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ABSTRACT

This booklet, compiled by the Ontario Institute for Studies in Education, lists behavioral objectives for biology in grades 4-6. The major areas of biology objectives presented are relations among plants, animals, and the environment; identifying and classifying plants and animals; and structures and functions of plants and animals. Each major area contains one-sentence behavioral objectives followed by sample test questions which might be used to measure student attainment of the stated objective. (MR)

SELECTED BIOLOGY BEHAVIORAL OBJECTIVES AND TEST ITEMS FOR GRADES 4—6

Science Objectives & Test Items Pool Project

Office of Field Development & Department of Curriculum
The Ontario Institute for Studies in Education
252 Bloor Street West, Toronto, Ontario
M5S 1V7

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1973

SCIENCE OBJECTIVES AND TEST ITEMS POOL PROJECT

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More than a score of teachers from the Metro Toronto, Peterborough and Kingston areas contributed objectives and test items to the pool. To all of our teacher-writers and all others who have contributed to the work of the project, the project staff wish to express their appreciation.

PREFACE

This collection of science objectives and companion test items for grades 4-6 is intended to assist the Junior Division science teacher in two important tasks:

1) planning classroom learning experiences to achieve his own teaching objectives; and

2) evaluating his (and his pupils') success in achieving those objectives.

It has been observed elsewhere that, "a huge advantage of an instructional objective derives from the simple fact that it is written. Once it is written, it is visible. Once it is visible, it can be reviewed, evaluated, modified, and improved." [1]

Using Behavioral Objectives to Plan Classroom Learning Experiences

Traditionally, goals of instruction have been stated in broad, global terms (example: "The student will develop scientific attitudes and habits of mind"). Instructional goals with such a high degree of generality aren't very helpful to the teacher. They are too broad to suggest particular teaching strategies, so the teacher is left to select day-to-day teaching strategies on the basis of more practical and immediate considerations. The result is that, if the broad, long-term goals are achieved at all, it is more by accident than by design.

This collection consists of relatively specific objectives. While their specificity may confer the apparent disadvantage that individually they do not appear to possess a high degree of educational significance, taken together a group of specific objectives "adds up to" a significant goal of education. Meanwhile, the advantage of specific objectives is that they often suggest particular teaching strategies to the teacher. It is much easier to translate specific instructional objectives, than it is to translate broad, long-term objectives, into daily lesson plans. When such objectives are achieved, it is more likely to be through design than through coincidence.

[1] Flanagan, John C, et al. Behavioral Objectives: A Guide to Individualized Learning ("Science" volume). Palo Alto: Westinghouse Learning Press, 1971: page v.

Using Behavioral Objectives to Evaluate Instruction

Another common characteristic of traditional goals of instruction (take the same example: "The student will develop scientific attitudes and habits of mind.") is that they are ambiguous. In this example, what are "scientific attitudes and habits of mind"? Do authorities agree on what they are? How do they differ from other attitudes and habits of mind; that is, how can we recognize them?

A third common characteristic of traditional goals is that they frequently do not refer to anything observable, so that an evaluator (such as a classroom teacher) must infer from indirect evidence that an objective has been achieved. Achievement is not defined "operationally" (that is, in terms of observable behavior). Referring once more to our earlier example, an "attitude" is customarily thought of as an internal feeling about something. How can a teacher know that a pupil possesses a particular attitude? He must infer it from the pupil's behavior, of course, and such inferences are frequently of doubtful validity.

Behavioral objectives are intended to overcome those two major drawbacks of traditional, broad-gauged goals of instruction. First, because they are much more specific, behavioral objectives usually can be formulated without resort to the use of abstract concepts, and that normally results in a greater degree of precision. Second, behavioral objectives are so labelled because they state the objectives of instruction in terms of the observable learner behavior that is intended as the outcome of instruction. Obviously, these two characteristics of behavioral objectives render their achievement much easier to evaluate. A glance at any objective (and its companion test items) in this collection will show how the means to measure achievement flows almost automatically from a statement of the objective itself. The same cannot be said for global, long-term objectives of the traditional kind!

The Biology Objectives Collection

This package consists of a large number of behavioral objectives (and companion test items) related to the life sciences. While these objectives do not even remotely exhaust the potential set of objectives that might be formulated for this teaching area, and level, an attempt has been made to include a broad range of objectives, both in terms of the content areas and in terms of the levels of difficulty represented. In short, this package contains a fairly representative sample of behavioral objectives and companion test items in the life science area for the Junior Division. Teachers using these materials are strongly encouraged to write additional objectives -- and additional test items for the existing objectives -- to suit their own instructional purposes, using the objectives and test items presented here as models for the development of others.

You will note that each objective in this package bears an Objective Number consisting of a one-digit number separated by a hyphen from a three-digit number. The first digit of the Objective Number refers to the major category (e.g., "Plants, Animals and the Environment") in which the objective is classified. The last three digits simply indicate the serial position of an objective within its major category (e.g., objective #1-021 is the twenty-first objective classified under "Plants, Animals and the Environment"). Within each major category, objectives have been sub-classified on a rather rough-and-ready basis for your convenience.

Additional Sources of Science Objectives

A number of agencies and projects have been funded in recent years to develop pools of instructional objectives and companion test items. Several sources known to have developed collections of science objectives suitable for use at the Junior Division level in Ontario are listed below.

AAAS - A Process Approach: American Association for the Advancement of Science/Xerox Division. 1515 Massachusetts Avenue, N.W. Washington D.C. 20005.

Course Goals Development Project, School Districts of Clackamas, Multnomah and Washington Counties, Multnomah County, Intermediate Education District, 220 SE. 102nd Avenue, Portland, Oregon.

Evaluation for Individualized Instruction. A title 111 ESEA Project Illinois School Division District 99. Downers Grove, Illinois

The Instructional Objectives Exchange, P.O. Box 24095, Los Angeles, California, 90024. U.S.A.

The Objectives and Items Co-op XE-3, University of Massachusetts, Amherst, Massachusetts.

Project Plan, Westinghouse Learning Press, Palo Alto, California. (Division of Westinghouse Learning Corporation

I. PLANTS, ANIMALS AND THE ENVIRONMENT

OBJECTIVE NO. 1-001

The pupil can identify some ways in which plants and animals are interdependent.

SAMPLE TEST ITEMS

1. Plants are directly or indirectly essential to animals because they

   (a) supply beautiful surroundings
   *(b) are the first step of food chains
   (c) eat harmful animals
   (d) grow rather slowly

2. During daylight plants give out oxygen which is then available for use by animals. *True/False

3. Without plants all animals would eventually starve. *True/False

4. Animals breathe out carbon dioxide which is

   *(a) taken in by plants to make food
   (b) poisonous to most plants
   (c) stored in the clouds to form rain
   (d) the gas making up 79% of the air

5. Which of the following is not a way in which animals are of benefit to plants?

   (a) animals help in pollination of flowers
   *(b) animals help to make food in the plant
   (c) animals help to fertilize the soil
   (d) animals help in the dispersal of seeds

OBJECTIVE NO. 1-002

The pupil can identify definitions of certain ecological terms (e.g. ecology, population, community, ecosystem, niche, biome).

SAMPLE TEST ITEMS

1. The following definitions refer to the interrelationship between plants, animals, and their environment. Match each definition in Column 1 with its correct term in Column 2 by writing the letter of each definition in the space provided in front of the term.

