 p.m., the _____ was in back and to the right. It was _____inches long at 3:30 p.m. At _____ a.m., it was 13 inches long. The shadow was shortest at _____. That means the sun was right above Lars and Jayda. The shadow was longest at _____.

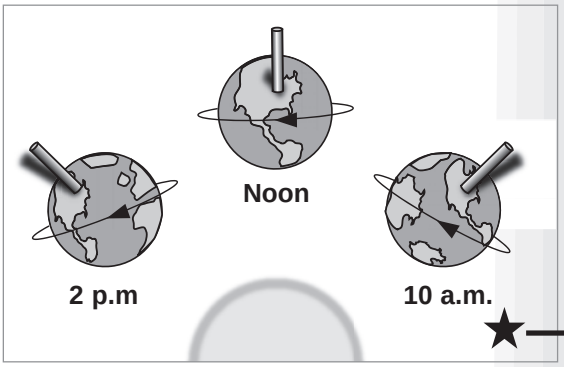
Standards Addressed: Soc 4.3.3; Sci 4.2.4, 4.3.9, 4.5.4



Special cameras take pictures of the sun. Never look directly at the sun.

the sun moves in the sky, it doesn't. The sun stays in one place, and Earth just keeps rotating. It's Earth's position in relation to the sun that changes.

You can imagine how objects on Earth change their position in relation to the sun if you think about riding a merry-go-round. If there were a tree next to the merry-go-round as you spun around, sometimes you could look straight at the tree; sometimes you would have to turn your head to look back at the tree; sometimes you would be next to the tree. As the merry-go-round spins, you move to different positions relative to the tree.



It takes Earth one whole day–almost 24 hours–to make one complete rotation. As Earth rotates, you change your position from the sun, much like you would on the merry-go-round as you went by the tree. When you are on Earth, you slowly spin by the sun. You move and the sun stays in place. As Earth rotates, we move to different positions in relation to the sun. We block the sunlight from different positions. Around noon, we pass directly in front of the sun and it is right over our heads: at noon, our shadows will be very short because we cannot block much of the sun.

As Earth rotates, we move to the side of the sun. From the side, we can block more of the sun so our shadows are longer. As we continue to rotate, our positions create different lengths of shadows on the ground.

D) Complete a caption that explains this diagram.

"As the Earth _____ we change our _____ in relation to the Sun."

A) Does this graphic tell you about the hydrologic cycle? _____ Write one reason why OR one reason why not.

_____

_____

Discover

What are the three stages of the hydrologic cycle? How does the cycle affect Indiana?

Science Words

condensation the changing of a gas into a liquid

evaporation the changing of a liquid into a gas

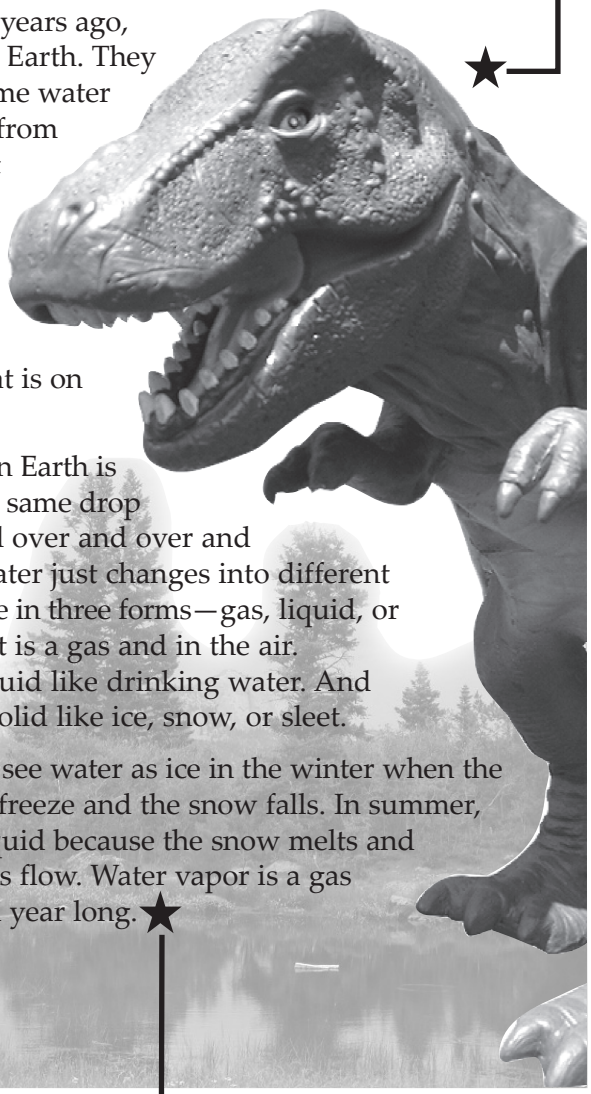
hydrologic cycle the water cycle of precipitation, evaporation, and condensation

precipitation water (solid or liquid) that falls to the Earth from the sky; the process through which water falls to Earth

Can you imagine?

A raindrop that fell on the head of a Tyrannosaurus Rex could be in the river closest to your town today.

Dinosaur Water



Over a million years ago, dinosaurs lived on Earth. They drank from the same water then as you drink from today. Doesn't that seem strange? But it's true. The water that was on Earth when the dinosaurs lived is the same water that is on Earth today!

All the water on Earth is part of a cycle. The same drop of water is recycled over and over and over again. The water just changes into different forms. Water can be in three forms—gas, liquid, or solid. Sometimes it is a gas and in the air. Sometimes it is liquid like drinking water. And sometimes it is a solid like ice, snow, or sleet.

In Indiana, we see water as ice in the winter when the lakes and streams freeze and the snow falls. In summer, we see water as liquid because the snow melts and the rivers and lakes flow. Water vapor is a gas that is in the air all year long.

B) Look at the flow chart on the next page. Write one reason that this graphic makes it is easier to understand the hydrologic cycle.

_____

_____

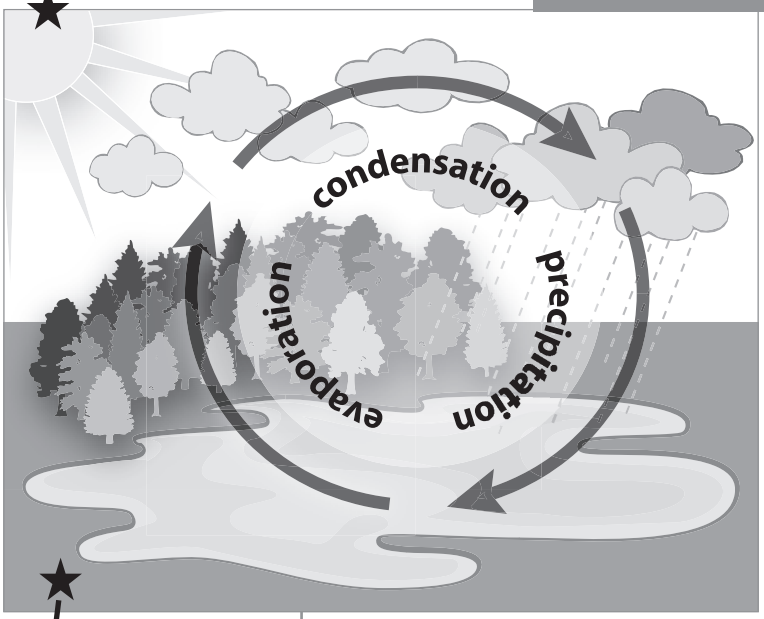
Standards Addressed: Soc 4.3.7; Sci 4.2.4, 4.3.2, 4.5.4

C) Look back at your *Graphics* card. What are two things that this graphic can explain better than the words can?

_____

_____

_____



The water cycle is called the **hydrologic cycle**. The hydrologic cycle is made of three different stages: evaporation, condensation, and precipitation.

Evaporation is one stage in the water cycle. **Evaporation** is the changing of a liquid, like water, into a gas, like water vapor. When liquid water evaporates, or becomes part of the air, it is turned into a gas called water vapor. Sometimes you can see water vapor. You can see water vapor when steam rises from really hot water. As some of the water rises into the air, it becomes a gas and joins with other gases in the air.

Water from oceans and lakes becomes part of the air through evaporation. The sun heats up water. Tiny drops of water from the oceans and lakes evaporate into the air. Now the liquid water from Earth is part of the air. The sun even evaporates dew on the grass and the raindrops after a storm. When the dew and raindrops evaporate, they become water vapor too.

Water vapor can rise in the air. The higher the water vapor rises, the colder it gets. As the vapor gets colder, it begins to change back into liquid. The changing from a gas to a liquid is called **condensation**. Condensation is another part of the

D) What are two things the words can explain better than the graphic can?

_____

_____

_____

_____

_____

E) Does this graphic tell you about the hydrologic cycle? _____
Write one reason why **OR** give one reason why not.

_____

_____

water cycle.

You can almost see water vapor condensing if you go outside on a foggy day. The cooled water vapor clouds the air. You may even feel the wetness of the water in the air.

When water vapor condenses high in the sky, it turns into clouds. You have probably seen many clouds drifting over the Indiana sky. Some clouds are very white, while others are darker, almost black. The more condensation that happens in the sky, the bigger and darker the clouds become.

Which do you think is heavier: water vapor or liquid water? If you thought liquid water, you're right. As more and more water vapor condenses, the clouds become heavier. The water vapor condenses into darker clouds. When a lot of water has condensed, it is too heavy for the air to hold it anymore. The water drops back down to Earth as liquid rain or icy sleet and snow. When this water falls to Earth, it is called **precipitation**. Through precipitation, the water is back on Earth and is ready to evaporate again.

We measure precipitation to know how much rain, snow, and sleet Indiana gets each month. Too much precipitation could cause a flood. Too little precipitation could cause a drought. A drought is when Earth is too dry for plants to grow.

Consider this:

A gallon of paint or a quart of motor oil can seep into Earth and pollute 250,000 gallons of drinking water.

A spilled gallon of gasoline can pollute 750,000 gallons of water.

Without water, humans cannot live. More than half of your body is water.

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F) Does this graphic tell you about the hydrologic cycle? _____
Write one reason why **OR** give one reason why not.

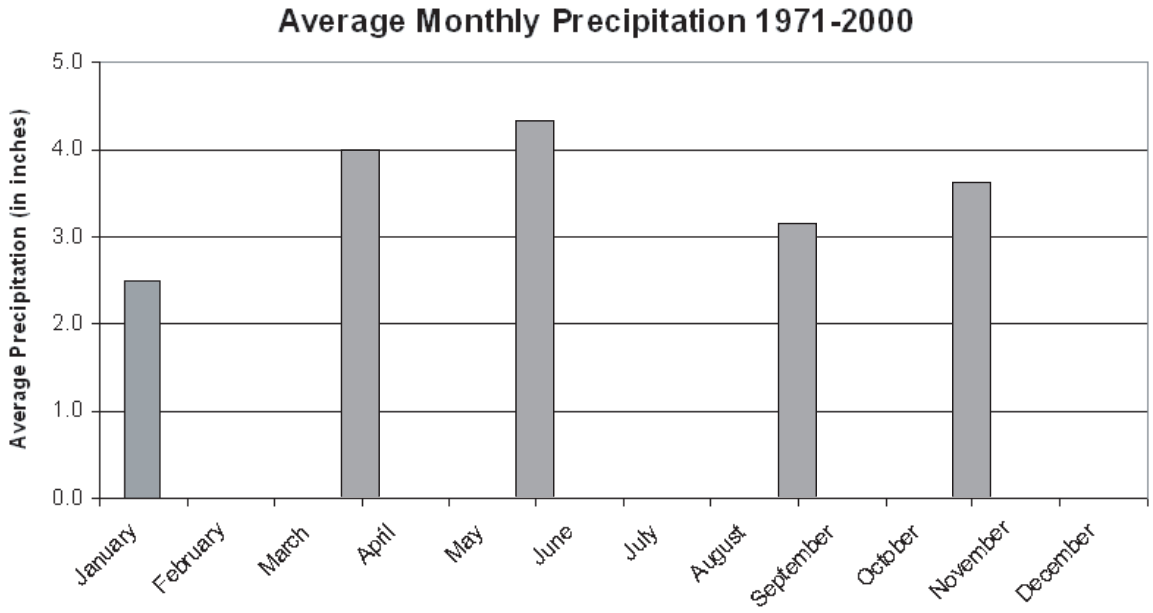
_____

_____

Review Questions

The average amount of precipitation in Indiana between 1971 and 2000 is recorded in the box below. Use this information to create a bar graph that shows the amount of rain or snow for each month. Some of the months have been done for you.

- In March it rained an average of 3.4 inches.
- In July it rained an average of 4.2 inches.
- In January it snowed and sleeted an average of 2.5 inches.
- In December it snowed and sleeted an average of 3.1 inches.
- In April it rained an average of 3.9 inches.
- In February it snowed and sleeted an average of 2.3 inches.
- In August it rained an average of 3.9 inches.
- In October it rained an average of 3.0 inches.
- In June it rained an average of 4.2 inches.
- In May it rained an average of 4.5 inches.
- In November it rained an average of 3.4 inches.
- In September it rained an average of 3.1 inches.



1. What are the three stages of the hydrologic cycle?
   - ○ rain, sleet, snow
   - ○ oceans, lakes, rivers
   - ○ evaporation, condensation, precipitation

2. How does the hydrologic cycle affect Indiana?
   - ○ It brings new water to the Earth.
   - ○ It creates clouds, rain, and snow.
   - ○ It changes freshwater into saltwater.

LESSON 3

MAIN IDEA

Taxes in Indiana provide important services for Indiana citizens.

VOCABULARY

budget
fund
revenue
tax
transportation

Tax, revenue, budget, and fund are all words about money.

Indiana Tax Dollars

How much do you know about taxes? You might think that taxes are something that only grown-ups pay, but if you have ever bought something at the store, you have probably paid a tax. What exactly is a tax? A **tax** is an amount of money that people and businesses are required to pay to support public services. The government uses the money that it raises from taxes to provide services to its citizens.

Who Pays Taxes?

Who pays taxes? Almost everyone in the state of Indiana pays taxes. When people work, they must give part of the money that they earn to the government. This is an income tax. Businesses must also pay income taxes. This is a corporate income tax. When people buy things at the store, they must pay an extra amount of money to the government. You may have noticed that when you buy something at the store you pay a little more than the price on the price tag. This extra money is another kind of tax. It is a sales tax. Income taxes, sales taxes, and corporate income taxes represent important money for the state of Indiana.

What Does Indiana Do With Tax Money?

Indiana tax revenues fund many important programs. **Revenue** is the money the government receives to provide public

A) Does this graphic help you understand how taxes work? _____
Write one reason why **OR** one reason why not.

_____

_____

_____

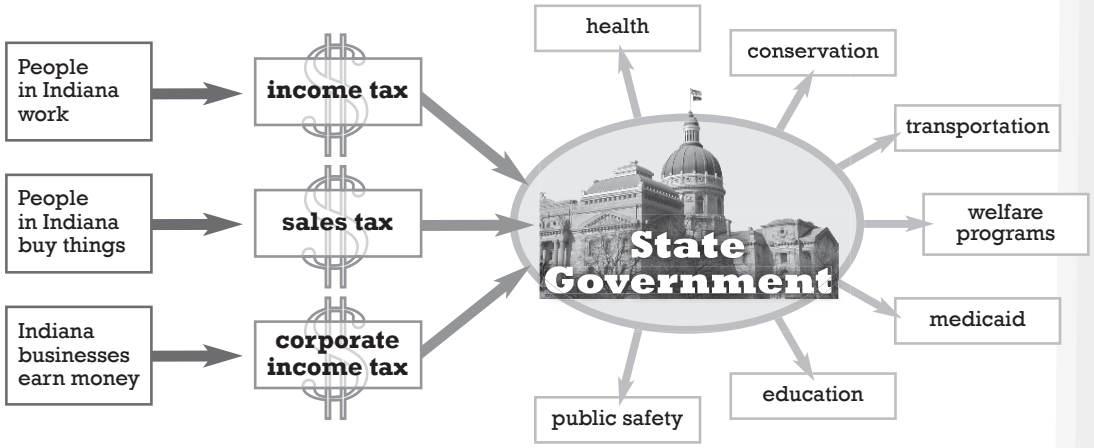
B) Does this flow chart help you understand the idea of taxes? _____
Write one reason why **OR** one reason why not.

_____

_____

_____

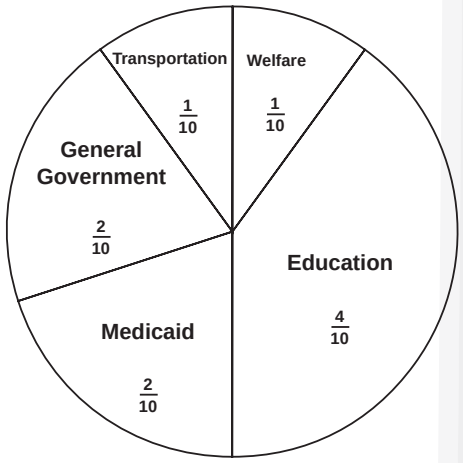
Flow of State Taxes



services. Did you know that your school is probably funded by tax revenues? To **fund** means to provide with money. A high percentage of Indiana tax revenues is spent on education. In fact, Indiana spends more of its tax revenues on education than on any other program or service. The tax revenues are used to provide books, teacher salaries, and schools for Indiana students. The government spends a lot of money on education because education is very important to the future of our state. Education helps make our state a better place to live.

Tax revenues are also used to fund transportation. **Transportation** is the movement of people or goods from one

Top Services



This pie chart shows the five services that receive the most tax revenue.

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C) Transportation budgets include money for building roads, repairing roads, and bus service. Should you use a pie chart or a flow chart to show how much is spent on each service? Why?

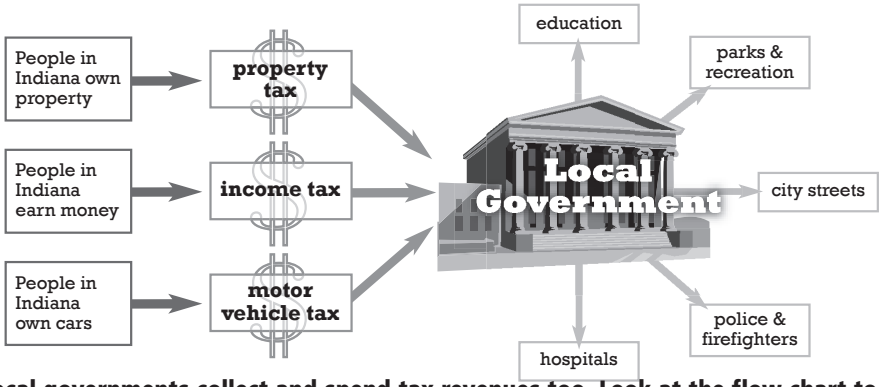
_____

_____

place to another. Some of the money that is spent on transportation supports the state highway system. For example, tax revenues are used to build new highways and to repair the highways that we drive on every day. Another way that the Indiana government funds transportation is by providing buses for people in Indiana. If the government did not build highways and provide buses, Hoosiers would have a hard time getting to work and school. Welfare programs are another service that Indiana tax revenues provide. Welfare programs help Hoosiers pay for food and housing. Another program, called Medicaid, helps Indiana citizens pay for medicine. Other ways in which Indiana tax revenues are spent include public safety, health, and conservation.

How is the Money Divided?

Because there are so many important programs that need money from the state of Indiana, the government has to decide how much money to give to each program. To do this, it must create a budget. A **budget** is a plan for spending money. Every year, the government of the state of Indiana produces a budget that shows how it will spend the taxes paid by the citizens of Indiana. If you look at the pie chart, you will see how much money the Indiana state government budgets for each important program.



Local governments collect and spend tax revenues too. Look at the flow chart to see how local governments collect and spend taxes.

D) What is one source of taxes for local government?

_____

What is one way local government taxes are spent?

_____

Review Questions

1. According to the pie chart on page 2, which three services receive the most funding from Indiana tax revenues?

   _____

   _____

2. Compare the state government flow chart with the local government flow chart.

   a. Write one difference in how state and local governments collect taxes.

   _____

   _____

   b. Write one similarity in how state and local governments spend taxes.

   _____

   _____

4. The pie chart on page 2 shows how Indiana spends money for government programs. Imagine that you have $10 to spend. You want to spend $5 on a book, $2 on a notebook, $2 on markers, and $1 on pencils. Complete the chart below and then construct a pie chart to show how your $10 will be spent.