Column 1 Definitions	(Answers)	Column 2 Terms
A. the study of organisms in relation to each other and to their environment	(D)	ecosystem
	(E)	niche
B. the total of all individuals of a given species occupying a particular area	(B)	population
	(A)	ecology
C. any group of different kinds of organisms living in the same place	(F)	biome
	( )	environment
D. a community of living organisms in combination with its physical environment	(C)	community
E. the particular place in the environment occupied by a plant or animal species		
F. the complete plant-animal society in any place		

continued

OBJECTIVE NO. 1-002

2. Which of the following terms includes all the others listed?

(a) population
*(b) ecosystem
(c) community
(d) niche

3. Similar kinds of vegetation usually provide similar niches for animals. *True/False

4. Tundra, tropical rain forest, and desert are all examples of biomes. *True/False

OBJECTIVE NO. 1-003

The pupil can identify five major components of an ecosystem (e.g. energy, abiotic chemicals, producer organisms, consumer organisms [primary and secondary consumers], reducer organisms).

SAMPLE TEST ITEMS

1. In an ecosystem energy is derived mainly from the

   (a) moon
   (b) stars
   *(c) sun
   (d) air

2. A carnivorous animal has to obtain its energy indirectly. It does so via which of the following paths?

   (a) carnivore, plant, bacteria, sun
   *(b) carnivore, herbivore, plant, sun
   (c) carnivore, herbivore, plant, gases
   (d) carnivore, bacteria, plant, sun

3. Which of the following forms part of an ecosystem?

   (a) reducer organism
   (b) producer organism
   (c) energy
   *(d) all of the above

4. Which of the following is not an example of an abiotic chemical forming part of an ecosystem?

   (a) water
   (b) nitrate
   *(c) sunlight
   (d) oxygen

OBJECTIVE NO. 1-003

5. In an ecosystem producer organisms are those which

*(a) use the sun's energy to make food
(b) get their food from other organisms
(c) decay dead plants and animals
(d) provide chemicals for use by plants

6. Which of the following is a characteristic of a consumer organism?

(a) it decomposes oxygen
*(b) it eats other organisms
(c) it makes its own food
(d) none of the above

OBJECTIVE NO. 1-004

The pupil can identify certain parts of an ecosystem (e.g. producer organism, consumer organism, energy source, reducer organism, abiotic chemicals).

SAMPLE TEST ITEMS

1. Label the parts indicated in the following diagram of a simplified ecosystem by writing the letter of each label in the appropriate space provided.

   A. consumer organism

   B. site of action of reducer organisms

   C. producer organism

   D. source of energy

   E. source of abiotic chemicals

continued

OBJECTIVE NO. 1-004

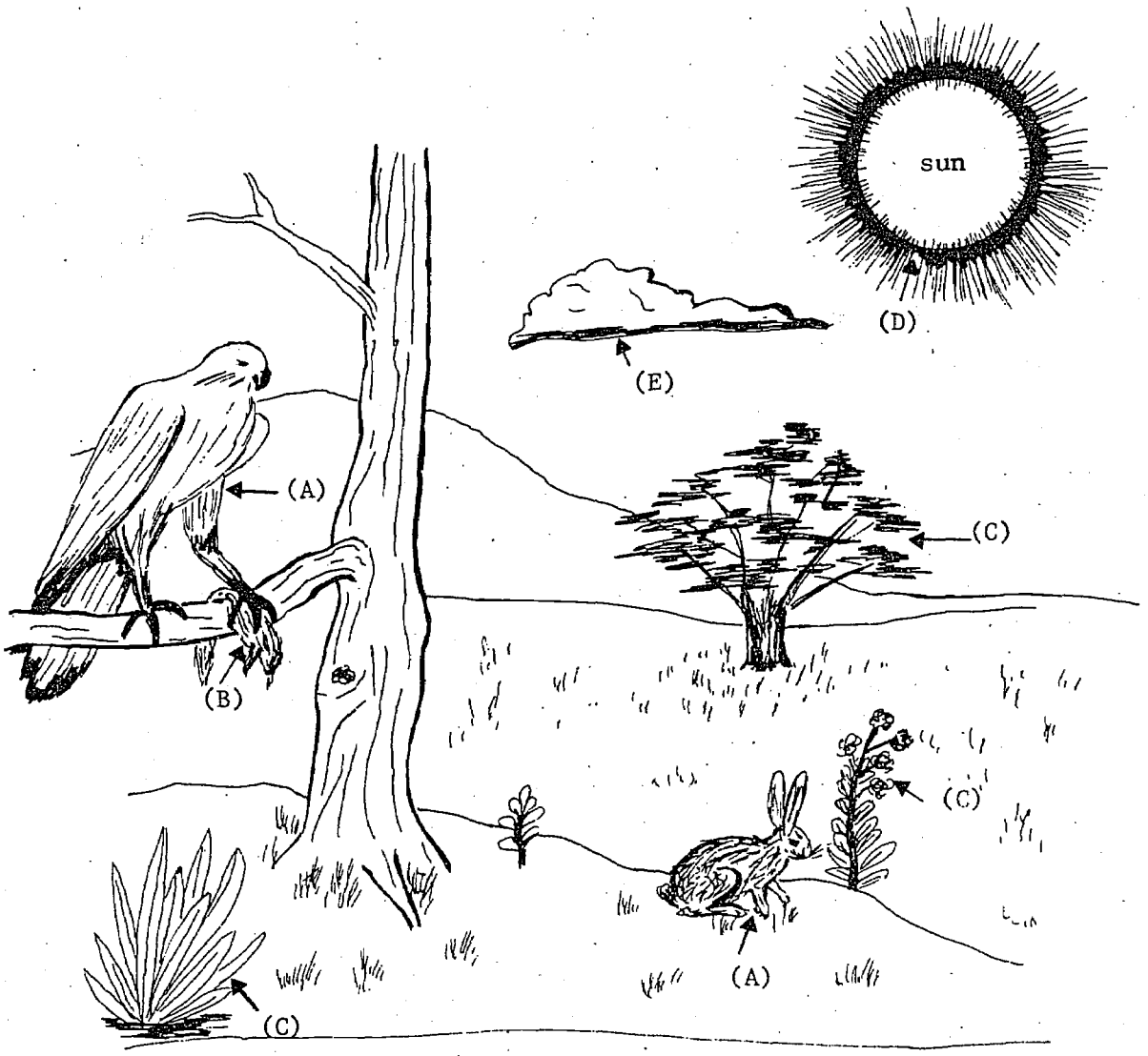


DIAGRAM OF A SIMPLIFIED ECOSYSTEM

OBJECTIVE NO. 1-005

The pupil can order the components of a typical complete food chain relating both to land and aquatic environments.

SAMPLE TEST ITEMS

1. Which of the following is the correct order of a complete land food chain?

   (a) grass, bird, snake, horse
   (b) leaf, rabbit, cow, insect
   *(c) grass, insect, snake, bird
   (d) rabbit, bird, insect, man

2. Number the following organisms in the order in which they would appear in a fresh-water food chain.

   (4) bass, (1) weed, (3) frog, (2) insect.

   *(weed, insect, frog, bass)

3. Number the following organisms in the order in which they would appear in a land food chain.

   (2) mouse, (1) grass, (4) hawk, (3) snake.

   *(grass, mouse, snake, hawk)

4. Which of the following is the correct order of a complete fresh-water food chain?

   (a) weeds, frogs, fish, insects
   (b) insects, weeds, frogs, fish
   (c) weeds, insects, fish, frogs
   *(d) weeds, insects, frogs, fish

OBJECTIVE NO. 1-006

The pupil can identify the role played by each part of a food chain in the continuance of that food chain.

SAMPLE TEST ITEMS

1. If each member of the following food chain, i.e. plants - mice - snakes - birds, had no other food, what would happen if all snakes died from disease?

   All mice would die. True/False*

   All birds would die. *True/False

   All plants would die. True/False*

2. If only one member in the middle of a food chain were removed, the food chain would continue in the normal way. True/False*

OBJECTIVE NO. 1-007

The pupil can order the basic parts of a simple food chain (e.g. green plants, herbivores, and carnivores).

SAMPLE TEST ITEMS

1. Which of the following lists the parts of a simple food chain in the correct order?

   (a) herbivores, green plants, carnivores
   (b) carnivores, herbivores, green plants
   *(c) green plants, herbivores, carnivores
   (d) green plants, carnivores, herbivores

2. The correct order of the basic parts of a simple food chain is green plants, herbivores, and carnivores. *True/False

3. Each of the following lists gives the parts of a simple food chain. Which of these lists is in the correct order?

   *(a) weed, insect, frog
   (b) snake, frog, hawk
   (c) mouse, grass, snake
   (d) insect, bird, frog

OBJECTIVE NO. 1-008

The pupil can identify a food web as two or more linked food chains in a community.

SAMPLE TEST ITEMS

1. A food web is made up of

   (a) a single food chain
   (b) two similar food chains
   (c) many separate food chains
   *(d) two or more linked food chains

2. If two or more food chains are linked together they make up a food web. *True/False

OBJECTIVE NO. 1-009

The pupil can apply the rule that carnivores depend indirectly on green plants for food.

SAMPLE TEST ITEMS

1. Animals that feed on fish would live even if there were no plant life in the water. True/False*

2. The amount of meat produced in the world depends on the number of plants that are in the world. *True/False

3. Foxes, since they eat rabbits, do not depend on plants for food. True/False*

4. If there were no rain for a long time, which of the following would be likely to happen to a carnivore such as a fox?

   (a) the number of foxes would be likely to increase
   (b) the foxes would be likely to have more then enough to eat
   *(c) the foxes would be likely to suffer from lack of food
   (d) the number of foxes would be likely to stay the same

OBJECTIVE NO. 1-010

The pupil can identify plants that make their own food and those that obtain their food from other plants or animals.

SAMPLE TEST ITEMS

1. A mushroom is a plant which

   *(a) cannot make its own food
   (b) makes its own food
   (c) contains chlorophyll
   (d) always grows in the shade

2. Which of the following plants can use the sun's energy to make its own food?

   (a) fungus
   (b) bacteria
   *(c) moss
   (d) toadstool

3. A sunflower depends on other plants and animals for its food. True/False*

4. Cells which contain chlorophyll are capable of using the sun's energy to make food. *True/False

OBJECTIVE NO. 1-011

The pupil can recognize how animals may affect the pollination of flowers and the dispersal of fruits and seeds.

SAMPLE TEST ITEMS

1. When entering flowers, insects often get a yellow powder on their legs. This yellow powder is called _____(pollen).

2. The yellow powder is normally found on the flower's_____ (anthers).

3. The yellow powder contains male sex cells; the insect carries the yellow powder to the sticky female part of the flower called the _____(stigma).

4. In this way insects help start sexual _____(reproduction).

5. The structure of the plant which contains the ripened seeds is called the _____(fruit).

6. Animals may carry fruit or seeds in their fur because some fruits have _____(burrs).

7. Seeds may be carried in the mud attached to an animal's _____(hooves).

8. Seeds eaten by birds may later be dropped or passed out of the body in the _____(feces).

OBJECTIVE NO. 1-012

The pupil can identify various stages in the nitrogen cycle.

SAMPLE TEST ITEMS

1. Green plants make their own

   *(a) food
   (b) nitrogen
   (c) water
   (d) oxygen

2. When plants and animals decay the protein is changed into

   (a) hydrogen
   *(b) nitrogen
   (c) carbon
   (d) oxygen

3. Waste products in the soil are changed into nitrates and other chemicals by

   (a) sunlight
   (b) oxygen
   (c) carbon
   *(d) bacteria

continued

OBJECTIVE NO. 1-012

4. The following terms represent stages in the nitrogen cycle. Write the letter corresponding to each term in the correct space provided on the following diagram.

   A. animal proteins

   B. nitrates

   C. plant proteins

   D. free nitrogen

   E. "nitrogen-fixing" bacteria

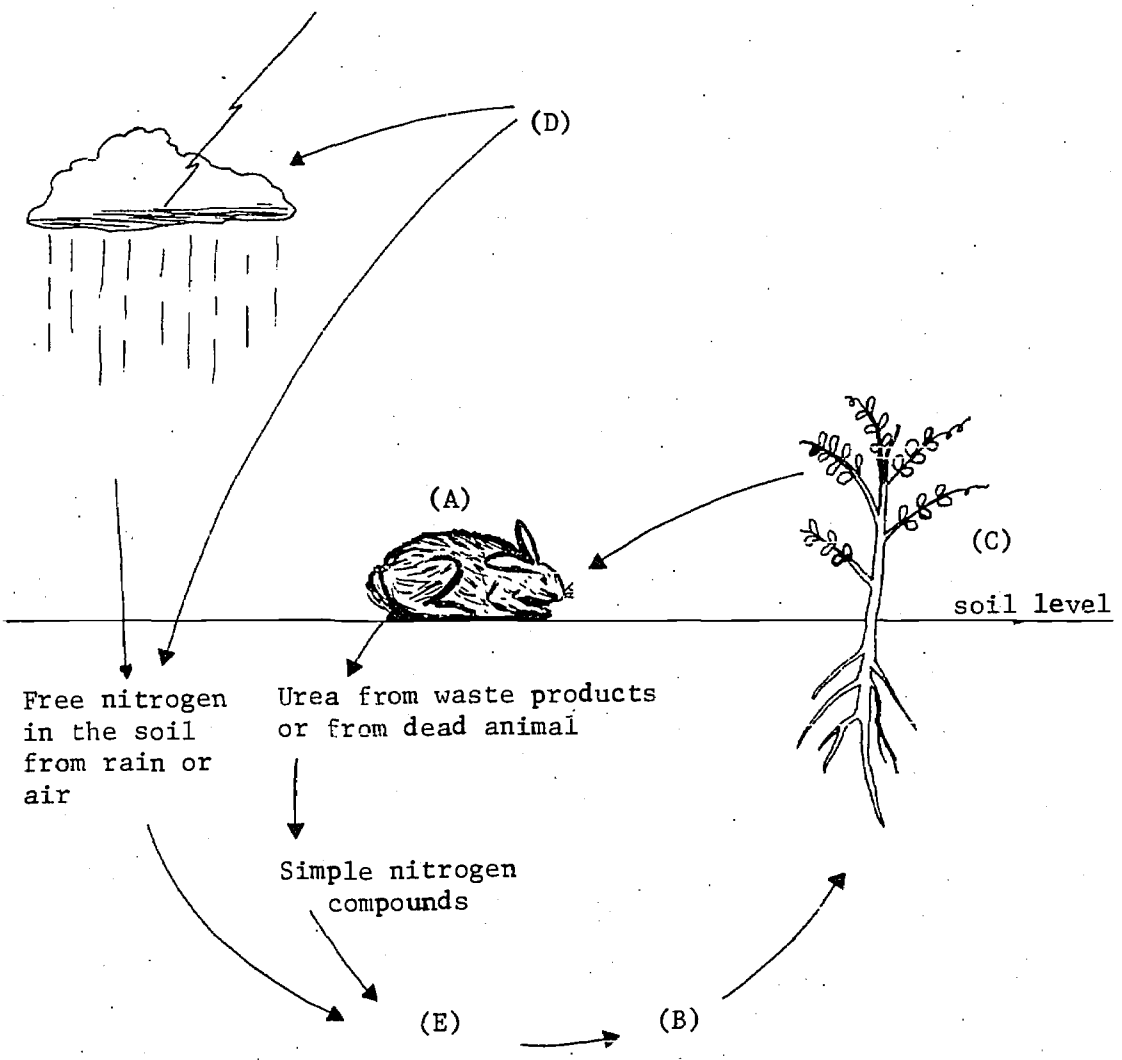


DIAGRAM OF NITROGEN CYCLE

OBJECTIVE NO. 1-013

The pupil can identify some of the processes involved in the water cycle.