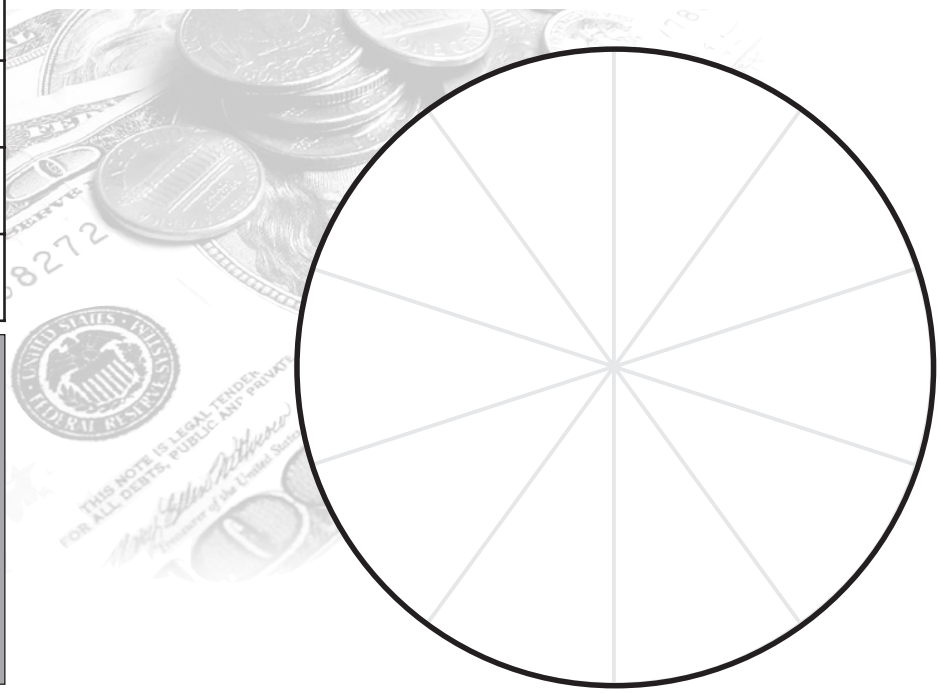
book	$\frac{5}{10}$
notebook	
markers	
pencils	

Pieces of the Pie

$\$5 = \frac{5}{10}$

$\$2 = \frac{2}{10}$

$\$1 = \frac{1}{10}$



STUDY SKILL: KWL Chart

A KWL chart is a good study aid for lessons and chapter tests. A KWL chart helps you organize the information you know, identify the information you want to learn, and outline the information you have learned.

A KWL chart has three columns: one for what you know, one for what you want to learn, and one for what you learned when you read.

Now you will make your own KWL chart for the next lesson. Just follow the steps listed below.

Title_____

What I Know K	What I Want to Learn W	What I Learned L
BEFORE	DURING	AFTER

STEP 1 - Choose a title for your KWL chart (use the lesson's title and headings).

STEP 2 - Complete the first column.

1. Think about what you already know about the topic (transportation in Indiana). Think about HOW you travel. Think about WHY you travel. Think about WHAT you travel on or in.
2. Write at least two things that you already know about transportation in Indiana in the first column.

STEP 3 - Complete the second column.

1. Skim the lesson's headings, bolded words, and pictures.
2. Write at least two things you want to learn in this lesson. What questions about transportation do you have? Write what you want to learn in the second column.

STEP 4 - Complete the third column after you read the lesson.

Standards Addressed: Soc 4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.4.5; Sci 4.1.8

A) Write one reason having vocabulary words here can help you predict what the lesson is about.

_____

_____

LESSON 5

Indiana Transportation: Railways to Highways

MAIN IDEA

The ways that goods and people travel have changed over time in Indiana.

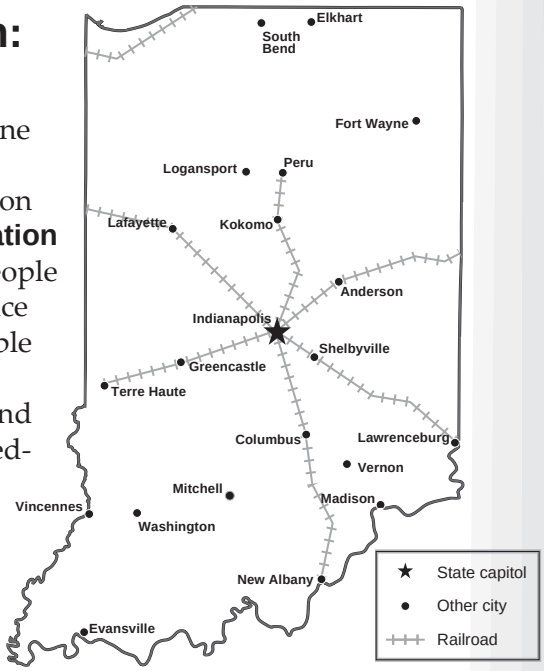
VOCABULARY

goods
interstate
transportation

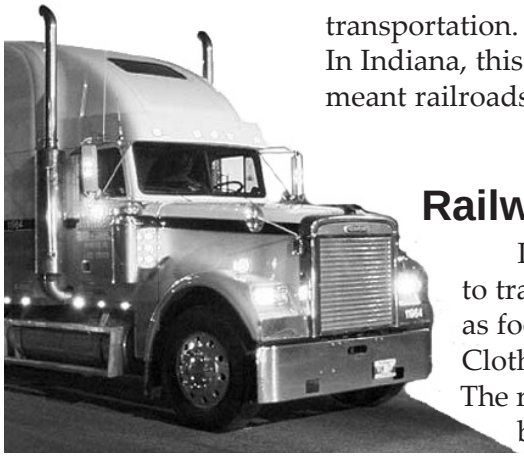
Early Transportation: Waterways

Waterways were one of the first important routes for transportation in Indiana. **Transportation** is the movement of people or goods from one place to another. When people moved away from the rivers to grow crops and build houses, they needed a new kind of transportation. In Indiana, this meant railroads.

MAJOR INDIANA RAILWAYS



Trucks transport goods from one place to another.



Railways Cover the State

Railroads were built all over Indiana in order to transport goods. **Goods** are objects such as food or toys that can satisfy people's wants. Clothes, food, and books are all examples of goods. The railroads carried goods. In order for people to buy goods, the goods must be moved, or

B) Write one place in your KWL chart where you could put vocabulary words. Explain your answer.

_____

_____

C) You will read about another type of transportation that developed in Indiana. Predict what it is.

_____

transported, to where people who want them can buy them. That's one reason Indiana railroads became so important.

In the late 1800s, Indianapolis was the center for railway activity. The map shows that almost all Indiana railways met in Indianapolis. The trains would stop in Indianapolis and transfer the food, medicine, and other supplies to other railroad lines. Some of the most important Civil War railway transportation routes were in Indiana.

★The First Roads

Even though railways were one of the main ways people and goods traveled in the 1800s, people also traveled by horse and wagon. The National Road, which stretched from the East Coast to the Mississippi River, came through Indiana. The National Road was a cleared dirt path. In 1837, over 100 wagons traveled this dirt path every day. Today the route is a paved road called US 40.

The Automobile Appears

By the end of the 1800s, the automobile was invented. One of the first automobiles that actually worked was built in Indiana. Elwood Hayes tested his car on July 4, 1894 in Kokomo. He drove it for seven miles.

The Need for Highways

In order to drive automobiles across the state, there needed to be good roads. So Indiana began to build highways. As more people owned their own cars and more highways were built, fewer people traveled by railroad. Trucks used the highways to transport goods from town to town across Indiana. Soon the trucks needed bigger roads. Large highways called interstates were built.

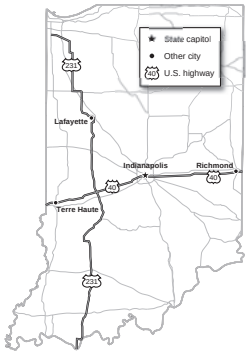
STOP

D) Stop reading here. Before you read more, predict where in Indiana the interstates were built. Skim the maps in this lesson for a clue.

My prediction:

_____

_____



US 40 was the first national road in Indiana. US 231 is the longest Indiana road. It goes across the entire state.

E) Write one place in your KWL chart where you could put information from this graphic. Explain your answer.

_____

_____

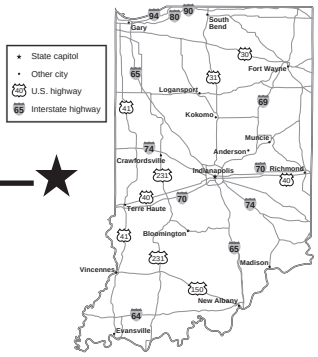
Standards Addressed: Soc 4.1.8, 4.1.9, 4.1.11, 4.3.10, 4.4.1, 4.4.5; Sci 4.1.8

F) Where would you write the names of trucking companies that serve Indiana?

- ○ What I have learned because I read it in the lesson.
- ○ What I want to learn because it is not in the lesson.
- ○ What I know because I know how trucks are made.

An **interstate** is a big highway that connects states to other states. The interstates in Indiana were built along familiar routes. They followed the same routes that the railroads used. Why do you think that is?

★ Today trucks transport most of the goods around the state of Indiana. Semi-trucks, or trucks that have a cab and a large trailer attached to them, carry many different kinds of goods. Sometimes they



More major highways intersect in Indiana than in any other state in America.

carry new cars. Sometimes they carry cows and pigs. Sometimes they carry televisions or radios. What are some of the other ways goods are transported today? ★

Review

Use your KWL chart to answer the questions.

1. Write two ways the KWL chart helps you remember the lesson.

   _____

   _____

   _____

   _____

2. How could you use a KWL chart to prepare to write a report?

   _____

   _____

   _____

   _____

H) Complete your KWL chart on page one by writing at least two things you learned from this lesson in the third column. GO!

G) Think about a highway near your school. If you wanted to add information about this highway to your KWL chart, where would you put it? Explain your answer.

_____

_____

A) Skim the lesson by reading the **bolded** words. Write two things you think this lesson is about.

_____

_____

How do you know if you made a smart prediction about what the lesson will be about?

_____

_____

Discover

What are artifacts and what can we learn from them? ★

Science Words

archaeological site a particular location where an artifact is found that shows where people once lived or worked

archaeologist a scientist who studies and searches for artifacts

artifact an object made or used by a person that tells how people used to live

Indiana Artifacts ★

What is an Artifact?

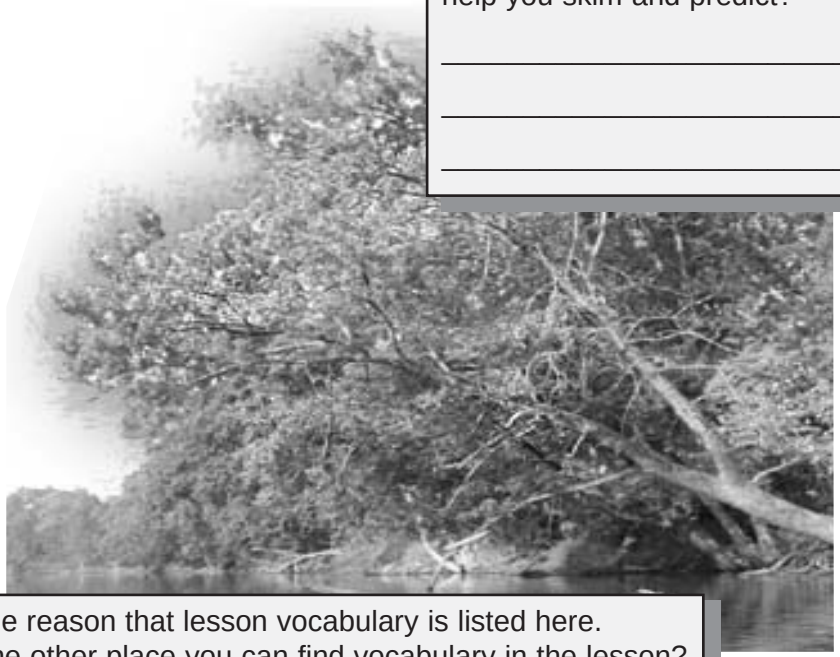
People have lived in Indiana for thousands of years. Scientists think American Indians lived in Indiana as early as 12,000 years ago. Even though the Native Americans did not leave written records of their lives, scientists have been able to learn a lot about them. By studying American Indian tools, scientists have learned how the early people of Indiana lived. These early tools have also helped scientists understand what Indiana was like thousands of years ago.

B) How does the *Discover* question help you skim and predict?

_____

_____

_____



Many artifacts have been found along the Wabash and Ohio Rivers in Indiana.

C) Write one reason that lesson vocabulary is listed here. Where is one other place you can find vocabulary in the lesson? Circle at least one vocabulary word.

_____

_____

_____

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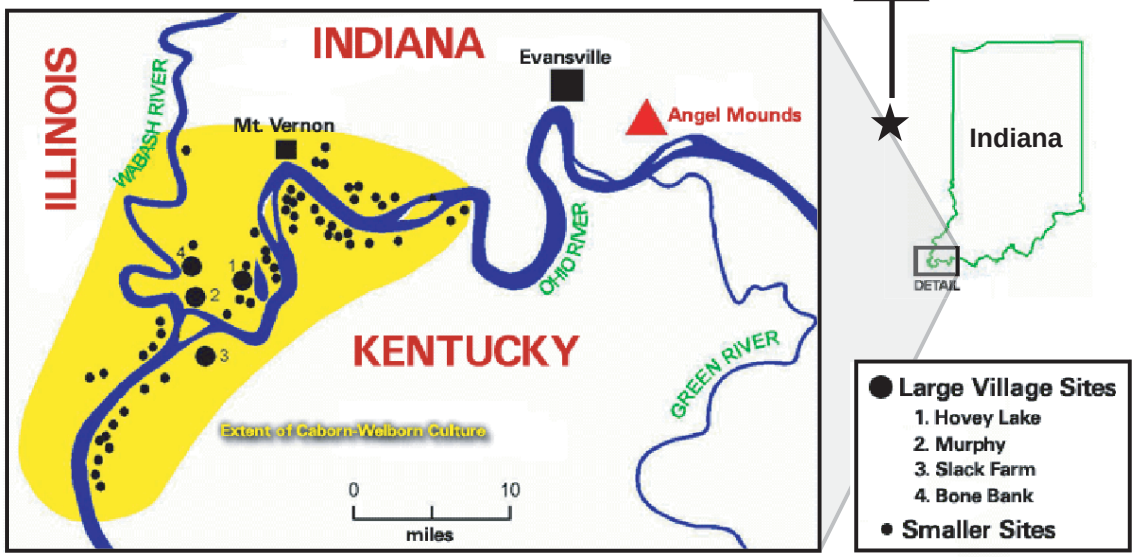
D) What is one detail that you notice on this map? Write one reason a graphic can help you predict or skim information in the lesson.

_____

_____



Hoosiers look for artifacts that tell how people used to live. Artifacts are often found along riverbanks.

The tools American Indians created to make their lives easier are now called artifacts. An **artifact** is an object made or used by a person that helps scientists find out how people used to live. Artifacts found in Indiana include arrowheads and knives used by American Indians when they hunted. Pottery used for cooking is another common Indiana artifact.

E) The lesson includes (är´kē-ŏlə-jĭst) in order to tell you

- ○ what *archaeologist* means
- ○ how to pronounce *archaeologist*
- ○ what ancient people called archaeologists

How Are Artifacts Discovered?

STOP

Sometimes people discover artifacts by accident. Old pots are sometimes found by people walking along riverbanks. Sometimes people find old pieces of pottery when they are building. Most of the time, buried artifacts are found by archaeologists. **Archaeologists** (är´kē-ŏl´ə-jĭst) are scientists who study and search for artifacts. Archaeologists use artifacts to learn about people from long ago. Glenn Black was a famous

STOP

F) Stop here! Predict what the rest of the paragraph will be about.

My prediction: _____

_____

How did you make your prediction? _____

_____

G) The term *archaeological site* is **bolded** because it is a _____.

- ○ vocabulary word
- ○ place name
- ○ main idea
- ○ mistake

Indiana archaeologist in the twentieth century. Maybe you can become a famous twenty-first century archaeologist.

Archaeologists dig in the ground at specific sites to look for artifacts. An **archaeological site** is a particular location where an artifact is found that shows where people once lived or worked. Artifacts have been found in every county in Indiana. In northern Indiana at the Indiana Dunes National Lakeshore, many sites are being examined for artifacts. Look at the map on the previous page. It shows four large village sites. In southern Indiana, archaeologists have been digging at the Hovey Lake site. What artifacts do you think they will find?

Glenn Black found this artifact at Angel Mounds.

Why Do Scientists Study Artifacts?

Scientists study artifacts to find clues about the way people lived a long time ago. Artifacts tell stories about how people used to live--what they ate, how they hunted, what was most important to them. Artifacts such as knives and spears let archaeologists know that the people who used them were probably hunters. Baskets show that the people may have gathered food. Decorated pottery shows that the person who made it cared about art. Nets or bone hooks might show that the people fished. Why do you think scientists want to know how people used to live?

Did you know?

When two artifacts are found at the same site, the artifact that is buried deeper is generally older.

H) Headings help you skim. Underline two headings in this lesson.

What are two ways to skim a lesson?

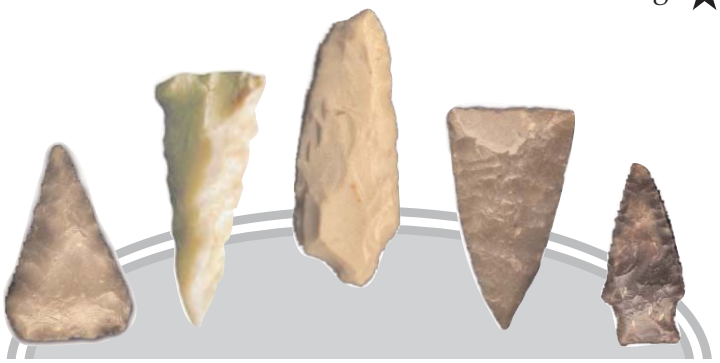
_____

_____

What if...

If you were to put one thing in a time capsule for people to see hundreds of years from now, what would it be?

Knowing what tools people used also helps us understand what Indiana used to be like. Because of the differences in artifacts found in Indiana, we know that people lived different kinds of lives in different periods of time. For example, the earliest people to live in Indiana hunted and gathered their food. We know this because the oldest artifacts found in Indiana are spear points used for hunting. As time passed, people in Indiana began to grow crops. Scientists know this because later artifacts include hoes used for farming. ★



Many kinds of artifacts are made from a rock called chert. Chert was popular for toolmakers because it would break where they wanted. Many Indiana arrowheads are made of chert.

REVIEW

1. Write one reason why artifacts are important.

2. Write your own definition of *artifact*.

I) When you have finished reading, it is a good idea to skim the lesson so you can _____.

○ guess ○ predict ○ review

Hint: Read review questions before you read the lesson. It will help you know what you need to learn. It will help you skim and predict.

A) Predict what this lesson is about.

_____

_____

_____

LESSON 4

Waterways to Railways

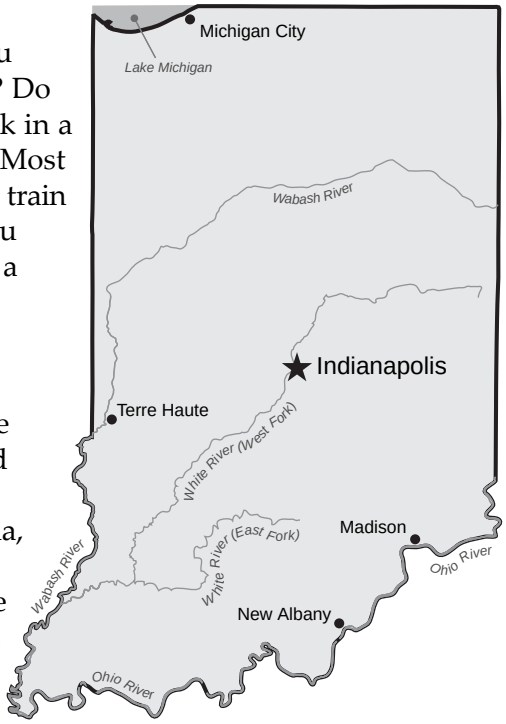
MAIN IDEA

Water and railroad transportation influenced the ways in which Indiana grew.

VOCABULARY

goods
Indianapolis
transportation

How do you travel to school every day? Do you walk? Ride your bicycle? Do your parents ride to work in a car or bus or on a train? Most people take a car, bus, or train to work or school. Do you know anyone who rides a boat to get to school?



Rivers and early cities in Indiana.

Boats in Indiana

When settlers, people who move to a place and make it their home, first started coming to Indiana, cars and trains had not been invented. So people came to Indiana by boat. They traveled on rivers and streams, and most people arrived by way of the Ohio River.

People traveled by boat on rivers and canals in Indiana.

In the early 1800s, water was important to Hoosiers who relied on it as a means of transportation. **Transportation** is the movement of people or goods from one place to another. The rivers carried boats and the boats carried people, food, and other goods. **Goods** are objects such as food or toys, that can satisfy people's wants. People and goods could travel more quickly on water than they could on land.

B) Circle three vocabulary words in this lesson.

C) Do questions help you predict? _____ Write one reason why OR one reason why not.

_____

_____

Big Cities in Indiana in the 1800s

Do you know what the largest city in Indiana was in 1830? It was New Albany. New Albany was large because it was on the Ohio River. People came to New Albany to visit and shop. Do you know what the largest city in Indiana was in 1850?

Madison was the largest city in Indiana in 1850. Madison was a large, lively city because it was on the Ohio River and many boats stopped there.