SAMPLE TEST ITEMS

1. We are constantly getting about the same amount of water in the form of rain as we are losing by evaporation. *True/False

2. Which of the following pairs of processes is involved in the water cycle?

   (a) evaporation and respiration
   (b) condensation and respiration
   *(c) evaporation and condensation
   (d) none of the above

3. Water evaporates from earth and is stored temporarily as water vapor in rain clouds. *True/False

4. Water vapor in rain clouds condenses to form rain. *True/False

5. During the water cycle rain is the only form in which water vapor is returned to the earth. True/False*

OBJECTIVE NO. 1-014

The pupil can identify ways in which plants are adapted to the environment in which they live.

SAMPLE TEST ITEMS

1. Which of the following characteristics of a cactus plant is not an adaptation for life under dry conditions?

   (a) thick, fleshy leaves
   (b) waxy layer covering leaves
   *(c) large, thin leaves
   (d) sunken "pores" in the leaf

2. The branches of evergreen trees (conifers) do not break under the weight of snow because

   (a) the snow falls between the widespread branches
   (b) the branches are very strong
   (c) these trees live in tropical regions
   *(d) the snow slides off the sloping branches

OBJECTIVE NO. 1-015

The pupil can identify certain mechanisms which have enabled particular animals species to survive (e.g. protective coloration, mimicry, shape of the body).

SAMPLE TEST ITEMS

1. Which of the following is not a mechanism which would enable certain animal species to survive in a particular habitat?

   (a) protective coloration
   (b) mimicry
   (c) shape of body
   *(d) size of the heart

2. Some non-poisonous animals are protected from predators because they mimic poisonous animals. *True/False

3. The mottled skin of a frog serves as a means of protection from predators. *True/False

4. The shape of the body plays no part in the survival of certain animal species. True/False*

OBJECTIVE NO. 1-016

The pupil can identify ways in which fish are adapted to a particular habitat.

SAMPLE TEST ITEMS

1. A goldfish cannot live in the sea because it is adapted to living in

   (a) deep water
   (b) salt water
   *(c) fresh water
   (d) muddy water

2. A fish that is well adapted to living in brightly colored coral reefs is likely to be

   *(a) small and brightly colored
   (b) small and dull in color
   (c) large and fast moving
   (d) none of the above

3. A fish may be adapted to a particular habitat because of

   (a) its color
   (b) its shape
   (c) its speed
   *(d) all of the above

4. Most fish which are adapted to living near the bottom of the sea would die if they were brought up to the surface. *True/False

5. Eels and salmon can live in both fresh and salt water. *True/False

6. Fish cannot live right at the bottom of the sea. True/False*

7. Some fish are able to move on land. *True/False

OBJECTIVE NO. 1-017

The pupil can identify certain characteristics of bony fish (teleosts), namely that they are cold-blooded, aquatic vertebrates.

SAMPLE TEST ITEMS

1. Which of the following applies only to bony fish?

   (a) cold-blooded, aquatic, vertebrate, possessing hard shell and flippers
   (b) warm-blooded, aquatic, vertebrate, possessing fur and flippers
   *(c) cold-blooded, aquatic, vertebrate, possessing gills, fins, and scales
   (d) cold-blooded, aquatic, vertebrate, possessing gills but no fins or scales

2. Bony fish, like humans, have backbones. *True/False

3. The body temperature of a fish remains constant no matter how cold the water is. True/False*

4. Most fish are covered with little shields called scales. *True/False

5. All bony fish possess gills which assist in breathing. *True/False

6. Fish use their fins for swimming. *True/False

7. No fish can live out of water for more than a few minutes. True/False*

OBJECTIVE NO. 1-018

The pupil can identify stages in the migratory life-cycle of a Pacific salmon.

SAMPLE TEST ITEMS

1. Pacific salmon migrate from the ocean to fresh water rivers

   (a) in the spring
   (b) in the winter
   *(c) between late spring and early fall
   (d) between late summer and winter

2. The salmon migrate to fresh water when

   (a) they want to escape the cold water
   (b) they want to get some exercise
   (c) they train their young to swim
   *(d) they are about to lay their eggs

3. After salmon have spawned, the

   *(a) adult salmon die
   (b) young salmon die
   (c) adults change color
   (d) adults return to the ocean

4. When the young salmon hatch, they

   (a) swim to a lake
   (b) start spawning
   *(c) swim to the ocean
   (d) find a mate

5. The young salmon mature

   (a) shortly after hatching
   (b) in one year
   *(c) in 3-4 years
   (d) after they spawn

OBJECTIVE NO. 1-019

The pupil can identify the breathing structures that allow for the existence of amphibians on land.

SAMPLE TEST ITEMS

1. Which of the following does not help amphibians to breathe on land?

   (a) lungs
   *(b) air sacs
   (c) thin skin
   (d) mouth

2. Amphibians can breathe on land as well as in the water. *True/False

3. The thin skin of an amphibian must be kept moist to enable it to breathe on land. *True/False

4. A frog would not be able to breathe on land if its nostrils were blocked. True/False*

5. The gills of newts allow them to breathe on land. True/False*

6. The skin of a frog is well supplied with blood capillaries to help in oxygen absorption. *True/False

7. Tadpoles are well adapted to breathing on land. True/False*

8. The frog uses its mouth or buccal cavity to pump air into its lungs. *True/False

OBJECTIVE NO. 1-020

The pupil can identify ways in which a frog is adapted to its amphibious life cycle.

SAMPLE TEST ITEMS

1. The frog is able to swim in water because it has

   (a) thin skin
   *(b) webbed feet
   (c) large gills
   (d) light bones

2. A tadpole is adapted for life in water owing to the presence of

   *(a) gills
   (b) lungs
   (c) scales
   (d) legs

3. Which of the following features does not help the frog to live either on land or in water?

   (a) the ability to breathe through its skin
   (b) the ability to breathe by means of lungs
   (c) the ability to breathe through the "lining" of its mouth
   *(d) the ability to breathe in a large volume of air

4. The frog is well adapted for catching prey on land because it has

   *(a) a long sticky tongue
   (b) very good eyesight
   (c) a good sense of smell
   (d) a good sense of hearing

OBJECTIVE NO. 1-021

The pupil can name the animal that develops from a tadpole.

SAMPLE TEST ITEMS

1. At a certain time in its life, a tadpole changes into

   (a) a minnow
   *(b) a frog
   (c) a water snake
   (d) goldfish

2. The adult stage of the tadpole is the _____(frog).

OBJECTIVE NO. 1-022

The pupil can identify certain animal structures which are adapted for a particular type of locomotion (e.g. claws, webbed feet, hoofs, toes, wings, fins).

SAMPLE TEST ITEMS

1. Column 1 lists a number of different modes of animal locomotion. Column 2 lists the names of various animal structures. Each type of locomotion has a number of structures written directly opposite it. From each selection indicate the structure which is most appropriate to that type of locomotion by underlining the correct term.

Column 1 Types of Locomotion	Column 2 Structures
Flying	claws, wings, hoofs, toes
Swimming	wings, toes, webbed feet, claws
Running	wings, fins, hoofs, webbed feet
Walking	fins, toes, claws, wings
Climbing	hoofs, webbed feet, claws, wings

OBJECTIVE NO. 1-023

The pupil can recognize that there is a relation between a bird's feeding habits, and the shape of its beak.

SAMPLE TEST ITEMS

1. Name a bird that

(a) uses its beak for tearing flesh _____(e.g. eagle)

(b) uses its beak as a sieve _____(e.g. duck)

(c) stores food in its beak _____(e.g. pelican)

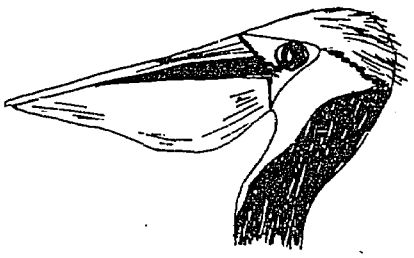
(d) uses its beak to bore holes in wood _____(e.g. woodpecker)

(e) cracks seeds with its beak _____(e.g. sparrow)

continued

OBJECTIVE NO. 1-023

2. Match each of the beaks on the left with the function it performs in the column on the right by writing the letter corresponding to each beak in the correct space provided.

A. 

B. 

C. 

D. 

E. 

(D) seed-cracking

(E) flesh tearing

(C) boring wood to obtain insects

(B) sieving water to get food

(A) temporary storage of food

OBJECTIVE NO. 1-024

The pupil can identify several ways in which plants and animals respond to changes in their environment.

SAMPLE TEST ITEMS

1. A Canada goose would adapt to the onset of winter by

   (a) hibernating during winter
   *(b) migrating to a warmer place
   (c) getting a thick layer of fat
   (d) getting a thicker covering of feathers

2. Which of the following animals does not adapt to changes in temperature by hibernating?

   (a) squirrel
   (b) snake
   (c) chipmunk
   *(d) lion

3. As an adaptation to winter the leaves of some trees

   *(a) drop off
   (b) change in color
   (c) become thicker
   (d) become larger

4. The sap in a maple tree starts to flow as a response to

   (a) a change in air pressure
   *(b) a change in temperature
   (c) a message from its internal "clock"
   (d) the intake of water

continued

OBJECTIVE NO. 1-024

5. Which of the following actions of man is <u>not</u> a response to a change in the environment?

(a) putting on extra clothes
(b) turning on the air conditioner
*(c) going to the drugstore
(d) warming oneself by a fire

OBJECTIVE NO. 1-025

The pupil can identify ways in which living organisms are adapted to wet or dry habitats.

SAMPLE TEST ITEMS

1. Which of the following is not likely to be found in a desert-living plant?

   (a) thick waxy cuticle
   (b) sunken stomata
   (c) small fleshy leaves
   *(d) large thin leaves

2. It is thought that the largest dinosaurs became extinct when certain regions of the earth dried up, because

   (a) they had very sensitive skins which had to be kept moist
   *(b) they were unable to support their body weight for long on dry land
   (c) they were only able to move by swimming
   (d) none of the above

3. Desert animals are able to survive for several days without water. *True/False

4. Many desert-living plants have large underground bulbs. *True/False

5. The gills of a fish enable it to breathe in water. *True/False

6. Any plant would be able to survive in a desert. True/False*

OBJECTIVE NO. 1-026

The pupil can identify the adaptations of certain animals to life during winter months.

SAMPLE TEST ITEMS

1. An example of a mammal whose fur turns white in winter is the _____(snowshoe rabbit).

2. An example of a bird that migrates south for the winter is the _____(Canada goose).

3. An example of an insect that remains in the pupa stage for the winter is the _____(butterfly).

4. An example of a mammal that stores extra food in the fall for eating in the winter is the _____(beaver).

5. An example of an animal that hibernates during the winter months is the _____(ground squirrel).

6. When animals shed their hair or fur in summer the process is called _____(molting).

7. During winter animals which live off stored body fat and have a slower rate of heart beat are said to be _____(hibernating).

8. Some insects spend the winter as _____(pupae) in cocoons.

OBJECTIVE NO. 1-027

The pupil can identify ways in which birds react to cold weather.

SAMPLE TEST ITEMS

1. In cold weather when birds fluff out their feathers

   (a) the body loses heat through the spaces between the parted feathers
   *(b) a thicker insulating layer of air is trapped between the feathers
   (c) this means that they are about to go into hibernation
   (d) this acts as a warning signal to other birds

2. Some birds react to the onset of winter by

   (a) hibernating
   (b) reproducing
   (c) incubating
   *(d) migrating

OBJECTIVE NO. 1-028

The pupil can identify ways in which man may assist in the conservation of certain plant and animal species.

SAMPLE TEST ITEMS

1. Man may help to conserve certain plant and animal species by

   (a) preserving them in a museum
   (b) allowing unrestricted hunting in the area
   *(c) ensuring that their habitat is not destroyed
   (d) none of the above

2. Which of the following is not a technique sometimes used in the conservation of a particular animal species?

   (a) establishing hunting seasons
   (b) culling or hunting a number of that species
   (c) prohibiting all hunting of that species
   *(d) allowing unrestricted hunting of that species

3. Man guards against forest fires partly in order to conserve certain plant and animal species. *True/False

4. Man helps to conserve certain plant and animal species by declaring them "endangered species". *True/False

5. Education of the general public assists in the conservation of wildlife. *True/False

OBJECTIVE NO. 1-029

The pupil can identify ways in which man has contributed, or is contributing, to the destruction of certain plant and animal species.

SAMPLE TEST ITEMS

1. One of the main ways in which man is contributing to the destruction of certain plant and animal species is by

   *(a) pollution
   (b) conservation
   (c) cultivation
   (d) immigration

2. Which of the following is not likely to contribute to the destruction of certain plant and animal species?

   (a) chemicals
   (b) poisonous gases
   *(c) oxygen
   (d) heat

3. The explosion of atomic bombs by man contributes to the destruction of certain plant and animal species. *True/False

4. Radioactive material is harmful to most plants and animals. *True/False

5. A species of plants or animals may be destroyed by overpopulation. *True/False

6. Poisonous gases do not adversely affect an animal species if plenty of oxygen is available. True/False*

OBJECTIVE NO. 1-030

The pupil can identify the reasons for having laws to protect wildlife.

SAMPLE TEST ITEMS

1. Some plants and animals are in danger of becoming extinct so they must be protected by laws. *True/False

2. A law is passed to protect a plant or animal if it is

   (a) plentiful
   (b) found in many areas
   *(c) decreasing in numbers
   (d) increasing in numbers

OBJECTIVE NO. 1-031

The pupil can identify ways in which animal species may become extinct.

SAMPLE TEST ITEMS

1. Indicate whether each of the following conditions could lead to the extinction of an animal species.

controlled hunting of the species	True/False*
destruction of the habitat of the species	*True/False
removing the food of the species	*True/False

OBJECTIVE NO. 1-032

The pupil can identify some animal species which are either extinct or in danger of becoming extinct.

SAMPLE TEST ITEMS

1. The whooping crane is very plentiful in Canada. True/False*

2. The eastern bison is extinct. *True/False

3. The buffalo of the prairies is in danger of becoming extinct. *True/False

4. An extinct bird once found in North America is the

   *(a) passenger pigeon
   (b) Canada goose
   (c) snowy owl
   (d) whooping crane

5. A North American bird that is no longer very plentiful, but not yet extinct, is the

   (a) passenger pigeon
   (b) Canada goose
   (c) snowy owl
   *(d) whooping crane

OBJECTIVE NO. 1-033

The pupil can identify certain commerical uses of plants.