Another big city in the 1800s was Michigan City. Michigan City was a busy city because it was on Lake Michigan. People and goods that stopped there were carried by boats.

Today Madison and Michigan City are small towns in Indiana. Why do you think that is?

Our State Capital: Indianapolis

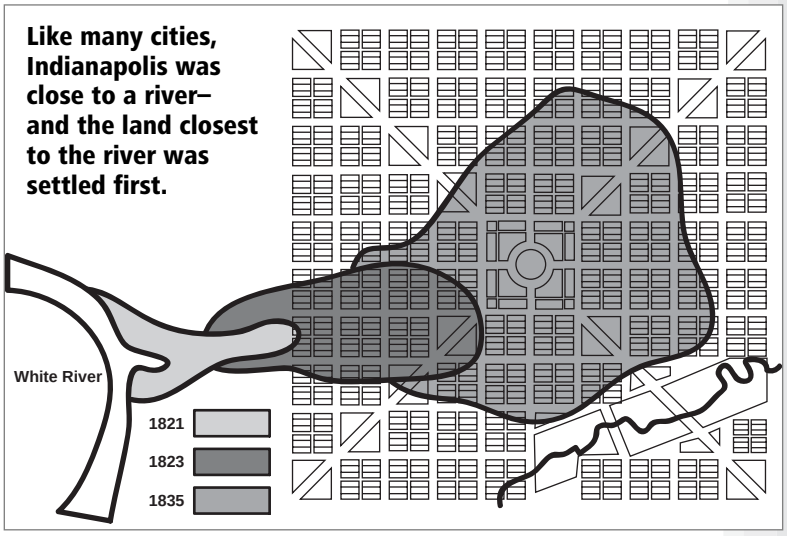
After people came to Indiana by boat, they cleared the land of trees and built houses and farms. Each year, more and more people moved farther away from the large waterways, Lake Michigan and the Ohio River. Soon Hoosiers wanted to have a capital that was centrally located.

In 1821 **Indianapolis**–still a small town–became Indiana's capital.

Waterways to Railways

In the 1830s people started building railroads. Railroads didn't depend on how a lake or river flowed, because they were built over land. And people and goods could travel faster on railways than on waterways.

The first major railroad went from the river city of Madison to the small town of Indianapolis. Begun in 1836, it was completed in 1847. If you've ever been to



Like many cities, Indianapolis was close to a river–and the land closest to the river was settled first.

123

D) Does this map help you skim? _____ Write one reason why OR one reason why not:

_____

_____

Madison, you know that it has many steep hills. It took five years to cut through those hills to build the railroad. In fact, the Madison railway is one of the steepest in the United States.

Soon other railroads went to the new capital. Look at the map, and you can see how all the railroads go to and from Indianapolis. Do you think the city expanded because of the railroads?

Building Railroads

The capital grew to become the largest city in Indiana by 1870. The railroads carried people, crops, and goods to and from the city. Indianapolis was becoming a transportation center.

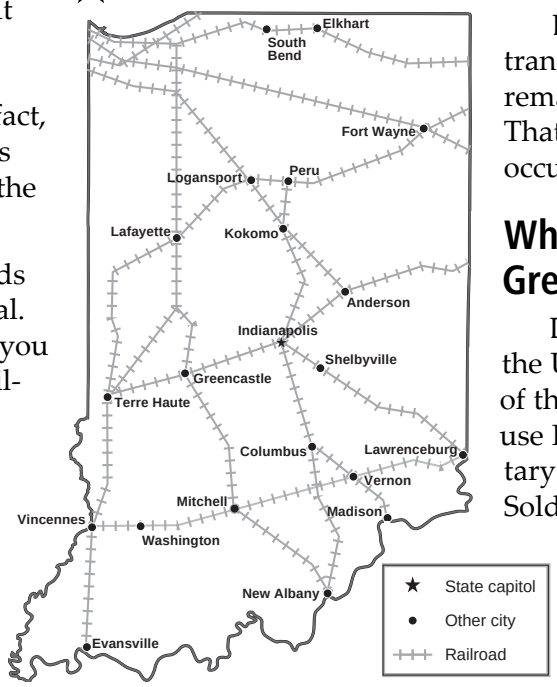
It was also becoming known as the "Crossroads of America." That is our state motto, or how we describe our state.

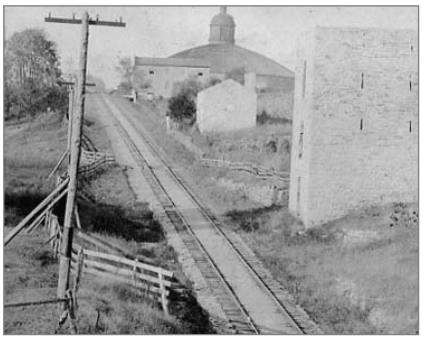
Even with the capital's transportation boom, it remained small until 1860. That's when the Civil War occurred (1861-1865).

Why Indianapolis Grew

During the Civil War, the Union Army, the army of the North, decided to use Indianapolis as a military training ground. Soldiers from all over America traveled to Indianapolis to be trained.

Because of its central location and railroads, Indianapolis became an important place for transporting supplies like bandages and food during the Civil War. Soon it was the largest city in Indiana.





This photo shows a major hill on the Madison railroad.

E) Predict: What do you think “Crossroads of America” means?

_____

_____

Review Questions

1. The following headings are taken from the lesson. Choose the sentence below that best describes what you read in the section under each heading. Write the letter of the sentence on the line next to the correct heading.

_____ *Waterways to Railways*

_____ *Boats in Indiana*

_____ *Big Cities in Indiana in the 1800s*

_____ *Our State Capital: Indianapolis*

_____ *Building Railroads*

_____ *Why Indianapolis Grew*

A. Indianapolis became the capital in 1821.
B. Transportation influenced how Indiana grew.
C. Indianapolis was becoming the "Crossroads of America."
D. Railroads were built to Indianapolis.
E. Many people came to Indiana by boat.
F. During the Civil War, Indianapolis was a transportation center.
G. Madison and New Albany were big cities because they were on the Ohio River.

2. Why was Indianapolis chosen as the capital of Indiana?

_____

_____

3. Write two important events or inventions that changed life in Indiana in the 1800s.

_____

_____

4. Write two things you do when you predict.

a) _____

b) _____

STUDY SKILL: Cause and Effect Diagram

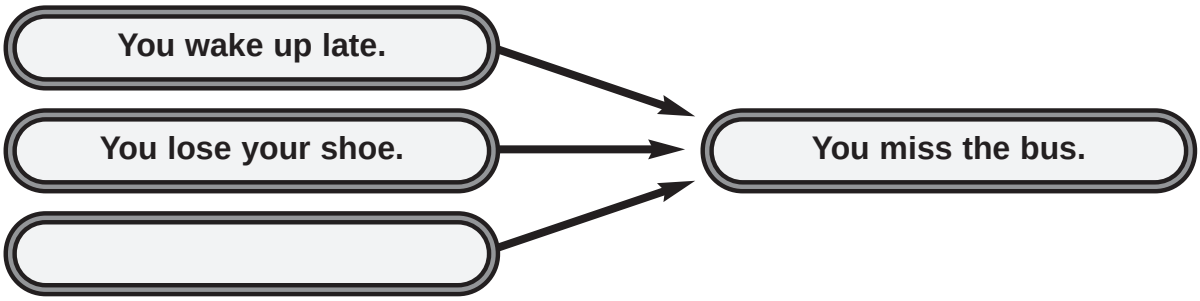
Creating cause and effect diagrams can help you understand information.

Suppose you read a sentence that starts, "The pool was closed because…." If you kept reading, you would find out what caused the pool to close. The word *because* is a signal word that lets you know that you will be reading about a *cause* and an *effect*.

A cause and effect diagram is a type of graphic organizer. In the diagram, the cause (or causes) is listed first. The arrow points to the effect.

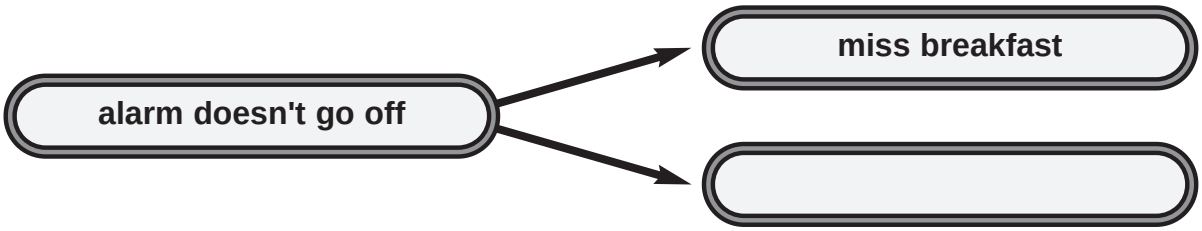
(cause) (effect)

Sometimes there can be many causes and only one effect. The diagram below shows many causes. Think of another possible cause of missing the bus and write it in the cause and effect diagram.



If only one of the things happened, you might have been on time. But all three made you miss the bus.

Sometimes there are many effects for only one cause. The diagram below shows two effects. Think of another possible effect of an alarm that doesn't go off and write it in the cause and effect diagram.



Standards Addressed: Soc 4.4.1; Sci 4.1.7, 4.4.10, 4.4.11

A) Circle four cause and effect signal words in this lesson. Then list two things that colds cause.

_____

_____

_____

Discover

What causes colds?

Science Words

immune system the body's protection system

vaccine a drug that prevents disease

virus a type of germ

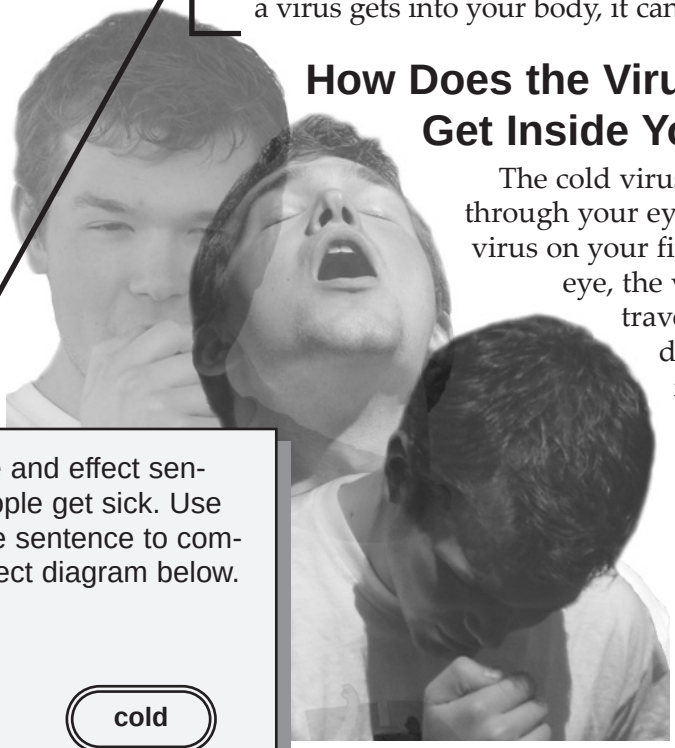
Catching a Cold

Most students in Indiana will catch at least one cold each year. Colds cause students to miss school. Colds cause parents to miss work too.

Catching a cold doesn't mean you got sick playing catch. Catching a cold doesn't mean you got sick on a cold day. Catching a cold means you have a virus inside your body. A virus is a living organism. A **virus** is a type of germ. Because a germ is so small, you can't see it without a microscope. Viruses are in the air, on tables, and other places. When a virus gets into your body, it can cause you to get sick.

How Does the Virus Get Inside You?

The cold virus likes to enter your body through your eyes or nose. If you have a virus on your finger and then rub your eye, the virus gets in your eye. It travels into your body through ducts in your eye. It moves from the eye down to the nose. Once you have the virus, you can get sick with a cold.



The scientific name for a cold is *rhinovirus* (rī-nō-vī´rəs).

B) Underline the cause and effect sentence that tells why people get sick. Use the information from the sentence to complete the cause and effect diagram below.

getting wet

living viruses

cold

being cold

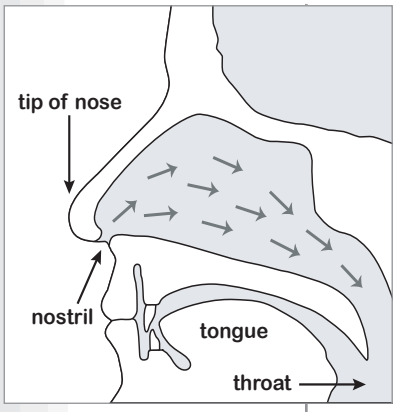
C)

1. Complete this diagram. [ ] → [eyes tear]

2. Underline the sentence that helped you answer this question.

How Does Your Body Fight a Virus?

Your body has a great immune system to fight viruses, so viruses don't always make you sick. The **immune system** is your body's protection system. If a virus gets in your eye, your eye's protection system makes tears to help wash the virus out. Even your nose has a protection system. It has tiny little hairs to help keep viruses out. If you sneeze or have a runny nose, your immune system may be fighting a virus.

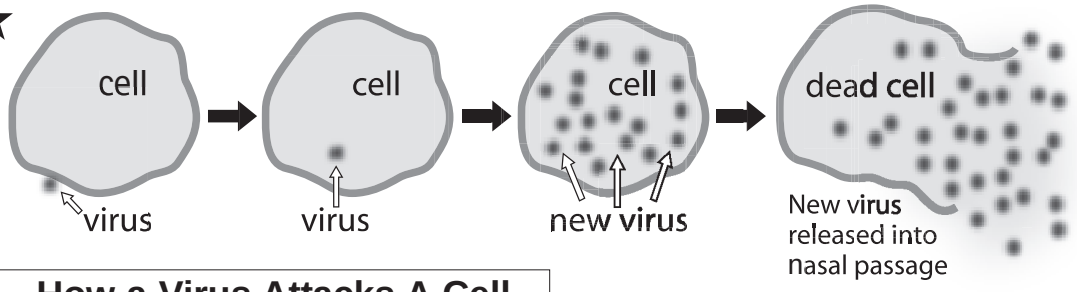


The cold virus lives in your nose.

Even though your body has an immune system, sometimes the cold virus manages to stay inside of you. Your body doesn't give up easily. You have white blood cells that attack viruses inside your body so the germs can't make you sick. Sometimes your body fights the virus and you don't get sick. Other times, the virus is so powerful that your body can't fight it, and you get sick.

When you get sick, it means that cells are being destroyed. The virus enters a cell in your body. Hundreds of new viruses form inside the cell until it is so full it explodes. When the cell explodes, it is destroyed. Then the hundreds of viruses look for new cells to enter. You can't feel the cells being destroyed, but you may begin to feel tired, chilled, or sick.

You feel sick because a virus is destroying your cells.



How a Virus Attacks A Cell

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D) Make a cause and effect diagram using this graphic.

[ ] → [ ]

cause **effect**

Standards Addressed: Soc 4.4.1; Sci 4.1.7, 4.4.10, 4.4.11

E) Does this graphic show cause and effect? _____
Write one reason why OR one reason why not.

_____

_____

_____

How Do You Get Better?

If you rest, your body will have the strength to get rid of the germs. Your body will continue to make more white blood cells so that the virus will be destroyed. Medicines can't make cold viruses go away. Medicines might make you feel better, but your body has to fight the virus on its own. A **vaccine** (văk-sēn´) is a drug that prevents disease. Your doctor might give you a vaccine to help prevent some viruses, such as measles, from making you sick. There are, however, no vaccines yet to prevent viruses that cause colds.

Eli Lilly is an Indiana company that makes vaccines and medicines.

Misunderstandings About Colds

Sometimes people think they became ill, or sick, because they played outside on a cold day. Cold air and rain don't make people ill, but if you are not dressed warmly, your body may not be strong enough to fight any viruses that have entered you. Your body will be working hard to keep you warm, instead of fighting germs. You may end up sick. The same thing happens if you don't get enough sleep. Because your body is tired, it won't have the energy to fight the germs inside of you. You may feel ill and miss doing the things you wanted to do.

Staying Healthy

1. Wash germs off your hands by using soap and warm water.
2. Get the rest you need.
3. Keep your hands away from your nose and eyes.

Review

1. When you get sick it is because
   - ○ defenses kept the virus out.
   - ○ the virus is in your body.
   - ○ it is cold outside.
2. What fights the cold virus?
   - ○ your body
   - ○ vaccines
   - ○ medicine

F) As you read this paragraph, pay attention to what causes and what does not directly cause colds. List one action that does not directly cause a cold and underline the sentence where you found the answer:

_____

A) This experiment will help you find out the effect of rubbing two objects together. Predict what the *effect* of the rubbing action will be. Write your prediction here.

_____

_____

_____

Experiment: Friction

You will need:

- a pencil with a good eraser. Make sure you have not used the eraser in the last half-hour.
- carpeting (or a sturdy pair of pants such as denim jeans)

Step 1

Feel the eraser on the end of your pencil. Is it soft? Is it hot? Is it sticky? Is it wet?

Step 2

Make a prediction. What do you think will happen to the eraser if you rub it back and forth on carpeting? ★

Step 3

Rub your pencil back and forth across the carpet 20 times.

Step 4

Feel the eraser. How does the eraser feel now?

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C) Write one effect of friction that you read about in this paragraph.

_____

_____

_____

Discover

What causes moving objects to stop or slow down? What makes objects heat up when rubbed together?

Science Words

friction a force that stops or slows down an object that is moving

heat a form of energy that is felt as warmth

B) Look at the **Discover** questions. How can you tell that this lesson will be about causes and effects?

_____

_____

_____

_____

What Happened in the Experiment?

After rubbing your pencil back and forth, the eraser should feel warm. The eraser became warm because of friction. **Friction** is a force that stops or slows down an object that is moving. Friction also causes heat. When you rub the pencil eraser back and forth, friction is at work between the eraser and the carpet. The heat produced by friction can be felt when you touch the eraser.

Have You Felt Friction at Work?

If you slide down a dry waterslide, you can feel the friction slowing you down. You have to work hard to keep sliding. If you put water on the slide, you will slide down faster. The water makes the slide slick and reduces the friction. There is less friction, so you can slide more easily. Generally, when you slide an object over a rough object, there is more friction than when you slide an object over a smooth object. The water makes the surface of the slide smoother.

If there is no water on a waterslide, the slide will pull at your skin. Friction will slow you down.

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D) Write one reason why it is easier to slide on a wet slide than on a dry one.

_____

_____

★ E) Write two cause and effect signal words that are used on this page.

_____ _____

F) Underline a cause in this paragraph. Circle the effect.

The Indianapolis 500 is a special race in Indiana. Drivers at the Indianapolis 500 don't want their cars to wear out in the middle of the race. They make sure their engine parts are protected from too much friction by using oil.

Friction Causes Heat

One of the effects of friction is heat. **Heat** is a form of energy that is felt as warmth. Friction causes heat. You may have used friction to warm yourself and not even known it. When you rub your hands together, friction is at work. Friction is the cause of the heat that you can feel in your hands. Next time your hands are cold, try rubbing them together. ★

If you put oil on your hands to make your hands slippery, they will slide back and forth easily. When an object slides easily, there is less friction. There is also less heat produced.

Heat can be damaging to surfaces. It can cause burns on skin. You can get a "carpet burn" on your skin from sliding on a rug. Heat can also cause machinery parts to wear out. Cars use oil to keep the pieces of machinery in the engine from rubbing together and heating up. ★

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G) What are two of the effects of heat?

_____

_____

Review Questions

1. Circle at least five cause and effect signal words on this page. (Hint: There are 28.)

Look at these examples and then complete questions 2-4 below.

When *this happens* (cause)
then *this will occur* (effect)

When *friction happens* (cause)
then *an object will slow down or get hot* (effect)

2. When *no oil is in a car's engine* (cause)
   then _____ (effect)

3. When *water is on the slide* (cause)
   then _____ (effect)

4. When *you have oil on your hands* (cause)
   then _____ (effect)

Complete the Chart

5. Write one *cause* of friction that you read about in the lesson.

Cause	Effect
	Friction

6. Write one *effect* of friction that you read about in the lesson.

Cause	Effect
Friction	

A) This question asks ***what*** happened. When you read about ***what*** happened because of something else, are you reading about the cause or the effect? _____

B) The word *reason* is a cause and effect signal word. This lesson lists three reasons why there are fewer farms in Indiana. Underline *reason* at least one time in the lesson. (Hint: look after each subheading)

LESSON 1

Changes in Indiana Farming

MAIN IDEA

There are many reasons for the decrease in the number of farms in Indiana.

VOCABULARY

developer
profit
revenue
specialize
urban

Farms and farmers are an important resource in Indiana. They produce food for the state of Indiana and people around the world.

In 1920, there were 205,000 farms in Indiana. By 1992, there were only 62,778 farms in Indiana. What happened to more than 142,000 farms in Indiana? Why did they disappear?

Specialization

One reason there are fewer farms today is because of specialization. When farming first began in Indiana, farmers had to produce food for their families. Farms were small enough that farmers could manage many different crops and animals. Farm families can now buy farm products from all over the country at a grocery store. Farmers no longer grow or raise all of the food for their families. They can choose to specialize in one product.