SAMPLE TEST ITEMS

1. Which of the following substances is made from plants?

   *(a) linen
   (b) iron
   (c) chalk
   (d) aluminium

2. Which of the following is not obtained from plant material?

   (a) food
   (b) perfume
   *(c) copper
   (d) oil

3. Many new synthetic materials are made from parts of plants. *True/False

4. Some medicines are made from plants. *True/False

5. Plastic is made from plants. True/False*

OBJECTIVE NO. 1-034

The pupil can identify certain plant products used in industry, such as soybean oil, turpentine, and natural rubber.

SAMPLE TEST ITEMS

1. Which of the following is not a plant product used in industry?

   (a) turpentine
   (b) soybean oil
   (c) natural rubber
   *(d) benzine

2. Turpentine which is used in industry is produced from the resin of certain evergreen trees. *True/False

3. Some plants can be used to produce substances which are used in industry. *True/False

4. Natural rubber is obtained from a plant. *True/False

5. Both soybean oil and cod-liver oil are obtained from plants. True/False*

OBJECTIVE NO. 1-035

The pupil can identify certain reasons for the cultivation of crops such as wheat, corn, soybeans,etc.

SAMPLE TEST ITEMS

1. Crops such as wheat and corn are cultivated in order to

   (a) reduce the number of weeds
   *(b) produce sufficient food
   (c) fertilize the soil
   (d) none of the above

2. Soybeans are widely cultivated because

   (a) they grow very quickly
   (b) they have beautiful flowers
   *(c) they are high in protein
   (d) none of the above

3. Usually, if there is a great demand for a particular crop such as soybeans, the farmers will try to cultivate more of this crop. *True/False

4. The choice of crops to be cultivated by a particular country is partly dependent on the climate of that country. *True/False

5. If a country does not cultivate its own wheat, the people in that country have to do without wheat. True/False*

OBJECTIVE NO. 1-036

The pupil can identify plants which are harmful or poisonous to man.

SAMPLE TEST ITEMS

1. Some mushrooms are poisonous to man. *True/False

2. Poison ivy causes a rash when touched by some people. *True/False

3. Poison ivy, poison oak, and spruce are all poisonous to man. True/False*

4. Which of the following plants is not harmful or poisonous to man?

   (a) poison ivy
   (b) stinging nettle
   *(c) water lily
   (d) some toadstools

OBJECTIVE NO. 1-037

The pupil can identify certain plant products that are used by man as medicines.

SAMPLE TEST ITEMS

1. Which of the following plant products is not used as a medicine?

   *(a) corn starch
   (b) camphor
   (c) castor oil
   (d) penicillin

2. Which of the following oils produced from plants is not used for medicinal purposes?

   (a) castor oil
   (b) eucalyptus oil
   *(c) linseed oil
   (d) olive oil

3. The mold which forms on a rotting orange produces penicillin. *True/False

4. Some primitive African tribes use many types of plants to produce medicines. *True/False

OBJECTIVE NO. 1-038

The pupil can distinguish between antibodies, antiseptics, and antibiotics.

SAMPLE TEST ITEMS

1. Substances in the blood which are normally present or are produced to act against bacteria, or germs, are called

   (a) antiseptics
   (b) antibiotics
   *(c) antibodies
   (d) none of the above

2. A substance produced by living things and having the power to destroy other microorganisms is called an

   (a) antiseptic
   *(b) antibiotic
   (c) antibody
   (d) antigen

3. A substance put on a wound to destroy or stop the growth of bacteria is called

   *(a) an antiseptic
   (b) an antibody
   (c) an antibiotic
   (d) a detergent

OBJECTIVE NO. 1-039

The pupil can identify some of the effects on the body of micro-organisms such as bacteria.

SAMPLE TEST ITEMS

1. Infection of a wound is often caused by

   (a) diet
   *(b) bacteria
   (c) amoebae
   (d) white blood cells

2. A bacterial infection results from

   (a) an increase in the size of the bacteria
   (b) the death of the bacteria
   *(c) an increase in the number of bacteria
   (d) none of the above

3. If a wound is not cleansed it is likely that it will become infected. *True/False

4. All infections are caused by bacteria. True/False*

OBJECTIVE NO. 1-040

The pupil can identify a disease caused by each of the following micro-organisms: virus, bacteria, fungus, and protozoa.

SAMPLE TEST ITEMS

1. One common disease caused by viruses is

   (a) arthritis
   (b) athlete's foot
   (c) dysentery
   *(d) influenza

2. Protozoa are micro-organisms which may cause

   (a) measles
   *(b) dysentery
   (c) pneumonia
   (d) all of the above

3. A common disease caused by a bacteria is the common cold. True/False*

4. Athlete's foot is caused by a fungus. *True/False

OBJECTIVE NO. 1-041

The pupil can identify some of the body's "defense mechanisms" against infection.

SAMPLE TEST ITEMS

1. Bacteria are in the air all around you. They land on your skin and are taken in when you eat and when you breathe. The main reason why your lungs are not filled with deadly bacteria is that

   (a) white blood cells are present
   *(b) mucus cells are present
   (c) red blood cells are present
   (d) digestive juices are present

2. Whenever you cut or scratch yourself, bacteria get into your body. The body prevents these from causing further infection by the action of

   (a) antibiotics
   (b) mucus cells
   *(c) white blood cells
   (d) digestive juices

2. IDENTIFYING AND CLASSIFYING PLANTS AND ANIMALS

OBJECTIVE NO. 2-001

The pupil can distinguish certain characteristics of living and nonliving things.

SAMPLE TEST ITEMS

1. Which of the following is true only of living things, but not nonliving things.

   (a) they can change in shape
   (b) they are able to move
   *(c) they are able to reproduce
   (d) they can change in size

2. Which of the following is not true of living things?

   (a) they must die at some stage
   (b) most of them need air, water, and food
   (c) they would include plants and animals
   *(d) they can live in any environment

OBJECTIVE NO. 2-002

The pupil can identify certain characteristics by which animals can be distinguished from plants.

SAMPLE TEST ITEMS

1. Which of the following is not a characteristic of most animals?

   *(a) they are able to make their own food
   (b) most of them are able to move around
   (c) they have some sort of nervous system
   (d) they possess cell membranes instead of cell walls

2. Most animals are fixed in one place; only a few simple kinds can move around. True/False*

3. Most animals have a nervous system and react quickly to disturbances. *True/False

4. Most animal cells have thick-supporting cellulose walls. True/False*

OBJECTIVE NO. 2-003

The pupil can distinguish whether certain organisms are plants or animals.

SAMPLE TEST ITEMS

1. Place each of the following organisms under the appropriate heading below. Oak, maple, tadpole, hawk, seaweed, deer, mouse, bread mould, perch, moose, fern, whale, lizard, shark.

Plants	Animals
oak	tadpole
maple	hawk
seaweed	deer
br[illegible] mould	mouse
[illegible]	moose
	perch
	whale
	lizard
	shark

OBJECTIVE NO. 2-004

The pupil can distinguish between plant and animal cells with respect to the presence (or absence) of cell walls, chloroplasts, and a large central vacuole.

SAMPLE TEST ITEMS

1. Plant cells and animal cells have some characteristics in common. Of the following cellular characteristics, mark those which are found in most plant cells, but not in animal cells.

nucleus	protoplasm
cell membrane	*chloroplast
cytoplasm	*large central vacuole
*cell wall	nuclear membrane

2. Chloroplasts are found in

   *(a) plant cells only
   (b) animal cells only
   (c) both plant and animal cells
   (d) the cell nucleus

3. A large central vacuole is a component of animal cells. True/False*

4. Most plant cells, in contrast to animal cells, possess a cell wall, a large central vacuole, and _____ (chloroplasts).

OBJECTIVE NO. 2-005

The pupil can compare plant and animal cells with regard to the presence of the following structures: cell membrane, nucleus, centrosome, cell wall, chloroplast, protoplasm.