Indiana Farms 1920-1992

	Farm population	Number of farms	Acres of farmland
1920	914,000	205,000	21,063,000
1950	667,000	167,000	19,659,000
1982	not known	77,180	16,294,268
1992	not known	62,778	15,618,831

This chart shows some of the changes to Indiana farming that have happened in the 1900s. Which changes do you think have had the greatest *effect*?

When farmers **specialize**, they produce a larger quantity of fewer products. They become experts at growing or raising a product. Usually they produce only one product. Some farmers may specialize in two or three products. When farmers specialize in one crop, they need to buy the materials to produce one crop only. Farmers do not need to buy three machines to process three different types of crops. They do not have to buy different types of feed for different animals.

C) Write one effect of farmers specializing.

_____

_____

★ D) Write three cause and effect signal words used in this lesson.

_____ _____ _____

Farmers pay less per pound for seeds if they buy a lot of them. A farmer who specializes in one crop needs only one type of seed to cover the whole farm. When farmers buy large amounts, they get a discount. Farmers can make more profit when they pay less for seeds. **Profit** is revenue from selling a good or service minus the cost of producing the good or service. A **revenue** is the amount of money made from selling a good or service. In order for farmers to make a profit, their products must make revenues greater than the amount spent to grow or produce them. Often, small farms cannot compete with the large farms because they do not get the discount for buying large amounts. This makes some of the smaller farms stop farming because they cannot make large revenues or profits. Then the big farms sometimes buy the small farms and become even bigger. Eventually this creates fewer, though bigger, farms.

One machine can do the work of many people.

E) According to this paragraph, what is one reason that farmers stop farming?

_____

_____

_____

★ **Soybeans are a top crop in Indiana. Soybeans make a lot of revenue for Indiana farmers.**

Machinery Improvements

Another reason there are fewer farms today is because of machinery improvements. There were not many machines when farmers first started

F) Sometimes graphics and captions tell about cause and effect. Write one effect that soybean farming has on Indiana. _____

_____

G) Write two *effects* of machinery improvements.

_____

_____

working in Indiana. Plows were pulled by horses or mules. It would take a long time to plow a field. Now farmers have gasoline powered tractor plows that can get jobs done quickly. Because farmers can work quickly with the help of machines, they can work bigger farms.

Farm equipment is very expensive. Farmers who have big farms that make lots of revenues and profits have an easier time affording the equipment. Smaller farms cannot always afford the equipment, so they stop farming. When small farmers stop farming, big farms can buy their land. Like specialization, machinery improvements create bigger, but fewer, farms.

Urban Growth

A third reason there are fewer farms today is the growth of cities in Indiana. Farmers did not need as many farm workers once they had machines. One machine could do the work of many workers. Because fewer farm workers were needed, many of the workers left the farms and moved to cities to find new jobs. This made the cities grow. Cities are often called urban areas. **Urban** means relating to a city or city life.

As urban areas grow, there is less land for farmers. Some farmers decide to sell their farms to developers. A **developer** is a person who buys land to build shops, houses, and parking lots. When a farm is sold to a developer, the farmer stops farming. The land is no longer used to produce food. Urban growth happens around cities and towns where more and more people want to live. Urban growth does not make bigger farms. Urban growth creates fewer farms.

Developers build houses in cities like Indianapolis.

H) Write two *effects* of growing urban areas.

_____

_____

Review Questions

1. One reason there are fewer farms in Indiana today is that
   - ○ farms are bigger.
   - ○ families are busier.
   - ○ seeds are smaller.

2. As a result of farm machines, people
   - ○ looked for new jobs.
   - ○ bought fewer seeds.
   - ○ moved to farms.

3. Urban growth causes
   - ○ bigger farms.
   - ○ fewer farms.
   - ○ older farms.

4. Cities grew because people moved there to
   - ○ start farms.
   - ○ find new jobs.
   - ○ buy new farm machines.

Complete the Chart

5. Give causes for these effects. Be sure to fill in all of the empty boxes.

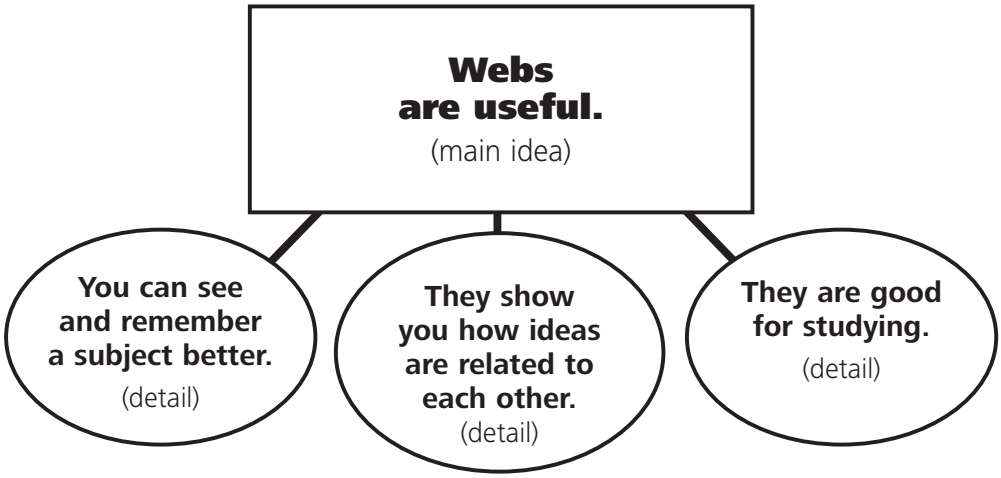
Cause	Effect
1. huge amounts of rain in a short time	1. flooded streets
2.	2. fewer farms
3.	3. people move to cities

6. Write the effects of these causes. Be sure to fill in all of the empty boxes.

Cause	Effect
1. ice storm	1. power outage
2. farmers specialize	2.
3. people move to cities	3.

STUDY SKILL: Web

A web is a kind of graphic organizer that helps you to see and remember a subject. Webs are good for studying because they show you how ideas are related to each other. Look at the web below.

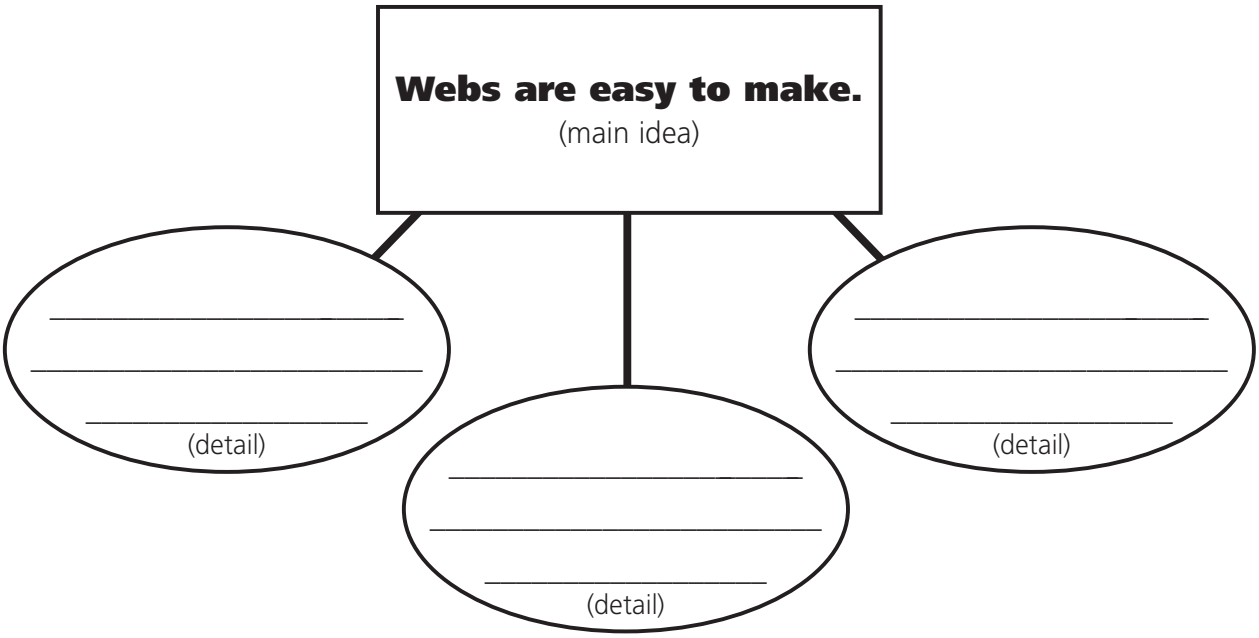


You will make your own web. Follow these directions.

Making a web is easy. Just follow the steps below.
1. Draw or fill in the rectangle with the main idea of the lesson or paragraph.
2. Draw or fill in each circle with a detail. The details will describe the main idea.
3. Give your web a title.

Use sentences 1-3 above to complete your web.

Title: _____



Standards Addressed: Soc 4.1.9, 4.1.11, 4.4.1, 4.4.7; Sci 4.3.6

LESSON 8

MAIN IDEA

West Baden Springs Hotel is an important part of Indiana history.

VOCABULARY

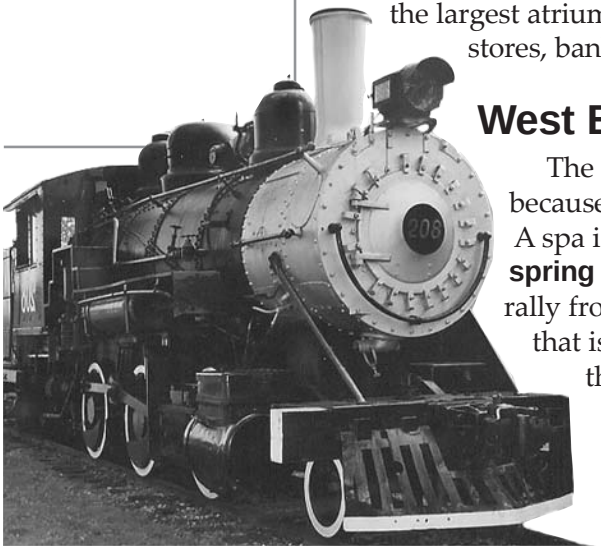
employ
Great Depression
mineral
spring

The West Baden Springs Hotel

The Eighth Wonder of the World

Do you know that Indiana is home to a hotel that was once known as "The Eighth Wonder of the World?" The West Baden Springs Hotel was called "The Eighth Wonder of the World" because it was so amazing. When hotel owner Lee Sinclair built the hotel, he wanted it to be round, and he wanted it to have the biggest dome in the world. He also wanted it to be built in less than a year. The hotel was built in 1902 in only 277 days. It was very large, with 708 rooms and a six-story atrium.

The atrium was a huge open area in the middle of the hotel. Visitors could see live birds flying around the atrium. It was the largest atrium in the world. The hotel even had its own stores, bank, and theater.



This steam engine brought visitors to West Baden and southern Indiana.

West Baden Springs ★

The West Baden Springs Hotel was a spa hotel because of the natural springs that surrounded it. A spa is a resort that has mineral springs. A **spring** is a small stream of water that flows naturally from the earth. Springs occur when water that is below ground reaches the surface through cracks in rocks called fractures.

A) Complete this web about the West Baden springs. The main idea has been set for you. Write three details. Be prepared to explain your answers.

title: _____

main idea

The West Baden Springs Hotel became a spa hotel because of the natural springs that surrounded it.

detail **detail** **detail**

Buildings were built around the springs.

The spring at West Baden is rich in mineral deposits. A **mineral** is a substance that is found in nature and is not a plant or an animal. Salt and gold are two examples of minerals. Rocks are made up of different minerals. When the spring's water passes through rock on its way to Earth's surface, small pieces of these minerals dissolve in the water.

People believed that the minerals from the spring were very good for cleaning the body. They also thought that the spring water could cure many illnesses.

Important Visitors

News of the healing springs at West Baden Springs Hotel brought visitors to Indiana from all over the country. Many famous people, including governors and well-known gangsters, such as Al Capone, came to the spa hotel. They came to see the hotel and to take baths in the springs.

Professional baseball teams such as the Chicago White Sox, the Chicago Cubs, and the Cincinnati Reds held spring training there. They practiced on the hotel's baseball field. The baseball field took up a small part of the 250 acres of hotel property.

Job Opportunities

The West Baden Springs Hotel was important to the development of Indiana because it provided jobs for many people. The hotel employed many people who lived in the town of West Baden. To **employ** means to provide with work and pay. The West Baden Springs Hotel also employed many African Americans.

In the early 1900s, many people and companies would not employ African Americans. This made it hard for them to find jobs. Because the West Baden Springs Hotel would employ them, many African Americans moved to Indiana from the southern part of the United States. This

B) Complete this web about *Important Visitors* by adding the main idea and two more details. Be prepared to explain your answers

title: _____

main idea

Professional baseball teams had spring training there.

detail

Some came to enjoy the hotel and to take baths in the springs.

detail

detail

detail

detail

 Standards Addressed: Soc 4.1.9, 4.1.11, 4.4.1, 4.4.7; Sci 4.3.6

★ **C)** Look back at the graphics in this lesson. Choose one to add to one of your webs.

Which graphic did you choose?_____

Where would you put it and why? _____

_____

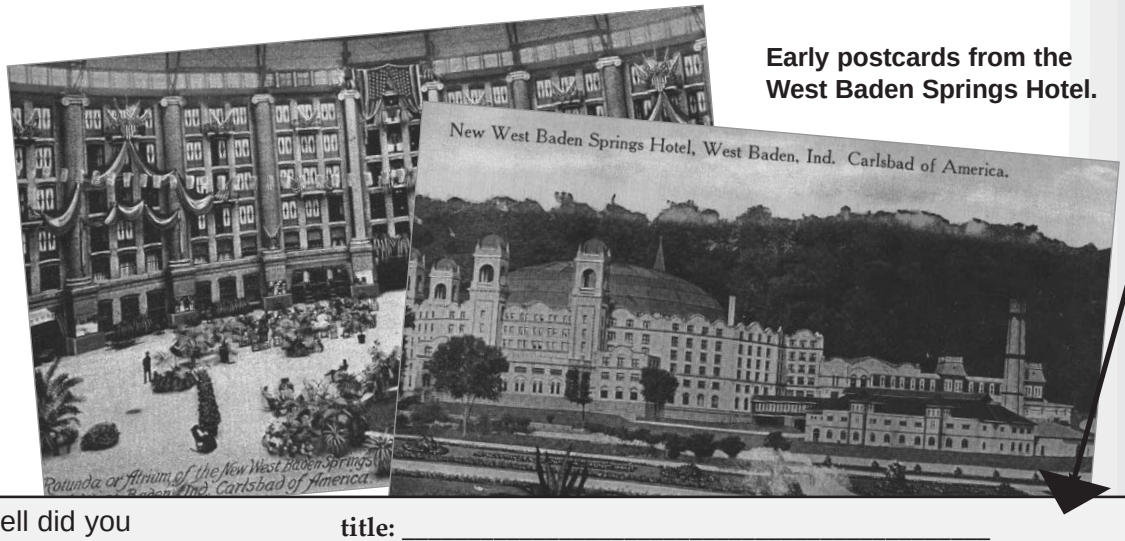
migration, or the movement of people from one place to another, helped Indiana grow. It also led to the development of an African American community in southern Indiana.

The Great Depression

The West Baden Springs Hotel was very busy until the Great Depression. The **Great Depression** was the time between 1929 and 1941 during which many Americans faced financial hardships.

People all over the United States faced hard times. Many Americans lost their jobs and most or all of their money. The Great Depression affected Indiana.

Jobs were hard to find during the Great Depression. People did not have enough money to stay at the West Baden Springs Hotel. The hotel's owners tried to help the people of West Baden by creating new jobs, but there were very few visitors to the hotel. The West Baden Springs Hotel closed in 1932. ★



Early postcards from the West Baden Springs Hotel.

D) How well did you understand the main ideas and details in this text? Complete this web using the main ideas and details from the paragraphs that you read. Some of the spaces have been filled in for you. Be prepared to explain your answers.

title: _____

main idea

The West Baden Springs Hotel is an important part of Indiana history.

It was called the Eighth Wonder of the World.

detail

It was important to the development of Indiana because of jobs.

detail

detail

detail

detail

A) The first sentence of this paragraph is its main idea. Underline it. Give one reason why you know that it is the main idea.

_____

_____

Discover

What are the major differences between freshwater and ocean water?

Science Words

density the mass of an object divided by its volume

erosion the process by which the products of weathering are moved from one place to another

evaporate to change from a liquid into a gas

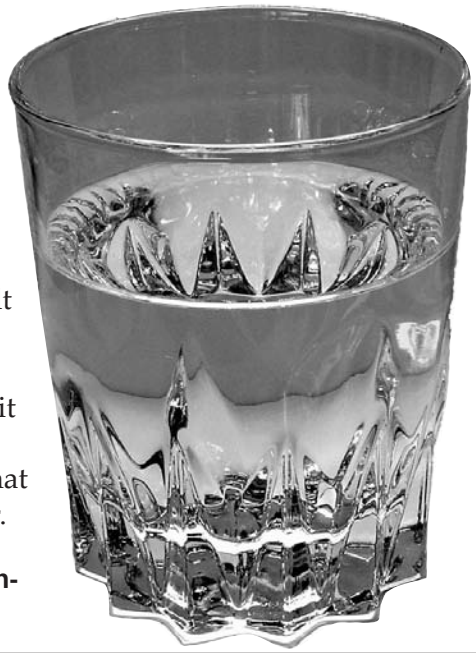
Saltwater and Freshwater

Water, Water, Everywhere

Water is necessary for people, plants, and animals to live, but most of the water on Earth isn't safe to drink. Nearly three-quarters of Earth's surface is covered by water. Most of this water is in the oceans. Unfortunately, we can't drink water right out of the ocean. Drinking ocean water can make you very sick. The water that we use for drinking, bathing, and cleaning comes from freshwater. We get freshwater from rivers, streams, and lakes. What makes freshwater different from ocean water?

A Dash of Salt

Salt is the major difference between freshwater and ocean water. Freshwater contains no salt. Ocean water contains a lot of salt. In fact, ocean water contains so much salt that we call it saltwater. If you took all of the salt out of the oceans and dried it, it would cover Africa. It is because of all of this salt that we can't drink ocean water.



In Indiana we treat our freshwater before we drink it.

B) Underline the main idea in this paragraph. How is the main idea related to the heading?

_____

_____

_____

C) This paragraph begins with a question. Do you think a question can be the main idea of a paragraph? _____
Write one reason why **OR** one reason why not.

_____

_____

D) Underline the main idea of this paragraph. Details add information to the main idea. Write two details about salt here.

1. _____

_____

_____

_____

_____

2. _____

_____

_____

Why is the Ocean Salty?

★ How did salt end up in oceans but not in rivers, streams, or lakes? Much of the salt in the world's oceans resulted from erosion. **Erosion** is the process by which the products of weathering are moved from one place to another. Weathering is the breaking down of rocks and other materials on Earth's surface by such processes as rain and wind. Rocks are composed of many different minerals. A mineral is a substance that is found in nature and is not a plant or an animal. Gold is a mineral. So is salt. As running water moves over rocks, it breaks down, or weathers, these minerals. Tiny pieces of the minerals are dissolved in the moving water, creating a salty mixture. Erosion carries these salty minerals to the ocean, where they blend with the ocean water to create saltwater. Although erosion happens along rivers and streams, these bodies of water are not salty. Why? One reason is that rivers and streams empty into the oceans. This means that the products of weathering carried ★

Rivers flow into the ocean.

Did you know?

The boiling point of ocean water is higher than freshwater and the freezing point is lower. Is this because of the salt in the water? Yes!

E) This paragraph needs a heading. Read the paragraph and underline the main idea. Which of the following is the best heading for this paragraph?

- ○ Mixing Freshwater and Saltwater
- ○ Differences in Water Density
- ○ Visiting the Ocean

by rivers and streams do not stay in these bodies of water, but end up in the ocean through erosion.

If you have ever been to the ocean, you may have noticed that it is easier to float in saltwater than it is in the swimming pool. The reason it is easier to float in saltwater is that saltwater is denser than freshwater. **Density** is the mass of an object divided by its volume. Something that is not very dense will float on something that is more dense. The density of the water increases if you add salt. The salt makes saltwater more dense than freshwater. If you mix freshwater with saltwater, the freshwater will rise to the top. The denser saltwater will sink to the bottom. A heavy object may sink in freshwater and float in saltwater. This is why it is easier to float in the ocean than in the swimming pool.

Evaporation: Making Saltwater Fresh

Most of the water on Earth is saltwater. There is not a lot of water that we can drink. Only a small part of the water on Earth is freshwater. Two-thirds of this water is frozen in ice caps and is unusable. Because this leaves only a tiny amount of Earth's water for all of the humans, plants, and animals that depend on it, it has become necessary to take salt out of ocean water in order to use it. We can remove salt from ocean water through a process called evaporation. To **evaporate** means to turn from a liquid into a gas. If you boil water, it will evaporate and become a gas called water vapor. Water vapor can't hold salt, so when saltwater evaporates, the salt is left behind. When the water vapor is cooled, it becomes freshwater. Thanks to evaporation, the water will be safe to drink!

Fun Fact

In 400 A.D., the Egyptians were the first people to record their methods of creating drinking water.

F) Underline the main idea of this paragraph.

G) Write two details about evaporation.

_____

_____

_____

Review Questions

There are five paragraphs in this lesson. Starting on page 1, number each paragraph.

Below you will find some more details about the differences between saltwater and freshwater that were not in the lesson. Using the main ideas that you have identified for each paragraph in the lesson, decide which paragraph each new detail belongs in.

1. *It is easy to remove the salt from ocean water, but it is very expensive because it needs to be done to such a large amount of water.*
   - ○ 2nd paragraph
   - ○ 3rd paragraph
   - ○ 4th paragraph
   - ○ 5th paragraph

2. *The salt in the ocean is the same kind of salt that we put on our food.*
   - ○ 2nd paragraph
   - ○ 3rd paragraph
   - ○ 4th paragraph
   - ○ 5th paragraph

3. *Saltwater has more mass than freshwater.*
   - ○ 2nd paragraph
   - ○ 3rd paragraph
   - ○ 4th paragraph
   - ○ 5th paragraph

4. *Rocks are composed of many chemicals that are classified as minerals.*
   - ○ 2nd paragraph
   - ○ 3rd paragraph
   - ○ 4th paragraph
   - ○ 5th paragraph

5. What is the main idea of the whole lesson?
   - ○ Saltwater is denser than freshwater.
   - ○ Saltwater will make you float when you swim in it.
   - ○ Salt can be taken out of ocean water through evaporation.
   - ○ Salt is the major difference between freshwater and ocean water.

A) Before reading, number each paragraph (#1 through #6) so you can keep track of where different details are located. Hint: Paragraph 6 is at the top of page 3.

B) What is the main idea of this lesson?

_____

_____

The Battle of Tippecanoe

MAIN IDEA

The battle of Tippecanoe changed the lives of American Indians and settlers in Indiana.

VOCABULARY

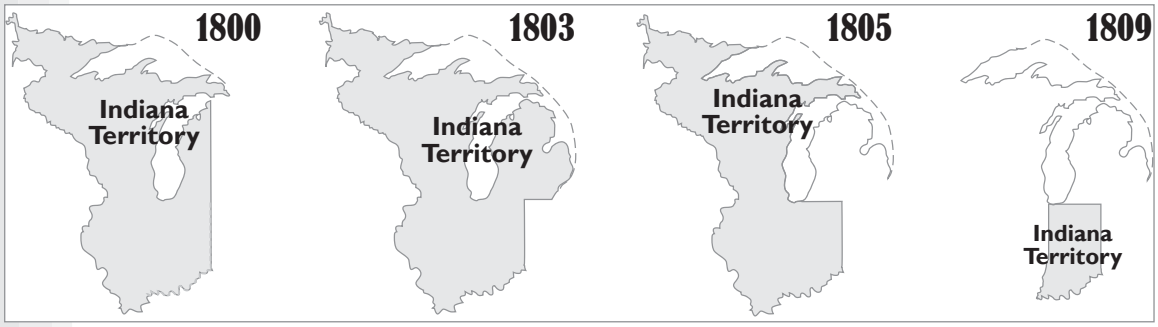
Battle of Tippecanoe
settler
Tecumseh
Tenskwatawa

In the early 1800s, many settlers came to the Indiana Territory. A **settler** is a person who moves to and develops a land. Settlers wanted to build on Indiana's land and call it their own. But American Indians had lived in Indiana for thousands of years, and they did not want to leave. Two American Indian brothers, Tecumseh and Tenskwatawa, made a plan to drive the settlers out of American Indian land. **Tecumseh** (tə kum´sə) was the leader of the Shawnee Tribe. **Tenskwatawa** (tensk wä tou´wä) was Tecumseh's brother who was known as the Prophet. Tecumseh and the Prophet left their home in Ohio and set up a camp near the Tippecanoe River with their followers. Their new home became known as Prophet's Town.

The Battle of Tippecanoe

Tecumseh and the Prophet worked hard to get other tribes to join them in Prophet's Town. Many of these tribes had been influenced by the settlers. Tecumseh and Tenskwatawa encouraged these tribes to stop wearing the clothes and eating the foods that they had adopted, or made their own, from the

Before Indiana became a state, it was known as the Indiana Territory. The Indiana Territory became smaller over time.



C) Write the main idea of this paragraph here. _____

_____

_____

D) Look at the drawings on this page. Can graphics support the main idea of a lesson? _____
Write one reason why **OR** one reason why not.

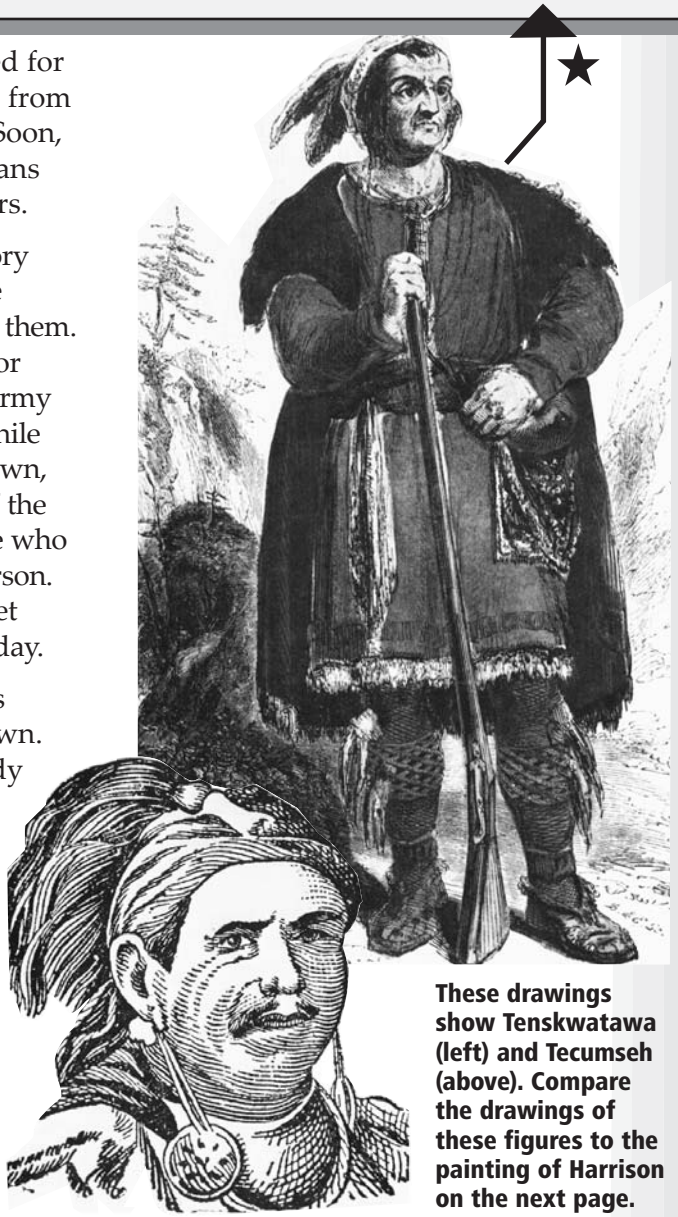
_____

_____

settlers. Together, the tribes prepared for a battle that would keep the settlers from taking over American Indian land. Soon, nearly one thousand American Indians had joined forces to battle the settlers.

The settlers in the Indiana Territory were scared; they demanded that the government do something to protect them. William Henry Harrison, the governor of the Indiana Territory, led a small army of men to destroy Prophet's Town while Tecumseh was away. At Prophet's Town, Harrison met with representatives of the Prophet. A representative is someone who speaks for, or represents, another person. The American Indians agreed to meet with Harrison and his men the next day.

★ William Henry Harrison and his men set up camp near Prophet's Town. Harrison warned his men to be ready for a surprise attack. Just before sunrise on November 07, 1811, the Prophet's men set out to attack Harrison's camp. But Harrison's men were ready for the attack, and they outnumbered the American Indians by almost two to one. Eventually, the American Indians retreated. It was a bloody battle, and many men were killed on both sides. The battle is known as the **Battle of Tippecanoe**.



These drawings show Tenskwatawa (left) and Tecumseh (above). Compare the drawings of these figures to the painting of Harrison on the next page.

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E) This paragraph does not have a sentence that contains the main idea. As you read, ask yourself what the sentences tell you about. Then choose which sentence below is the main idea of the paragraph about the Battle of Tippecanoe.

- ○ The American Indians attacked Harrison's camp.
- ○ Harrison's men made camp near Prophet's Town.
- ○ The American Indians eventually retreated.
- ○ Harrison's preparation led to victory.

H) Underline the sentence that contains the main idea in this paragraph.

The Battle of Tippecanoe made Harrison famous, and he used his popularity to run for President of the United States. His first attempt did not succeed, but four years later, using the slogan "Tippecanoe and Tyler, Too!," he was elected president. Harrison died one month later, having only served as President of the United States of America for one month. ★

G) How does this paragraph support the lesson's main idea?

_____

_____

Painting of William Henry Harrison

After the Battle

After the battle, the American Indians did not feel that it was safe to stay in the area. They packed their belongings and left Prophet's Town. William Henry Harrison worried that there would be another attack. But when he and his men arrived in Prophet's Town, they found the American Indians gone. Harrison and his men set fire to the town and returned home to Vincennes. ★

Today the site of the Battle of Tippecanoe is marked by an 85-foot marble monument in memory of the battle.

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F) Does this paragraph have a sentence that contains the main idea? _____

How do you know? _____

_____

Review Questions

Complete each question below by writing the main idea and details from the appropriate paragraphs in the lesson. Remember that the main idea might not be stated in one sentence. You might need to figure out what the main idea of the paragraph is. The first one has been done for you.

What is the main idea of paragraph 1? *Two American Indian brothers, Tecumseh and Tenskwatawa, made a plan to drive the settlers out of American Indian land.*

List two details from paragraph 1:

1. _____

2. _____

What is the main idea of paragraph 6? _____

_____

List two important details from paragraph 6:

1. _____

2. _____

Write two details or facts that you read about William Henry Harrison in Paragraph 3:

1. _____

2. _____

Write three details or facts that you read about Prophet's Town on Page 1:

1. _____

2. _____

3. _____

STUDY SKILL: Creating a Timeline

When you read, it is important to understand the information in your lesson. Paying attention to the sequence of events will help you understand the information better. Sometimes it is easy to follow the sequence of events. Sometimes, it is more difficult because the paragraphs do not list the events in the order in which they happened.

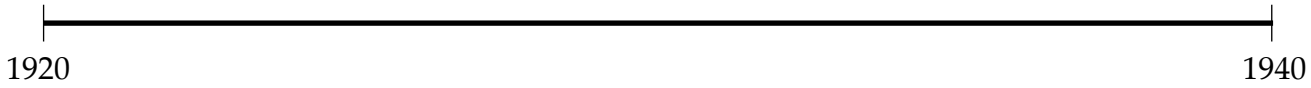
Creating a timeline is a study skill that can make a sequence of events easier to understand.

To create a timeline you need to follow three important steps:

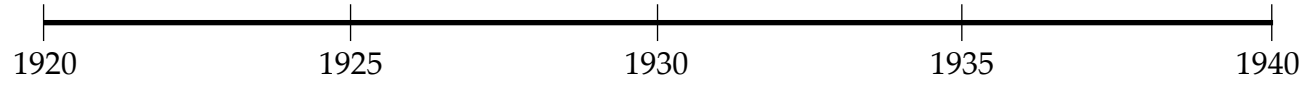
1. Decide what events you want to organize. (For example: Do you want to organize all of the events of a person's life or just the events during the years the person was president? This will give you a topic and title for your timeline.)

Topic/Title: *Governors in Indiana 1920-1937*

2. A. Draw a line and enter a beginning date on the left and an ending date on the right.

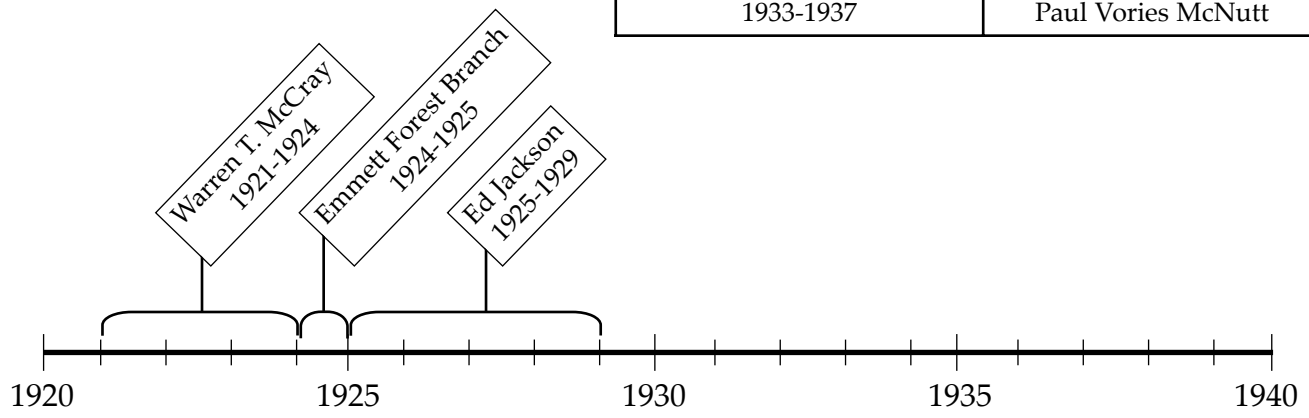


B. Divide the line with year markers. You can divide the time by years, decades (10 years), or centuries (100 years).



3. Enter the important dates and facts. Use the chart to complete the timeline.

Indiana Governors 1921-1937	
1921-1924	Warren Terry McCray
1924-1925	Emmett Forrest Branch
1925-1929	Edward L. Jackson
1929-1933	Harry Guyer Leslie
1933-1937	Paul Vories McNutt



LESSON 5

MAIN IDEA

Jonathan Jennings helped shape Indiana's history through his work in politics.

VOCABULARY

Congress
politics
Jonathan Jennings

A) When the text says "same year," what year does it mean?

_____

Jonathan Jennings

Jonathan Jennings was an important political figure in Indiana's history. In 1816, Jonathan Jennings became the first governor of Indiana. Earlier that same year, he had been elected president of the convention that wrote Indiana's first constitution. He also helped create land treaties, or agreements, with American Indians in both 1818 and 1832.

Jonathan Jennings, first governor of Indiana

Early Life

Jonathan Jennings did not grow up in Indiana, but he did help it become a state. He was born in New Jersey in 1784. When he was young, his family moved to Pennsylvania. He grew up there and studied to become a lawyer. Then he decided to go west. He traveled west on a flatboat on the Ohio River. In 1806, he settled in Jeffersonville, in southern Indiana. He made a new home in Jeffersonville and studied more about law. A year later, he moved to Vincennes, in western Indiana. He became a lawyer and worked for a newspaper while in Vincennes. In 1809, he moved again. This time, he moved near Charlestown, Indiana. He became more and more involved with politics. **Politics**

means the policies and affairs of government. In 1816, he wrote to the U.S. government and asked that Indiana become a state.

Political Life

From 1816 to 1822, Jonathan Jennings served as Indiana's first governor. After serving as governor, he began his work in national politics. In 1822, he left his home in Indiana to go to Washington, D.C. to serve in the U.S. Congress. **Congress** is the branch, or part, of the government that writes laws. He worked in Congress for nine years. After serving in Congress, he returned to Indiana. He left his life of politics and service to the state to retire in the countryside. He died on July 26, 1834 and is buried near his home in Charlestown, Indiana.

In 1816, Jennings County, in southeast Indiana, was named after Jonathan Jennings.

Jennings Elementary school in Indianapolis also shares Indiana's first governor's name.

B) Make a timeline of Jonathan Jennings's political life. Be sure to include at least four events.

Review Questions

1. Use this space to make a timeline listing the events of Jennings's personal life. Use the timeline to complete number two below. You should include at least five events. Remember to give your timeline a title.

2. Below are some events in Jonathan Jennings's life. Write them on the lines below in the correct order. Write the earliest event on line 1.

dies in Indiana	*moves to Jeffersonville, Indiana*
serves as governor of Indiana	*works on a newspaper*
lives in Pennsylvania	*helps write Indiana's constitution*

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

★ A) Circle two sequence signal words or phrases on this page.

Discover

How does the tulip poplar change throughout the year?

Science Words

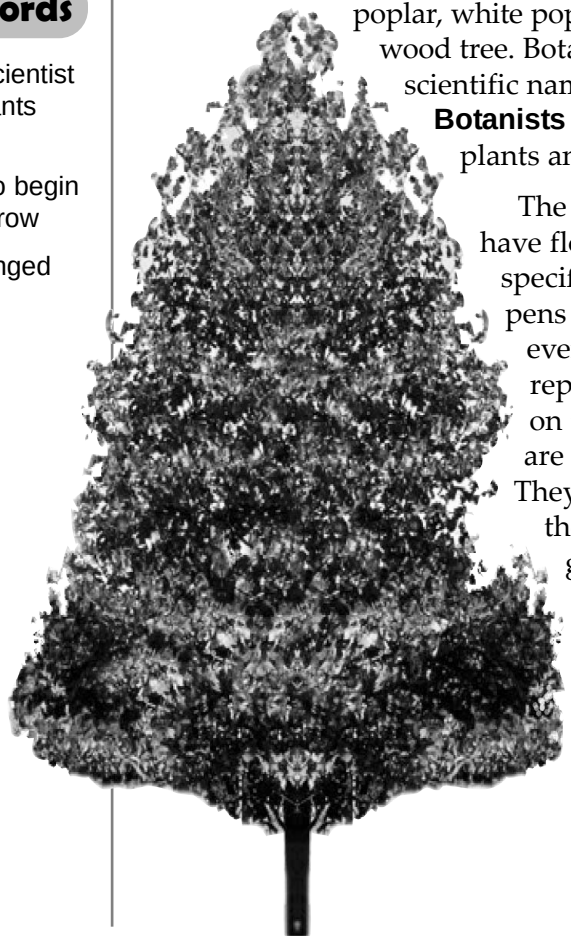
botanist a scientist who studies plants and trees

germinate to begin to sprout and grow

samara a winged seed

The Cycle of the Tulip Poplar

Indiana's state tree is the tulip poplar. It is tall, straight, and grows large flowers. It is also called the yellow poplar, white poplar, tulip tree, and white-wood tree. Botanists call the tulip tree by its scientific name, *liriodendron tulipifera.* **Botanists** are scientists who study plants and trees.



The tulip poplar tree doesn't have flowers year-round. It has a specific blooming cycle that happens each year. A cycle is a set of events that are continually repeated. In spring, buds form on the tree's branches. The buds are long, flat, and oval-shaped. They look like a duck's bill. As the weather warms, the buds grow and turn into bright green four-lobed leaves that are four to six inches across.

Every state has a state tree. Indiana's tree is the tulip poplar, which grows an average of three feet each year and can grow up to 150 feet tall.

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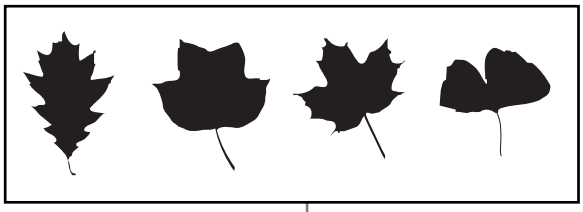
★ B) Dates (January 1, 2005), seasons of the year, and directions show sequence. Which one does this lesson use?

_____

C) Write one sequence signal word or phrase from this page. _____



Four-lobed leaves have four partially connected sections that end in points. Can you find a four-lobed leaf in this picture?

★ After the leaves appear, single flowers begin to bloom at the end of branches. The flowers are present for about six weeks during late spring. Botanists say the flowers are hard to see because they are so high up in the tree. They are cup-shaped flowers with six petals. The flowers measure about four inches long and two inches wide. The petals have a waxy feel and are yellow-green with an orange base.

In the summer, once the flowers have dropped from the tree, cones of seeds will appear. The seeds grow in the same place on the end of the branches where the flowers once bloomed. The seeds are called samaras. A **samara** is a winged seed. Tulip poplar samaras are hooked together in the shape of a cone. The cone stands upright at the end of the branch. In the summer, the samaras are green, but they turn light brown and are dry when they fall to the ground in autumn.

The flower blooms upright at the end of the branch. The flower will remain on the tree for six weeks in late spring.

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★

D) Write how the samaras look during each season.

1. summer _____

2. fall _____

E) Write how the leaves look during each season.

1.spring _____

2. summer _____

3. fall _____

In fall, the tulip poplar gets another new look. The leaves begin to lose their chlorophyll (klôr´ əfiĭ), which makes them lose their green color. The leaves turn yellow and fall off the tree. The samaras turn brown and begin to drop as well. They drop to the ground or blow away in the wind.