SAMPLE TEST ITEMS

1. The left-hand column lists structures which may be found in plant cells, animals cells, or both. Place a star in the other columns to indicate the type of cells possessing each structure in the left-hand column.

STRUCTURE	PLANT CELLS	ANIMAL CELLS
cell membrane	*	*
nucleus	*	*
centrosome		*
chloroplast	*	
cell wall	*	
protoplasm	*	*

continued

OBJECTIVE NO. 2-005

2. Match each statement in Column 1 with a group of structures in Column 2 by putting the letter of the correct statement in the bracket beside the corresponding group of structures.

Column 1 Statements		Column 2 Structures
	(Answers)	
A. group of structures found in both animal and plant cells.	(B)	chloroplast, cell membrane cell wall
B. group of structures found in plant cells only	(A)	cell membrane, nucleus, protoplasm
C. group of structures found in animal cells only	(C)	cell membrane, centrosome, nucleus
D. group of structures found in neither animal nor plant cells.		

OBJECTIVE NO. 2-006

The pupil can identify members of the group Protista.

SAMPLE TEST ITEMS

1. Which of the following does not belong to the group Protista?

   (a) viruses
   *(b) reptiles
   (c) bacteria
   (d) unicellular plants

2. Which of the following includes only members of the group Protista?

   (a) viruses, bacteria, man, insects
   (b) bacteria, mammals, viruses, multicellular plants
   *(c) viruses, bacteria, unicellular plants, unicellular animals
   (d) reptiles, viruses, birds, unicellular plants

OBJECTIVE NO. 2-007

The pupil can identify the following characteristics of the phylum Protozoa:

a) they are not easily visible to the naked eye
b) they are unicellular
c) they can reproduce
d) they have nuclei
e) they are sensitive to a number of stimuli (e.g. touch, light, etc.)

SAMPLE TEST ITEMS

1. A protozoan is made up of millions of cells. True/False*

2. In order to see protozoans clearly we must use a microscope. *True/False

3. Protozoans all have a nucleus. *True/False

4. Protozoans are not able to reproduce themselves. True/False*

5. A protozoan will move away if touched with a glass rod. *True/False

OBJECTIVE NO. 2-008

The pupil can define the term microorganism.

SAMPLE TEST ITEM

1. A microorganism can be defined as a living organism that

   (a) can be seen by the naked eye
   *(b) cannot be seen by the naked eye
   (c) is visible only during certain stages of growth
   (d) can be seen only during the daytime

OBJECTIVE NO. 2-009

The pupil can identify certain characteristics of fungi.

SAMPLE TEST ITEMS

1. One of the main reasons why fungi cannot manufacture their own food is that they lack

   *(a) chlorophyll
   (b) cytoplasm
   (c) protoplasm
   (d) phloem

2. Yeast is called a fungus because

   (a) it can make its own food
   (b) it has a green color
   *(c) it cannot make its own food
   (d) it makes bread "rise"

3. Which of the following is not likely to be a direct source of food for a fungus?

   (a) decayed plants and animals
   *(b) carbon dioxide and sunlight
   (c) living plants and animals
   (d) food substances such as bread

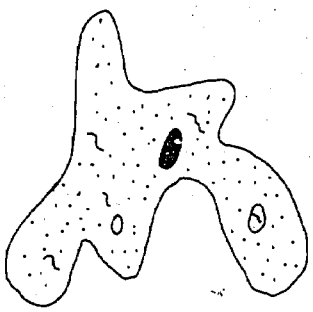
OBJECTIVE NO. 2-010

The pupil can distinguish certain protozoans by their shape (e.g. amoeba, paramecium, and euglena).

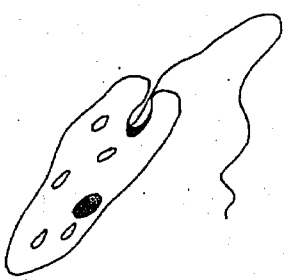
SAMPLE TEST ITEMS

1. The following are drawings of various protozoans. Choose the correct name of the animal from the list provided, and write the letter of that name below the right drawing.

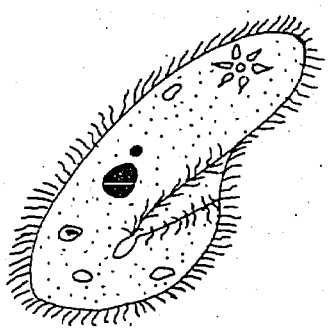
A. paramecium B. amoeba C. euglena



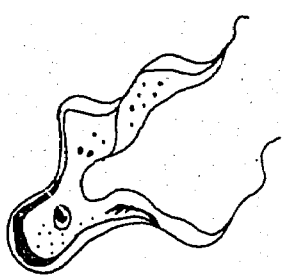
_____(B)*



_____(C)*



_____(A)*



_____( )*

continued

OBJECTIVE NO. 2-010

2. Which of the following does <u>not</u> have a definite shape?

(a) paramecium
(b) euglena
(c) locust
*(d) amoeba

OBJECTIVE NO. 2-011

The pupil can identify the three main types of bacteria: spirillum, bacillus, and coccus.

SAMPLE TEST ITEMS

1. Which of the following is not one of the main types of bacteria?

   (a) spirillum
   *(b) virus
   (c) bacillus
   (d) coccus

2. The three main types of bacteria are

   (a) spirillum, coccus, virus
   *(b) coccus, bacillus, spirillum
   (c) bacillus, flagellum, spirillum
   (d) virus, flagellum, bacillus

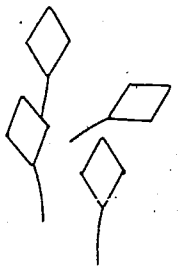
OBJECTIVE NO. 2-012

The pupil can identify three types of bacteria by their shape, e.g. bacillus, coccus, and spirillum.

SAMPLE TEST ITEM

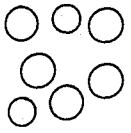
1. The following are diagrams of various types of bacteria. Identify which of these drawings represent bacilli, cocci, or spirilli, by writing the correct name below the appropriate drawing.

(a)



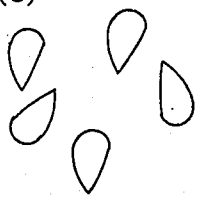
_____

(b)



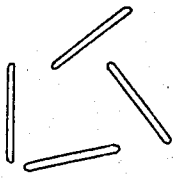
(cocci)

(c)



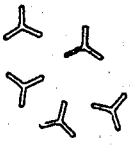
_____

(d)



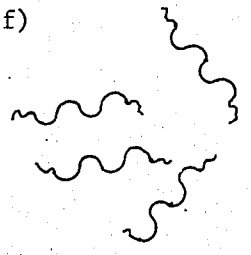
(bacilli)

(e)



_____

(f)



(spirilli)

OBJECTIVE NO. 2-013

The pupil can identify certain protozoans which exhibit different types of locomotion (i.e. movement by means of cilia, flagella or pseudopodia).

SAMPLE TEST ITEMS

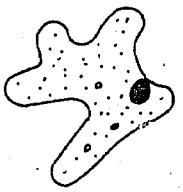
1. The following diagrams represent various protozoans. Identify whether each animal moves by means of

   A. a flagellum

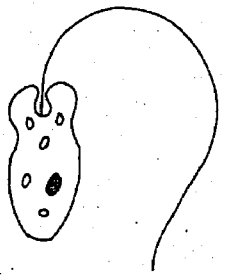
   B. cilia

   C. pseudopodia

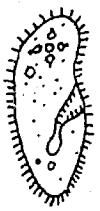
   by writing the letter of the correct structure in the space provided next to each diagram.



(C)



(A)



(B)

continued

OBJECTIVE NO.