In winter, the long tall trunk of the tulip poplar can be seen. Most or all of the leaves are gone. Some seeds remain and continue to fall. Once all of the samaras have fallen, small stubs that once supported the cones stand upright at the end of the branches. The seeds will continue to drop throughout the winter into February and March. One cone contains about 100 seeds. A single tree can produce 5,000 to 30,000 or more seeds. Only a small number of seeds will germinate. To **germinate** means to begin to sprout and grow. Some of the seeds will land on rocks, or on ground that is not good for germinating. Some seeds will not get enough sun or rain to germinate. Birds, rabbits, squirrels, and mice will eat many of the seeds.

The seed must freeze during the winter before it will germinate. When the weather warms in the spring, the seed will sprout into a young tree called a seedling. After growing for 15 to 20 years, the young tree will be able to produce its own seeds and create even more trees.

Architect Frank Lloyd Wright designed a house in Lafayette, Indiana called *Samara*. He based his design on the winged seed.

Tulip poplar samaras grow together in cones before they fall to the ground in autumn.

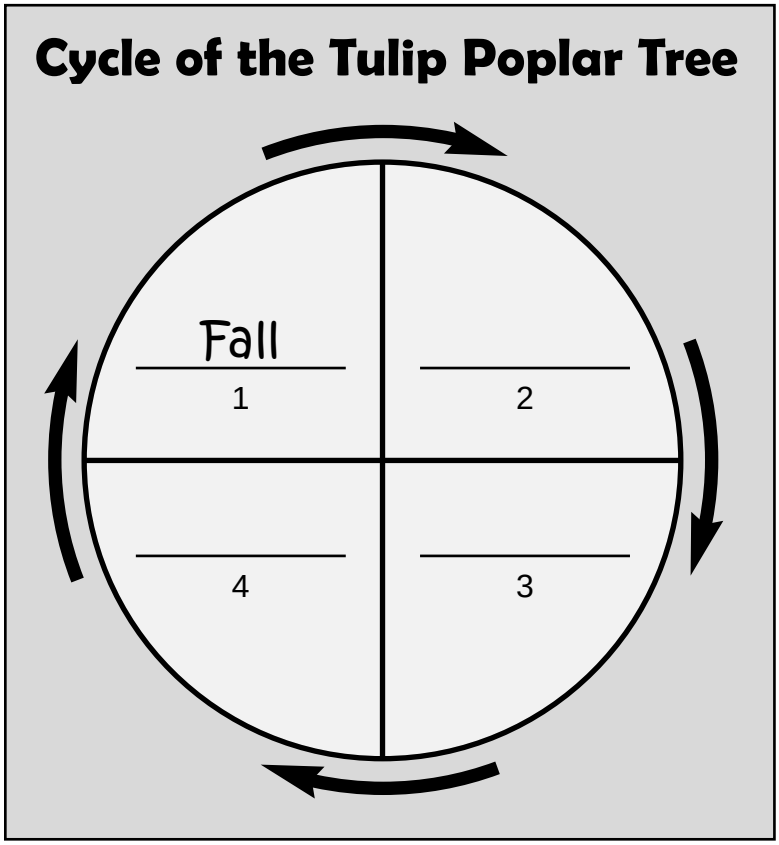
F) Sometimes words that can be sequence signal words are not used to show sequence. Write one example of this from the lesson. Why doesn't it show sequence?

_____

_____

Review Questions

The diagram below illustrates the cycle of the tulip poplar. This diagram starts with fall. Complete the diagram by writing the names of the seasons in sequential order, beginning with number 2. Then for each question, fill in the name of the season and choose two answers from the list below that describe what happens during that season. The first one has been done for you.



1. SEASON: fall
   - A. samaras fall
   - B yellow leaves

2. SEASON: _____
   - A. _____
   - B. _____

3. SEASON: _____
   - A. _____
   - B. _____

4. SEASON: _____
   - A. _____
   - B. _____

winter	green samaras	30,000 seeds
spring	two-winged samaras	~~yellow leaves~~
summer	oval-shaped leaves	buds grow
~~fall~~	150 feet tall	~~samaras fall~~
few or no leaves	yellow-green flowers	blooming cycle
flowers fall	seeds drop	

LESSON 6

MAIN IDEA

Many different people lived in what is now Indiana, and they called it by other names. Indiana became a state only after many years and many laws.

VOCABULARY

The Enabling Act of 1816
The Land Ordinance of 1785
treaty
Treaty of Greenville
The Treaty of Paris of 1763

Indiana Becomes a State

As a Hoosier, you call the state of Indiana home. But do you know how Indiana originally became a state? Indiana became a state after many battles, land trades, and laws. The land that makes up our state has been around for millions of years. It was known by different names. It did not become the state of Indiana until nearly 200 years ago.

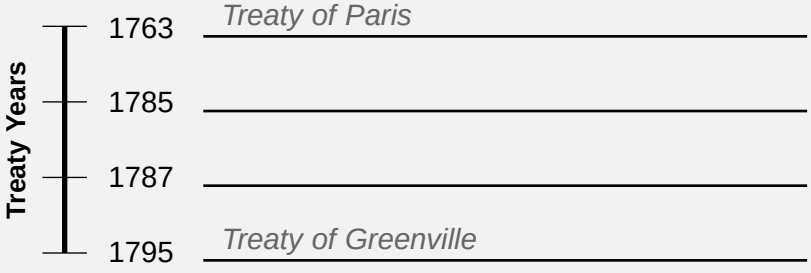
The United States before the State of Indiana existed.

Today Indiana is part of the United States. But before it became a state, the land that is now Indiana was claimed by many different nations. The first people to live on the land were the American Indians, who lived here for thousands of years. Then, in the late 1700s, the French government claimed most of this land as their own. Soon English settlers wanted to claim the land as well. Settlers are people who move to and develop a land. In the French and Indian War, the French and English fought over the land. The war ended in 1763, when both sides signed a treaty. A **treaty** is an agreement between two groups or countries. **The Treaty of Paris of 1763** gave the land, including the land that is now Indiana, to the English. After the Revolutionary War (1775-1783), the English ceded, or gave up, the land to the Americans.

A) Write one sequence signal word from this paragraph. Hint: There are at least **eleven** signal words.

_____

B) Write what happened in these years on the timeline.



The Northwest Territory

Settlers did not have an official name for the land in the middle of the United States. In 1785, the U.S. government created an ordinance, or law, to organize the mapping, dividing, and selling of the land. **The Land Ordinance of 1785** stated that the land would be divided into townships six miles wide by six miles long. Each township was divided into 36 square sections. All sections would be sold, except for one, which would be saved to build schools.

Another important ordinance called the Northwest Ordinance was written in 1787. It gave a name to all the land in the middle of the United States, including the state we call Indiana. This ordinance named the land *The Northwest Territory*. According to this law:

1. Slavery was not allowed in the territory.
2. Settlers in the territory had certain rights.
3. The U.S. government would appoint a governor.
4. Once 60,000 settlers lived in an area, a state could be created. The land would be used to create three to five new states.

Even though there were many new laws to help govern the territory, problems occurred. Fighting over the land was one of the biggest problems. American Indians did not want to cede the land. American Indians and settlers fought many battles. Finally, in 1795, both sides signed the **Treaty of Greenville**. It stated that the American Indians would cede land to the U.S. government and the government would pay for the land with goods.

Dividing the Territory

By 1800, the Northwest Territory was too large to manage well. So, the western part of the territory became a new territory called the **Indiana Territory**. This new

Townships were created with 36 sections. Section number 16 wasn't sold so that it could be used for schools.

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

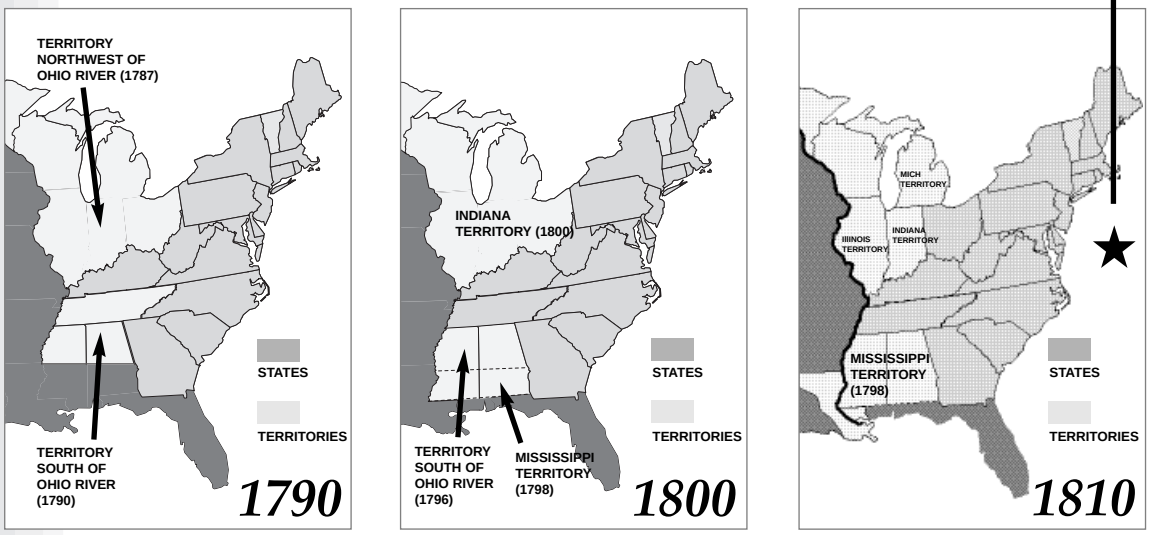
C) Does this grapic show sequence? _____ Write one reason why OR one reason why not

_____

_____

D) According to the graphic, which territory was created *first*?

- ○ Indiana Territory
- ○ Mississippi Territory



The country began to look different. More and more states were formed.

territory included the land that is now Indiana, Illinois, Wisconsin, and parts of modern-day Michigan and Minnesota. The national government appointed a governor for the new territory.

During the early 1800s, more settlers moved to the Indiana Territory because new laws made it easier for them to buy land. Settlers could now buy smaller amounts of land, and they could pay for it a little at a time, instead of all at once.

These changes helped the territory grow. It grew so much that in 1805 the government divided it again. Part of the land became the Michigan Territory. Finally, in 1809, the Indiana Territory was divided for the last time. Part of the land became the Illinois territory. The rest of the land eventually became Indiana.

There were 63,897 people living in the Indiana Territory in 1815. This number allowed the territory to apply for statehood under the Northwest Ordinance. After the territory applied for statehood, the U.S. Congress passed **The Enabling Act of 1816**. The Act was a law that set the state of Indiana's borders. It also declared that a state constitution should be written. The constitution was completed in June of 1816. Finally, on December 11th, 1816, President James Madison signed a resolution making Indiana the 19th state.

Review Questions

How well did you understand the sequence of events? Look at the events below. Reread the lesson **Indiana Becomes a State** and decide if the events happened at the same time, before, or after each other. Write your answers in the middle column.

	Event A	same time/before/after	Event B
1.	Indiana became a state		the Indiana constitution was written
2.	buying land was easier for settlers		the number of settlers was over 60,000
3.	American Indians lived on the land		settlers claimed the land
4.	Indiana Territory was formed		the Northwest Territory was formed
5.	the Revolutionary War was fought		the Treaty of Greenville was made

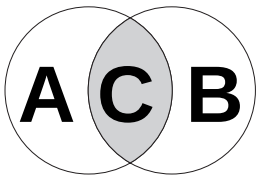
Look at all the events above. Put the events above in the correct order. The event that happened first is number 1, and it has been completed for you. Hint: writing the dates next to the events will help you check your work.

1. *American Indians lived on the land.*
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

STUDY SKILL: Venn Diagram

A Venn diagram is a type of graphic organizer that is helpful for showing similarities and differences between two subjects. A Venn diagram is made of two circles. The circles overlap like this:

Venn Diagram



In section A

write the information that describes your first subject.

In section B

write the information that describes your second subject.

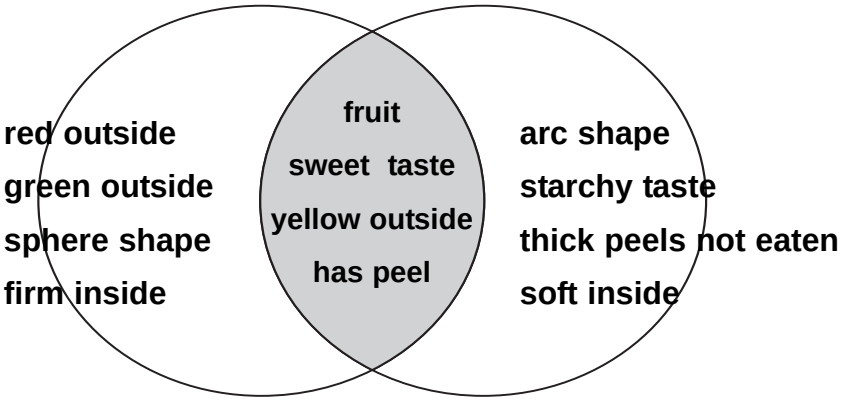
In section C

write information that describes both subjects.

When the diagram is complete, the center section (C) will show similarities and the outer sections (A and B) will show the differences.

Look at the Venn diagram below.

Title: Apples and Bananas



Student directions: Add these facts to the correct area in the Venn diagram above:

- white inside
- thin peel eaten

Discover

What are the major similarities and differences between telescopes and microscopes?

Science Words

lens a piece of clear material, often glass or plastic, that is curved so that it bends the light that passes through it

microscope a tool that makes small objects appear larger than they are

telescope a tool that makes faraway objects appear closer and larger than they are

Telescopes and Microscopes

Imagine you are a scientist. You need to know what the surface of the moon looks like. But the moon is too far away for you to see it up close. You also want to know what the eye of an insect looks like. But it is too small for you to see. Many years ago, it was impossible for people to see these things. But the invention of the telescope and the microscope allowed people to see things that were so small or so far away that they had never been seen before.

As you can see from these photos, telescopes are usually much larger than microscopes.

Telescopes

Have you ever used a telescope? If you have, then you know that a **telescope** is a tool that makes faraway objects appear as though they are right in front of you. Telescopes allow us to take a close look at planets, stars, and other objects that are so far away that we cannot touch them or see them clearly. A telescope works because it has a lens. A **lens** is a piece of clear material, often glass or plastic, that is curved so that it bends the light that passes through it. This helps us see better. Eyeglasses are a kind of lens. So is a magnifying glass. A telescope's lens makes faraway objects appear close.

A) In this paragraph, you read about the scientist Galileo. Use the information that you read to fill in the "Only Galileo" side of the Venn diagram below. You should include at least three details.

The invention of the telescope changed the way that people understood the world. Before the telescope was invented, people did not know very much about the solar system. Then, in 1608, two Dutch men named Hans Lipperhey and Jacob Metius each invented a telescope. Soon people all over Europe were interested in telescopes. An Italian scientist named Galileo Galilei (găl′ə-lā′ō găl′ə-lā′) heard about the invention of the telescope. He decided to make one for himself. He learned how to make his own lenses so that he could adjust the power of his telescope. In 1609, he built a telescope that was so powerful that he could see the moons of Jupiter! Galileo used his telescope to make many important discoveries about the solar system.

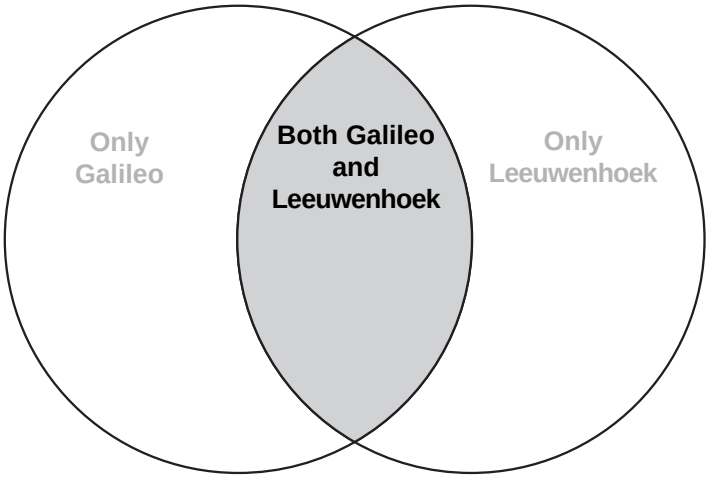
Today we use telescopes that are a lot like the ones that Galileo built 400 years ago. But today our telescopes are much larger and much more powerful. ★

The Kirkwood Observatory in Bloomington is home to a high-powered telescope.

Microscopes

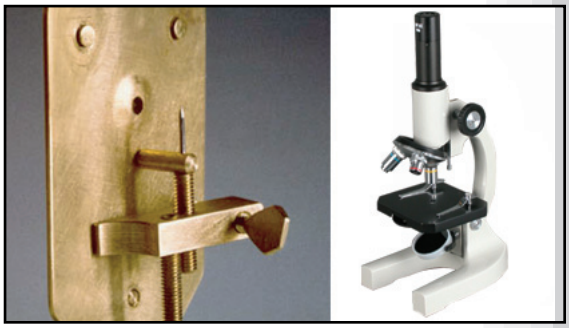
Like a telescope, a microscope is a tool that helps people see things better. Like a telescope, a microscope uses a lens. A **microscope** makes small objects appear large. You cannot use a microscope to see faraway objects because in order to use a microscope you need a specimen or sample. If you put this specimen under a

Galileo and Leeuwenhoek



A plant cell as seen through a microscope and magnified 400 times.

microscope, you can see parts of it that are so small that yo u cannot see them with just your eyes. Tiny objects such as individual hairs or the tiny parts of an insect become clear when looked at under a microscope.



What differences do you see between the early microscope used by Leeuwenhoek (left) and the microscope we use today (right)?

No one knows for sure who invented the first microscope. But a Dutch scientist named Anton van Leeuwenhoek (lā′vən-hō͝ok′) made microscopes better. Like Galileo, Leeuwenhoek learned how to make lenses. He used these lenses to make different kinds of microscopes. Between 1673 and his death in 1723, Leeuwenhoek used his microscopes to learn about living things that were too small to be seen.

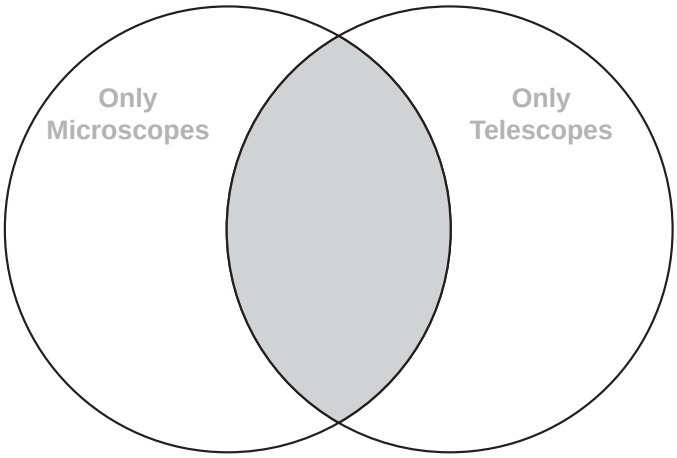
Microscopes have changed a lot since Leeuwenhoek's time. Though his microscopes only used one lens, most modern microscopes are compound–using more than one lens.

B) This paragraph gives you information about Leeuwenhoek. Use it to fill in the "Only Leeuwenhoek" side of the Venn diagram on page three. You should include at least three details. Then list at least two details that Galileo and Leeuwenhoek have in common.

Review

Now you can use the information you read in the lesson to make your own Venn diagram for microscopes and telescopes. You should include at least three details about each tool and at least three details that they have in common.

Title: _____



A) Predict something about grasshoppers and fireflies that could be compared in this lesson.

_____

_____

Find Out!

What is the same about fireflies and grasshoppers? What is different?

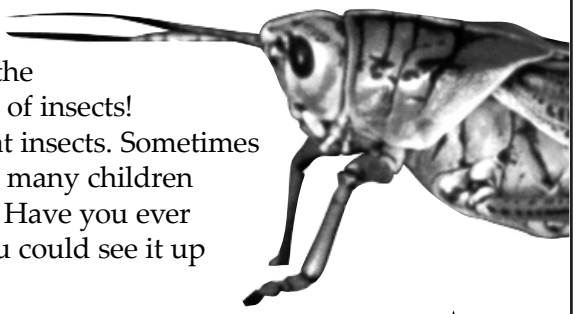
Science Words

bioluminescence
a glow made by a living being

carnivore
a plant or animal that eats mostly meat

herbivore
an animal that eats mostly plants

Indiana Insects

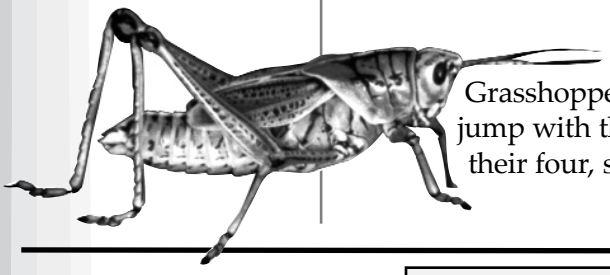


Summer in Indiana means warm sun, fresh foods from the farm, and insects. Lots of insects! Sometimes people swat insects. Sometimes people shoo them. But many children enjoy catching insects. Have you ever caught an insect so you could see it up close?

Two fascinating insects to catch and observe are grasshoppers and fireflies, also called lightning bugs. If you look closely, you can see that they are true insects. All insects have bodies made up of three sections. Every insect has a head, thorax, and abdomen. Both grasshoppers and fireflies have these three body parts. Like other insects, both grasshoppers and lightning bugs have six legs and two pairs of wings. Both have compound eyes (that have many lenses) and two antennae like other insects. Like all insects, they are each covered with a hard exoskeleton.

B) This sentence compares grasshoppers and fireflies to _____.

Most grasshoppers are green or brown. Grasshoppers hatch from small eggs buried underground. When they are born, they look very much like their parents. After hatching, they slowly grow into adult grasshoppers. Adult grasshoppers are usually one to three inches long.



Grasshoppers are very active during the day. It is tough to catch them! Grasshoppers have lots of ways to move. They can jump with their long hind legs. They can walk with their four, short, front legs. They can even fly with

C) What comparison is mentioned in this paragraph?

_____

_____

_____

D) How are the words *carnivore* and *herbivore* alike?

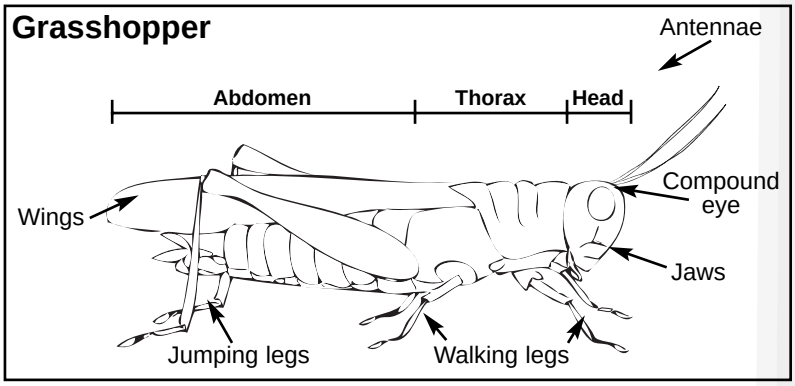
_____

_____

_____

their wings. Male grasshoppers also use their legs to communicate. They rub their back legs together to create sounds for other grasshoppers to hear.

Grasshoppers are good at chewing. They are herbivores. **Herbivores** are animals that eat mostly plants. Herbivores can



damage crops and gardens. Some grasshoppers, called locusts, can be especially damaging to crops. Luckily for farmers, many animals eat grasshoppers. Birds, spiders, reptiles, and rodents, all eat grasshoppers.

Unlike grasshoppers, fireflies won't damage farmers' crops. In fact, some fireflies are carnivores. **Carnivores** are animals that eat mostly meat. But these carnivorous fireflies don't eat hamburgers or chicken. They eat snails and insects. They even eat other fireflies. One trick these carnivorous fireflies use to attract their dinner is to make themselves glow.

This glow also makes children want to catch them. Unlike grasshoppers, fireflies are nocturnal, which means they are active at night. Even though they are usually less than an inch long and mostly dark brown and black, they can be seen flying

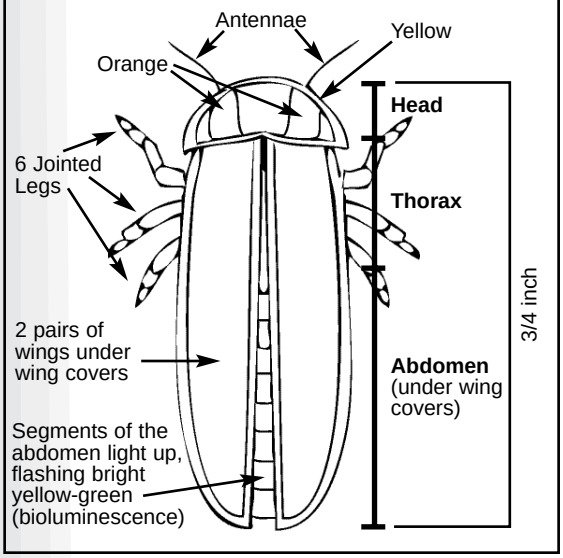
E) The word ***unlike*** tells you there is a contrast. What two topics are being contrasted here?

_____

_____

at night. They can be seen because they make their abdomens glow a bright yellow-green. This glow is called bioluminescence. **Bioluminescence** means a glow made by a living being. This glow is unusual because, unlike ★ light bulbs, it does not give off heat that you can feel. That is good, because otherwise the fireflies might get too hot!

Firefly



Before they can even fly, fireflies glow. Fireflies begin life as glowworms. They don't look like their parents when they hatch. They don't have wings, and they look like short worms. However, they do glow.

Scientists are studying fireflies to find out more about how they turn this bioluminescence on and off. Fireflies use bioluminescence to communicate with each other much like the grasshopper rubs its legs to communicate. ★ Males usually send slower flashes of light than females. Observe the flash patterns the next time you see fireflies. Can you figure out which are females and which are males?

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F) What word or phrase gives you a clue that this sentence contains a comparison?

_____

_____

Review Questions

Below are two charts that will help you compare and contrast grasshoppers and fireflies. Use information from the lesson to fill in the blanks. Then use the chart to answer the questions below. Some of the information has been provided for you.

What do Grasshoppers and Fireflies Look Like?

	Color	Names of Body Parts	Full Grown Size
Grasshoppers			*1-3 inches*
Fireflies			

How do Grasshoppers and Fireflies Live?

	Types of Food they Eat	Most Active Time	Ways they Communicate
Grasshoppers	*mostly plants*		
Fireflies			

1. Which of these two insects is usually bigger as an adult? _____

2. Other than size, what is one thing that is different about grasshoppers and fireflies?

_____

_____

3. What is one thing that is the same?

_____

_____

LESSON 2

MAIN IDEA

Indiana is made up of people from many diverse cultural groups.

VOCABULARY

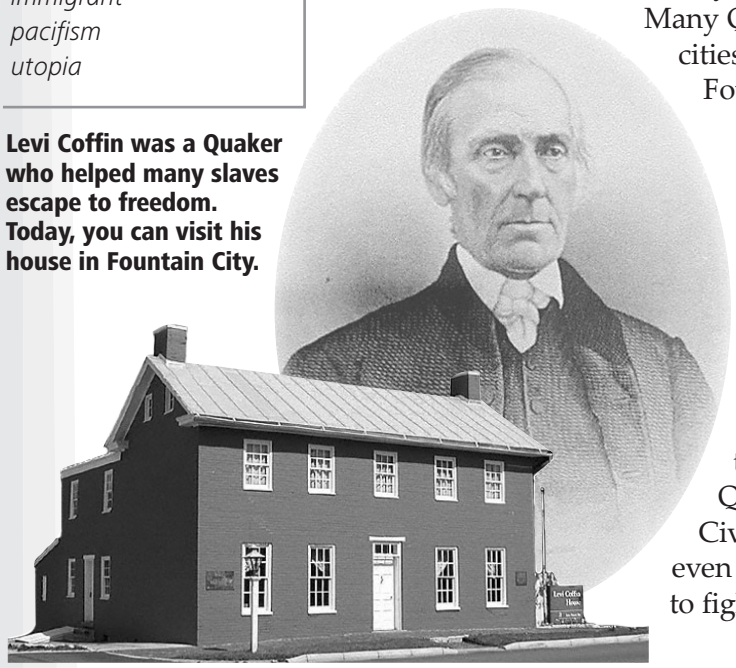
cultural group
employ
Hispanic
immigrant
pacifism
utopia

Cultural Groups in Indiana

A **cultural group** is a group of people who share common language, religion, and customs. Many cultural groups helped Indiana become a more interesting place to live. Due to the differences in their cultures, cultural groups have often faced challenges throughout Indiana history.

Quakers Arrive in Indiana

Indiana has more Quakers than any other state. Many Quakers moved to the Indiana Territory from the southern United States because the Indiana Territory did not allow slavery. Quakers believe that all men are created equal. They built many communities in eastern Indiana. Many Quaker buildings are found in cities such as Richmond and Fountain City.



Levi Coffin was a Quaker who helped many slaves escape to freedom. Today, you can visit his house in Fountain City.

Even though slavery was not allowed in Indiana, Quakers still faced challenges because of their beliefs. One challenge that many Quakers faced during the Civil War involved their pacifism. **Pacifism** is opposition to war as a means of resolving conflicts. Because they were pacifists, many Quakers refused to fight in the Civil War. Some Quakers were even put in jail because they refused to fight. ★

A) Write one of the compare and contrast signal words found on this page.

_____

B) Are all cultural groups immigrants? _____ Write one reason why OR one reason why not.

_____

_____

German Americans

Like the Quakers, German immigrants came to Indiana looking for a better life. An **immigrant** is a person who leaves one country to live in another. In the late 1800s and early 1900s, wars and crop failures made life in Germany hard. Many German immigrants came to Indiana looking for a safe place to live and work. Germans were a cultural group because of their common language and because they came from the same place.

German immigrants have added to Indiana's culture in many ways. Many foods that are favorites with Hoosiers, like sauerkraut and bratwurst, were originally German dishes. Some German immigrants built a utopian community in New Harmony, Indiana. A **utopia** is a perfect place where everyone works well together and is happy. Today, one out of every three Hoosiers claims German ancestry.

Because many German immigrants lived in communities with other German immigrants, they spoke mostly German and kept their German customs. But like the Quakers, German immigrants faced many challenges. During World War I, because the United States was fighting a war against Germany, many Americans started to fear their German neighbors.

Every year in Jasper, Hoosiers celebrate German culture and heritage with the Strassenfest.

Some Hoosiers believed that German-Americans were their enemies. In 1919, Indiana made it against the law for schools to teach the German language. German-Americans were forced to learn and speak English. Many German families stopped speaking German to their children.

Hispanic Immigrants

Today, many Hispanic immigrants live in Indiana. **Hispanics** are a cultural group because of their common language–Spanish. Most Hispanics came to

★ C) Circle two of the compare/contrast signal words found on this page.

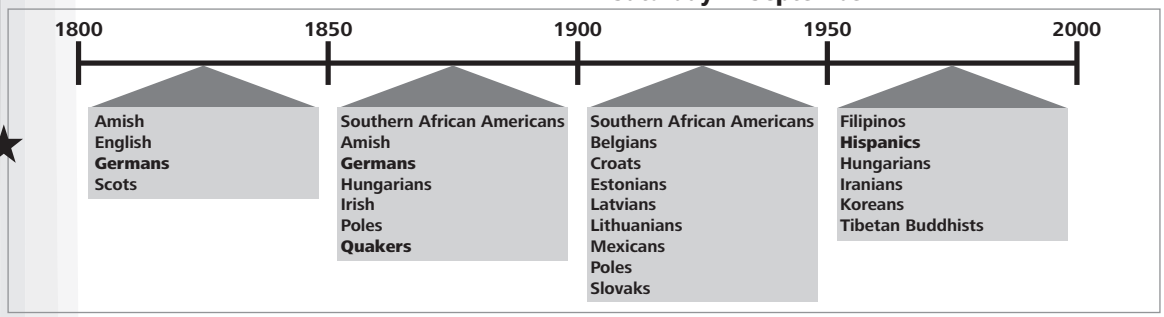
Indiana from Mexico and Puerto Rico. Many Hispanic immigrants came to Indiana to find employment. To **employ** means to provide with work and pay. Many Hispanic immigrants live in northern Indiana counties. Hispanic immigrants have become an important part of Indiana's workforce.

The Hispanic cultural group adds its own distinct culture to Indiana. The growing number of Hispanic immigrants has even begun to change the kinds of crops that Indiana farmers grow. Indiana farmers are learning how to grow favorite Hispanic foods like the jalepeño (hä´ lə – pān´yo) pepper. You have probably heard Hispanic music or eaten Hispanic food.

The Hispanic cultural group also faces challenges in Indiana today. Like the German immigrants, many Hispanic immigrants do not speak English. It can be difficult for non-English speakers to find employment in Indiana. Because of this, many Hispanic immigrants are employed in low-paying jobs. Sometimes people also treat Hispanics poorly because they do not understand the Hispanic culture.

Although most of Indiana's cultural groups have faced challenges, they are an important part of life in Indiana. Their contributions make life in Indiana better.

Fiesta Indianapolis is held on the third Saturday in September.



Many companies in Indiana wanted to employ more people, so they invited people from different places to move to Indiana to live. This timeline shows when many people from the same cultural group arrived in Indiana.

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★ D) Compare the years when many people from one cultural group came to Indiana.

In what years did the fewest cultural groups arrive? _____

In what years did the most cultural groups arrive? _____

Review Questions

Below is a chart that will help you compare and contrast the three cultural groups that you read about. Use information from the lesson to fill in the blanks. Some of the blanks have been done for you. Then use the chart to answer the questions below.

WHO	*The Quakers*	*German Immigrants*	*Hispanic Immigrants*
WHEN did the most members of the cultural group arrive in Indiana?		*1880-1929*	*1980 - today*
WHERE		*all over Indiana: especially Northern Indiana*	
WHY	*came to the Indiana Territory because it did not allow slavery*		*come to Indiana to find employment; to find a better life*
HOW did they contribute to Indiana?	*helped slaves escape to freedom; built buildings*		*supply Indiana with workers; Hoosiers today eat Mexican foods and enjoy Hispanic music*
WHAT challenges did they face?		*fear of Germans during World War I; German language banned in Indiana schools in 1919*	

1. Which two cultural groups faced challenges because of their language?

_____

2. Write one thing that made the Quakers different from the German immigrants. _____

_____

3. What is one thing that is the same about the Quakers and Hispanic immigrants? What is one thing that is different?

_____

_____

4. Write one reason why all three cultural groups came to Indiana. _____

_____

Glossary

appoint to choose

archaeological site a particular location where an artifact is found that shows where people once lived or worked

archaeologist a scientist who studies and searches for artifacts

artifact an object made or used by a person that tells how people used to live

atmosphere the gases that surround Earth, including the air we breathe

Battle of Tippecanoe bloody battle between Tecumseh's and Tenskwatawa's American Indian soldiers and William Henry Harrison's army

bill ideas for new laws

bioluminescence a glow made by a living being

biosphere all plants and animals on Earth

botanist a scientist who studies plants and trees

budget a plan for spending money

carnivore a plant or animal that eats mostly meat

chief head of a tribe or group; leader; person highest in rank or authority

condensation the changing of a gas into a liquid

Some definitions were taken from either:

- Thorndyke, E.L., & Barnhart, Clarence L. (1983). Scott Foresman Beginning Dictionary. Glenview, IL: Scott, Foresman and Company.
- Indiana Standards in Science and Social Studies

Congress the branch of government that writes laws

cultural group a group of people who share common language, religion, and customs

density the mass of an object divided by its volume

depression a time when prices are so low that people who sell things cannot make money

developer a person who buys land to build shops, houses, and parking lots

dune a hill or ridge piled up by the wind

employ to provide with work and pay

The Enabling Act of 1816 law that set Indiana's borders and declared that a state constitution should be written

energy what is needed to do work

erosion the process by which the products of weathering are moved from one place to another

evaporate to change from a liquid into a gas

evaporation the changing of a liquid into a gas

executive branch the branch of the government that makes sure laws are carried out

friction a force that stops or slows down an object that is moving

fund to provide with money

germinate to begin to sprout and grow

Some definitions were taken from either:

- Thorndyke, E.L., & Barnhart, Clarence L. (1983). Scott Foresman Beginning Dictionary. Glenview, IL: Scott, Foresman and Company.
- Indiana Standards in Science and Social Studies

glacier a giant sheet of ice that moves across land

goods objects, such as food or toys, that can satisfy people's wants

government a group of people who make and enforce laws

Great Depression the time between 1929-1941 during which many Americans faced financial hardship

Harrison, William Henry governor of the Indiana Territory, and later president of the United States

heat a form of energy that feels warm

herbivore an animal that eats mostly plants

Hispanic belonging to a Spanish-speaking cultural group

hydrologic cycle the water cycle of precipitation, evaporation and condensation

hydrosphere all the water on Earth's surface

Ice Age a period of time two or three million years ago in which ice covered the northern half of the Earth

immigrant a person who leaves one country to live in another

immune system the body's protection system

Indianapolis the capital city of Indiana

interstate a big highway that connects states to other states

Some definitions were taken from either:

- Thorndyke, E.L., & Barnhart, Clarence L. (1983). Scott Foresman Beginning Dictionary. Glenview, IL: Scott, Foresman and Company.
- Indiana Standards in Science and Social Studies

Jennings, Jonathan an important Indiana political figure who became Indiana's first governor

judicial branch the branch of the government that is responsible for enforcing justice

The Land Ordinance of 1785 law stating that the land in the middle of the United States would be divided into townships six miles wide by six miles long

legislative branch the branch of the government that creates laws

lens a piece of clear material, often glass or plastic, that is curved so that it bends the light that passes through it

limestone a kind of sedimentary rock that is at least half calcite

lithosphere soil and rock that form Earth's surface

microscope a tool that makes small objects appear larger than they are

mineral a substance found in nature that is not a plant or animal

moraine a pile of stones and boulders left behind by a glacier

natural resource something made by the Earth that is of value for humans

pacifism opposition to war as a means of resolving conflicts

politics the policies and affairs of government

precipitation water (solid or liquid) that falls to the Earth from the sky; rain, sleet, and snow are forms of precipitation; the process through which water falls to Earth

pressure the force of one object pushing against another object

Some definitions were taken from either:

- Thorndyke, E.L., & Barnhart, Clarence L. (1983). Scott Foresman Beginning Dictionary. Glenview, IL: Scott, Foresman and Company.
- Indiana Standards in Science and Social Studies

profit revenues from selling a good or service minus the costs of producing the good or service

revenue money the government receives to provide public services; the amount of income produced by a source (such as farming)

rock a solid mass made of one or more minerals

rotate to spin all the way around

samara a winged seed

sediment broken parts of plants, trees, rocks, and dirt mixed with water

senate the upper and smaller branch of the assembly that makes laws. Indiana elects fifty senators who serve for four-year terms

settler a person who moves to and develops a land

shadow a surface area from which light is blocked

specialize to produce fewer products and become expert at growing or raising one product

spring a small stream of water that flows naturally from the earth

tax an amount of money that people and businesses are required to pay to support public services

Tecumseh the leader of the Shawnee Tribe

telescope a tool that makes faraway objects appear closer and larger than they are

Tenskwatawa Tecumseh's brother who was known as "the Prophet"

Some definitions were taken from either:

- Thorndyke, E.L., & Barnhart, Clarence L. (1983). Scott Foresman Beginning Dictionary. Glenview, IL: Scott, Foresman and Company.
- Indiana Standards in Science and Social Studies

transportation the movement of people or goods from one place to another

treaty an agreement between two groups or countries

Treaty of Greenville of a treaty stating that Native Americans would cede land to the U.S. government and the government would pay for the land with goods

Treaty of Paris 1783 a treaty giving the land that is now Indiana to the English

unemployment a situation of being without work and pay

urban relating to a city or city life

utopia a perfect place where everyone works well with each other and is happy

vaccine a shot that prevents disease

virus a type of germ

volume a way of measuring the size of a three dimensional object

weathering breaking down of rocks and other materials on Earth's surface by such processes as rain or wind

Some definitions were taken from either:

- Thorndyke, E.L., & Barnhart, Clarence L. (1983). Scott Foresman Beginning Dictionary. Glenview, IL: Scott, Foresman and Company.
- Indiana Standards in Science and Social Studies

Main Idea

Madam C.J. Walker was a famous Hoosier entrepreneur.

Vocabulary

entrepreneur

goods

profit

What did Madam C.J. Walker use in her secret formula?

- Petrolatum
- Beeswax
- Copper sulfate
- Sulfur
- Violet perfume
- Carbolic acid

A Famous Hoosier

Sarah Breedlove was born in 1867. She had pretty black eyes and lots of hair. Her mother would brush her hair. Sarah liked to have flowers in her hair. She was proud of her hair. It made her feel special. 41

Sarah's parents died when she was seven years old. There was no one to take care of Sarah. Sarah had to take care of herself. She had to get a job. She washed other people's clothes to make money. She washed clothes in the morning and ironed them in the afternoon. Sarah made very little money washing clothes. She learned to work hard. 104

When Sarah grew older, her hair began to fall out. Sarah did not want her hair to fall out. She saw that many other women were losing their hair too. Some people were selling goods that could be used to help hair. Sarah decided to try these goods. **Goods** are objects, such as food or toys, that can satisfy people's wants. 165

The goods that Sarah used on her hair were oils and soaps. They helped a little, but she was still losing some hair. She thought she could make something better. She decided to experiment. To experiment means to try different things and find out what happens. She experimented with new hair oils in her bathtub. After trying hundreds of experiments, she made a secret formula. When she used it on her own hair, her hair began to grow back. 244

Sarah's new secret formula was a success. All of her hair grew back! She was very excited by her new invention. She liked the oil so much that she decided to sell it to help other people. When she sold it, she called herself by her married name, Madam C.J. Walker. She called her product "Madam C.J. Walker's Wonderful Hair Grower." 303

Photo of Madam C.J. Walker

Madam C.J. Walker needed customers, so she became a salesperson. She knocked on people's doors and tried to convince them to buy her new invention. Her hair-growing product became very popular. She began to make a profit. A **profit** is revenues from selling a good or service minus the cost of producing that good or service. So many people bought her oil that she trained other women to sell it. She sold more and more oil. She made bigger and bigger profits. Madam C.J. Walker sold so much oil that she needed a bigger place to mix it. She needed a factory. In 1910, she used her profits to build a factory in Indianapolis. Her sales and profits continued to grow. By 1927, she had to build a larger factory to make even more of her popular product.

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Madam C.J. Walker became the first female African-American to be a millionaire. Soon people wanted to learn all about the successful entrepreneur in Indiana who had invented a secret formula for hair cream. An **entrepreneur** is a person who takes a risk to start a business. Madam C.J. Walker traveled around the country and gave speeches about her life. She believed in working hard. She would say "I gave myself a start by giving myself a start." She wanted people to know that she started as a little girl washing clothes. She wanted people to know that they could succeed too if they worked hard.

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Madam C.J. Walker became a very wealthy entrepreneur. Her products continued to generate large profits. However, Madam C.J. Walker remembered how hard she had worked washing clothes and not making much profit. She wanted to help other people who were not as fortunate. She became a philanthropist. A philanthropist is someone who gives money to help others. As a philanthropist, Madam C.J. Walker used her money to improve the lives of many Hoosiers.

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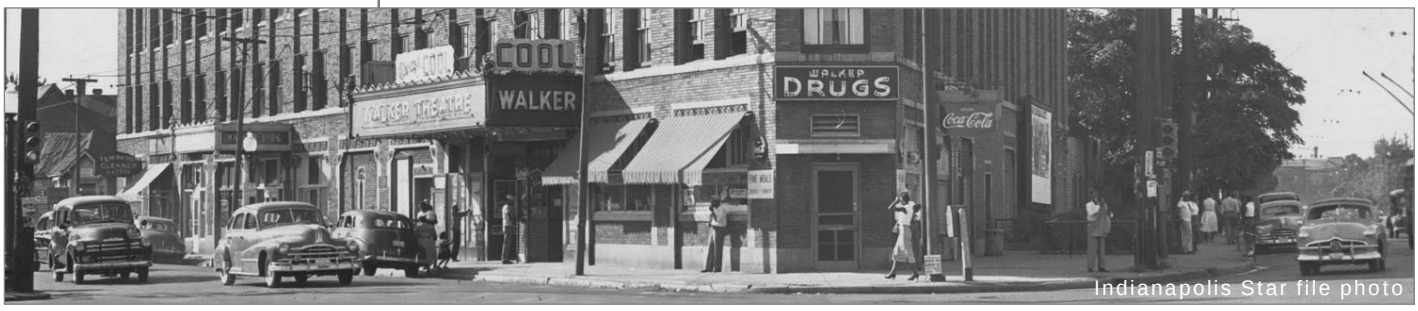
Madam C.J. Walker became famous all over the United States. Her company made hair care products for more than 80 years. The factory she built in 1927 is still in Indianapolis. Now it is a museum. People can take tours, learn about Madam C.J. Walker's life, and buy her famous products. In 1998, the United States postal service honored Madam C. J. Walker by putting her picture on a postage stamp.

683

The Walker Building, near downtown Indianapolis, originally housed Madam Walker's company. In 1927, part of the building was turned into the Walker Theater in Madam C.J. Walker's memory.



Indianapolis Star file photo

Review Questions

Name:_____

1. In this lesson, *goods* means objects that _____.
   - ○ satisfy people's wants
   - ○ fulfill people's dreams
   - ○ are made by philanthropists
   - ○ are made by entrepreneurs

2. A philanthropist is someone who _____.
   - ○ is an entrepreneur
   - ○ produces a product
   - ○ takes a risk to start a business
   - ○ gives money to help other people

3. Which two ingredients does the picture say were in Madam Walker's secret formula?
   - ○ lotion and soap
   - ○ powder and black dye
   - ○ vegetable oil and cream
   - ○ beeswax and violet perfume

4. Which of the following was a bolded vocabulary word in this lesson?
   - ○ profit
   - ○ revenue
   - ○ philanthropist
   - ○ Madam C.J. Walker

5. Sarah decided to try hair care products because she _____.
   - ○ was losing her hair
   - ○ wanted her hair to curl
   - ○ liked her hair to smell nice
   - ○ wanted to straighten her hair

6. What was the main idea of this lesson?
   - ○ A secret formula can help hair grow and can make a lot of money.
   - ○ Madam C.J. Walker was a famous Hoosier entrepreneur.
   - ○ Hoosiers can be on stamps if they're famous.
   - ○ People must experiment to make a profit.

7. After Madam C.J. Walker sold a lot of hair oil, she _____.
   - ○ built a factory in Indiana
   - ○ took a job washing clothes
   - ○ got married to C.J. Walker
   - ○ sold her secret to her partner

8. What was one thing that was the same about Madam C.J. Walker's life when she was a little girl and when she was an adult?
   - ○ She worked hard.
   - ○ She was a philanthropist.
   - ○ She travelled the country.
   - ○ She gave speeches about her life.

Discover

What are fossil fuels and how have they affected life in Indiana?

Science Words

fossil fuel a fuel, such as natural gas or coal, that was formed a long time ago from decayed plants and animals

non-renewable resource a resource that cannot be replaced

The Indiana Gas and Oil Boom

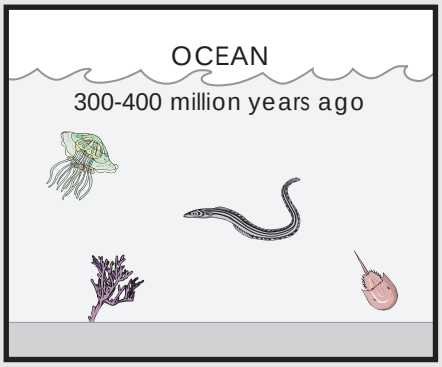
Today many Hoosiers depend on natural gas to heat our homes and cook our food. We rely on gasoline made from oil to keep our cars and buses running. We can buy gasoline at gas stations, and pipes bring natural gas into our homes. But have you ever thought about where these fuels came from originally? Did you know that oil and natural gas were on our planet before the dinosaurs?

Fossil Fuels

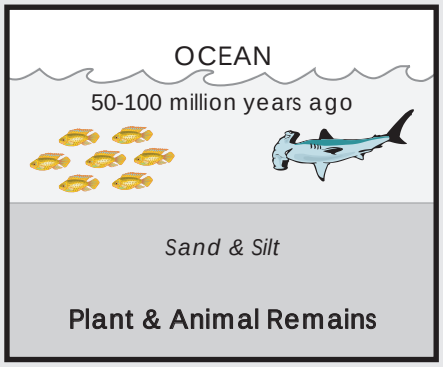
Natural gas and oil are fossil fuels. A **fossil fuel** is a fuel, such as natural gas or coal, that was formed a long time ago from decayed plants and animals.

Natural gas and oil formed hundreds of millions of years ago when small animals and plants that lived in the water died and sank to the bottom of oceans. Layers of sediment covered them. Sediment is broken parts of plants, trees, rocks, and dirt. Over time, heat and pressure transformed, or changed, the remains of these plants

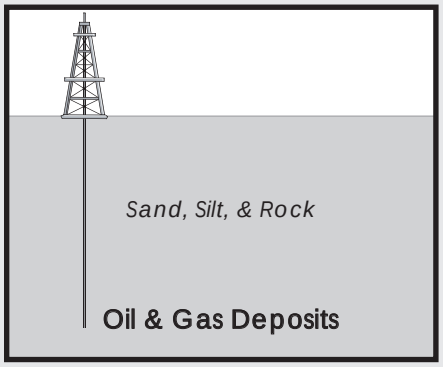
OIL & NATURAL GAS FORMATION



Millions of years ago, oceans covered the earth. Plants and animals lived and died in the oceans.



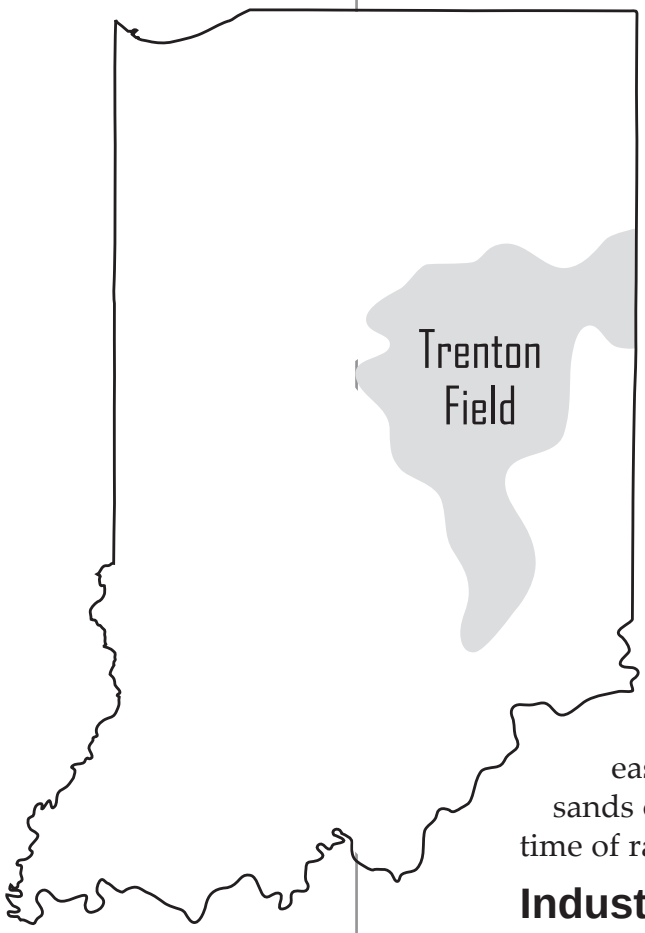
After the plants and animals died and sank to the bottom of the ocean, sediment buried them.



The heat and pressure from the sediment changed the plants and animals into natural gas and oil.

and animals into natural gas and oil. As more sediment built up, the weight of the sediment squeezed the oil and natural gas out. The oil and natural gas traveled through the sediment and layers of rock until they reached rocks that they couldn't pass through.

Because it took millions of years for natural gas and oil to form, they are called non-renewable resources. A **non-renewable resource** is one that cannot be replaced. If we use all of the Earth's natural gas and oil, we will not be able to make more.



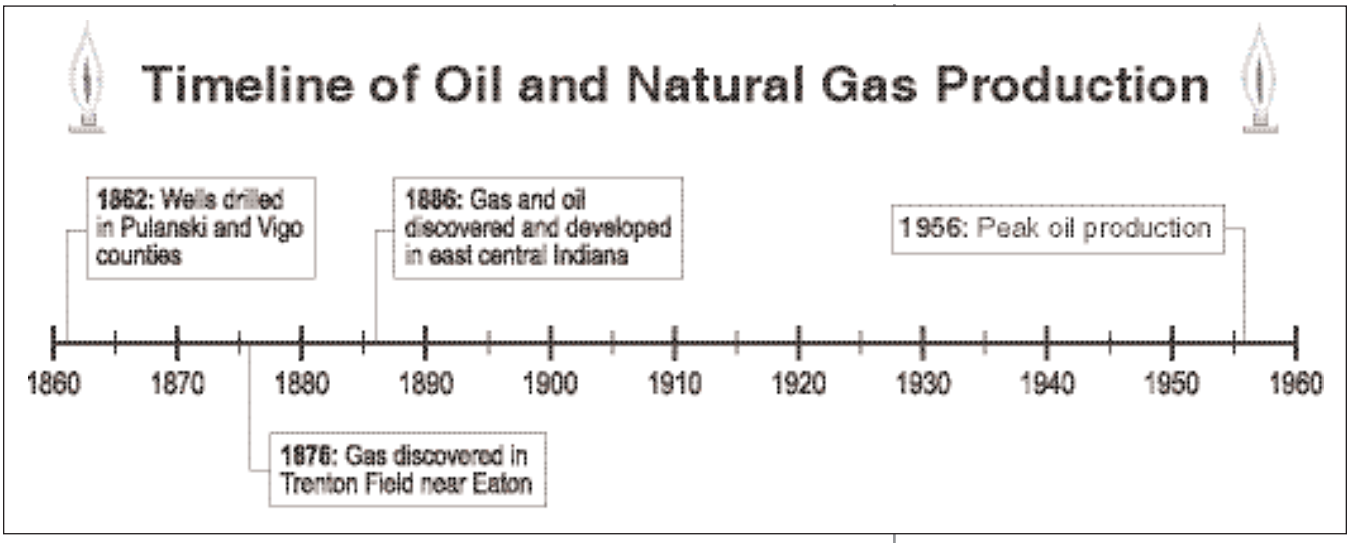
During the Indiana Oil and Gas Boom, Trenton Field produced more than 105 million barrels of oil.

Fossil Fuels in Indiana

Did you know that we have natural gas and oil right here in Indiana? Like all fossil fuels, the oil and natural gas in Indiana were created millions of years ago. But settlers didn't begin to use them until the late-1800s. People first drilled oil wells in Indiana in 1862. In 1876, drillers discovered natural gas in Delaware County. Hoosiers named the area where natural gas was discovered Trenton Field. Trenton Field was also rich in oil. In fact, at one time Trenton Field was the biggest oil field in the United States. In 1886, increased oil and natural gas production began in east central Indiana. People drilled thousands of wells. Indiana's oil and gas boom, a time of rapid growth, had begun!

Industry Grows

The large amount of natural gas and oil brought people and industries to Indiana. Natural gas could be burned to provide light. In the 1800s, many cities used natural gas to light their streetlights. Oil and natural gas could be burned to fuel machines in factories. Cities such as Anderson, Gas City, Kokomo, Marion, and Muncie



developed near Trenton Field. Kokomo even offered free gas to any company that would build factories in Kokomo and bring jobs to the city.

End of the Boom

When people first discovered natural gas and oil in Indiana, they did not understand that it was a non-renewable resource. A lot of natural gas was wasted because companies burned it as it was coming out of the ground. In cities such as Anderson, companies left giant torches, fueled with natural gas, burning day and night to show people how much gas the area had. People thought that there was so much of it that natural gas would never run out. They were wrong. By the beginning of the 1900s, Indiana was no longer a top producer of natural gas. Today Indiana uses more natural gas than it produces. Hoosiers have to get their gas from other states. Oil was later discovered in Southwest Indiana. This lead to a brief rise in oil production in the mid-1900s, but Indiana's oil production has been decreasing for nearly 50 years.

Consider this...

The amount of energy produced by the sun in a two-week period equals the combined stored energy of all the coal, iron, and natural gas reserves known in the world.

Review Questions

1. Fuel created long ago from decayed plants and animals is called _____.
   - ○ fossil fuel
   - ○ ocean fuel
   - ○ future fuel
   - ○ renewable fuel

2. In this lesson *boom* means _____.
   - ○ a factory
   - ○ a loud noise
   - ○ a kind of fossil fuel
   - ○ a time of rapid growth

3. Indiana's oil reached its peak production in _____.
   - ○ 1862
   - ○ 1886
   - ○ 1925
   - ○ 1956

4. If you were skimming this lesson, you would find the definitions of new vocabulary under _____.
   - ○ the title
   - ○ *Discover*
   - ○ the headings
   - ○ *Science Words*

5. What was one result of the Indiana gas boom?
   - ○ Fossil fuels became renewable in Indiana.
   - ○ People and industries moved to Indiana.
   - ○ Natural gas was discovered in Indiana.
   - ○ More people drove cars in Indiana.

6. What is the main idea of the last paragraph in this lesson?
   - ○ Indiana is a top producer of natural gas and oil.
   - ○ People should use oil more than natural gas.
   - ○ Oil is better than natural gas because there is more of it.
   - ○ Waste and limited resources ended the gas and oil boom.

7. What happened first?
   - ○ Oil wells were drilled in Indiana.
   - ○ Indiana used more gas than it produced.
   - ○ Natural gas was discovered in Delaware county.
   - ○ Increased natural gas production began in east central Indiana.

8. What is one thing that Indiana's natural gas and oil have in common?
   - ○ Both began to form in Indiana in the early 1800s.
   - ○ Both are renewable resources that won't run out.
   - ○ Both were discovered in Trenton Field in the 1800s.
   - ○ Both were found in southwest Indiana in the 1900s.

Money in Indiana

Main Idea

Throughout history, many different things have been used as money in Indiana.

Vocabulary

barter

currency

goods

Today when you buy something in Indiana, you pay for it with dollars and cents. But this was not always the way that people paid for things in Indiana.

Bartering Among American Indians

The first people to live in Indiana were American Indians. American Indians did not use money. Instead, American Indians bartered with each other for the items that they needed. To **barter** means to trade. Bartering was a very important part of life for American Indians. American Indians who lived in what is now Indiana were bartering with each other more than a thousand years ago! The earliest inhabitants of Indiana traded corn and other goods with each other. **Goods** are objects, such as food or toys, that can satisfy people's wants. Bartering can be a great way of paying for things, but sometimes it is hard to find the right person to barter with. Both people must have what the other wants, and both must agree that the two things to be traded are of

equal value. Otherwise, the trade would not be fair.

Beaver Pelts: From Bartering to Currency

When Europeans arrived in what is now Indiana, they brought with them many different goods. The American Indians were experts in trapping animals for their pelts. A pelt is the skin of an animal. The American Indians wanted the European goods and the Europeans wanted animal pelts. But there was a problem. The American Indians did not have money to pay for the European goods, and they did not want European money in return for their animal pelts. A new way of trading developed between the Europeans and the American Indians to solve this problem. It was agreed that each animal skin would be worth a certain amount when it was traded. Because hats made of beaver fur were very popular in Europe, beaver pelts were very valuable. People began to judge how much a good was worth based on how many beaver pelts they would have to trade for that good.

How much was a beaver pelt worth? Below are just a few of the goods that could be traded for one beaver pelt:

- 6 knives
- 1 shirt
- 10 pounds of pork
- 6 combs
- 5 pecks of corn
- 8 mink pelts
- 2 fox pelts

Beaver pelts became a form of currency. **Currency** is anything that is used as a means of exchange. As a form of currency, beaver pelts could be used to pay for almost anything, and everything had a set value in beaver pelts. People could trade their goods for beaver pelts and then trade the beaver pelts for the goods they needed. This system worked because everyone agreed on the value of

beaver pelts, but the pelts could be difficult to carry. Imagine if you had to carry beaver pelts with you every time you went to the store!

The Growth of Paper Money

When the United States became an independent country after the Revolutionary War, Americans needed a reliable currency. Banks were started in individual states to meet this need. Did you know that money was printed right here in Indiana? Several Indiana banks printed their own banknotes, or paper money. One such bank was the State Bank of Indiana branch in Lafayette that printed bills worth $2 and $5. Much of Indiana's currency was printed in communities along the Wabash and Erie canals. Some bills were worth as little as five or ten cents. Some bills were worth much more. Indiana currency looked very different from the dollars that we use today. The bills often showed pictures of Indiana life. Unfortunately, with so many banks printing money, it was hard to decide how much the money of one bank was worth compared to the money of another bank. This led to the development of the dollar bills that we use today. Now, whether you are in Indiana or California, you can pay for goods with the same dollars and cents.

> Can you imagine cutting out money with your scissors? Before machines were made to do the job, people used scissors to cut bills from sheets of money.

Gold is another form of currency that has been used throughout Indiana history.

photo courtesy of loc

Today many Hoosiers still enjoy panning for gold.

Review Questions

1. Which of the following is the best definition of *currency*?
   - ○ paper money printed by banks
   - ○ something that is up to date
   - ○ anything used in exchange
   - ○ animal skin used in trade

2. What is a pelt?
   - ○ a beaver
   - ○ a banknote
   - ○ skin of an animal
   - ○ coin made of gold

3. How many combs was one beaver pelt worth?
   - ○ 1
   - ○ 6
   - ○ 8
   - ○ 10

4. Under which heading would you expect to find information about the money that we use in Indiana today?
   - ○ Beaver Pelts: From Bartering to Currency
   - ○ Bartering Among American Indians
   - ○ The Growth of Paper Money
   - ○ Vocabulary and Main Idea

5. Banks were started in Indiana because people needed _____.
   - ○ places to meet
   - ○ new businesses
   - ○ reliable currency
   - ○ good employment

6. This lesson is mostly about _____.
   - ○ bartering
   - ○ beaver pelts
   - ○ currency used in Indiana
   - ○ the invention of paper money

7. What happened first?
   - ○ The dollar bills with Indiana scenes were designed.
   - ○ The dollar bills we use today were designed.
   - ○ American Indians bartered with Europeans.
   - ○ American Indians bartered with each other.

8. What is one thing that beaver pelts and Indiana banknotes have in common?
   - ○ Both are easy to carry.
   - ○ Both are forms of currency.
   - ○ Both had been used to barter.
   - ○ Both were made by Indiana banks.