2. A protozoan that moves by extending its jelly-like protoplasm is the _____(amoeba).

   A protozoan that moves by whipping its flagellum back and forth is the _____(euglena).

   A protozoan that moves by waving its cilia in unison is the _____(paramecium).

OBJECTIVE NO. 2-014

The pupil can identify some vertebrate and invertebrate animals.

SAMPLE TEST ITEMS

1. Which of these is an invertebrate?

   (a) turtle
   (b) snake
   *(c) caterpillar
   (d) lizard

2. All of the following are vertebrates except the

   (a) dinosaur
   (b) mouse
   *(c) beetle
   (d) man

3. All of the following are invertebrates except the

   (a) starfish
   *(b) seagull
   (c) tape worm
   (d) sand dollar

4. Which of the following combinations includes both a vertebrate and an invertebrate?

   (a) rabbit and mouse
   *(b) turtle and clam
   (c) grass snake and lizard
   (d) robin and owl

OBJECTIVE NO. 2-015

The pupil can identify the distinguishing features of certain animals e.g. elephant, giraffe, bat, whale, seal.

SAMPLE TEST ITEMS

1. Column 1 lists the names of certain animals. Column 2 lists a number of distinguishing features of these animals. From Column 1 choose the animal which corresponds to each feature, and write the appropriate letter in each answer space.

Column 1 Names	Column 2 Distinguishing features
	(Answers)
A. bat	(B) a mammal with a trunk and ivory tusks
B. elephant	(D) the largest living animal of any species
C. dinosaur	(E) the tallest living mammal
D. whale	(A) a mammal adapted for flight
E. giraffe	

2. A giraffe can be distinguished from any other mammal by its

(a) large ears
*(b) long neck
(c) big feet
(d) agility

continued

OBJECTIVE NO. 2-015

3. Which of the following features do a whale, dolphin, and seal have in common?

(a) they are mammals which are very intelligent
(b) they are animals used in industry
(c) they are animals which are very large
*(d) they are mammals which are able to live in water

OBJECTIVE NO. 2-016

The pupil can distinguish invertebrates with soft bodies from those with hard exoskeletons.

SAMPLE TEST ITEMS

1. In the blank space beside the name of each invertebrate animal write "S" if it has a soft body, or "H" if it has a hard outer covering.

   1. earthworm ( ) (S)*
   2. centipede ( ) (H)*
   3. lobster ( ) (H)*
   4. jellyfish ( ) (S)*

2. Which of the following invertebrates has a soft body?

   *(a) sponges
   (b) ants
   (c) crayfish
   (d) fleas

3. Which of the following invertebrates has a hard outer body covering?

   (a) fruit fly
   (b) caterpillar
   *(c) grasshopper
   (d) jellyfish

OBJECTIVE NO. 2-017

The pupil can identify certain animals as belonging to various invertebrate phyla (e.g. Arthropoda, Mollusca, Coelenterata, Annelida).

SAMPLE TEST ITEMS

1. Which of the following animals is classified as an annelid?

   (a) tapeworm
   *(b) earthworm
   (c) jelly-fish
   (d) starfish

2. Which of the following animals is not an arthropod?

   (a) lobster
   (b) locust
   (c) shrimp
   *(d) salmon

3. Which of the following animals is not a mollusc?

   *(a) crayfish
   (b) octopus
   (c) snail
   (d) squid

4. Which of the following animals is an example of a coelenterate?

   (a) octopus
   (b) angel fish
   *(c) jelly-fish
   (d) none of the above

continued

OBJECTIVE NO. 2-017

5. Annelids, arthropods, and molluscs are all invertebrates. *True/False

6. The phylum of arthropods can be subdivided into a number of classes. *True/False

7. There are only four invertebrate phyla, namely arthropods, molluscs, annelids, coelenterates. True/False*

OBJECTIVE NO. 2-018

The pupil can identify the main structural characteristics of insects (i.e. head, thorax, and abdomen; three pairs of jointed legs; exoskeleton).

SAMPLE TEST ITEMS

1. Which of the following is not a body division found in all insects?

   (a) head
   (b) thorax
   *(c) fins
   (d) abdomen

2. Which of the following is not a characteristic of all insects?

   (a) six legs
   (b) three body divisions
   *(c) fins
   (d) abdomen

3. All insects have an exoskeleton. *True/False

4. All insects have eight legs. True/False*

5. All insects have two pairs of antennae. True/False*

OBJECTIVE NO. 2-019

The pupil can distinguish between insects which have biting mouth parts and those which have sucking mouth parts.

SAMPLE TEST ITEMS

1. Which of the following insects has biting mouth parts?

   (a) house fly
   *(b) grasshopper
   (c) mosquito
   (d) butterfly

2. Which of the following insects has sucking mouth parts?

   (a) beetle
   (b) locust
   *(c) butterfly
   (d) ant

OBJECTIVE NO. 2-020

The pupil can identify certain species of animals which provide varying amounts of care for their offspring.

SAMPLE TEST ITEMS

1. The female crayfish cares for her eggs by attaching them to her swimmerets. *True/False

2. Animals that produce few offspring usually provide very little parental care. True/False*

3. The greatest amount of parental care is provided by organisms that

   *(a) have few offspring
   (b) have many offspring
   (c) lay eggs
   (d) reproduce asexually

OBJECTIVE NO. 2-021

The pupil can identify the presence or absence of bilateral symmetry in each of the following animals: (1) amoeba, (2) sponge, (3) starfish, (4) snake, (5) earthworm, (6) fish, and (7) frog.

SAMPLE TEST ITEMS

1. Which one of the following animals is not bilaterally symmetrical?

   (a) fish
   (b) snake
   *(c) starfish
   (d) grasshopper

2. The amoeba is bilaterally symmetrical. True/False*

3. The earthworm is bilaterally symmetrical. *True/False

4. The sponge is a good example of an animal that does not display bilateral symmetry. *True/False

5. Neither the fish nor the frog show bilateral symmetry. True/False*

6. Which one of the following animals is bilaterally symmetrical?

   (a) amoeba
   *(b) earthworm
   (c) sponge
   (d) starfish

7. The snake is not bilaterally symmetrical True/False*

OBJECTIVE NO. 2-022

The pupil can identify terms that are used to name groups of social animals.

SAMPLE TEST ITEMS

1. Choose the word in Column 2 that best completes each phrase in Column 1. Match the word to its correct phrase by putting the letter of the correct phrase in the blank beside the appropriate word.

Column 1 Phrases		Column 2 Words
	(Answers)	
A. schools of	(F)	insects
B. flocks of	(D)	wolves
C. herds of	(E)	monkeys
D. packs of	(A)	fish
E. troops of	( )	lion
F. colonies of	(B)	birds
	(C)	cattle

2. Use one of the following words to complete each blank in the sentences below: school, flock, pack, herd, troop, colony.

A _____(colony) of bees could be destroyed by an attack made by a _____(flock) of kingbirds.

3. When a _____(pack) of hungry wolves make a raid on a _____(herd) of deer, the lives of the deer are in danger.

OBJECTIVE NO. 2-023

The pupil can arrange in order, according to the degree of specificity, certain headings used in the classification of plants or animals, (e.g. kingdom, phylum, class, order, family, genus, and species).

SAMPLE TEST ITEMS

1. Which of the following is the correct order for the classification of living things?

   (a) kingdom, phylum, class, family, order, genus, species
   *(b) kingdom, phylum, class, order, family, genus, species
   (c) kingdom, class, phylum, family, order, genus, species
   (d) kingdom, phylum, order, family, class, genus, species

2. Fill in the missing five levels of classification between kingdom and species.

   kingdom

   _____ (phylum)

   _____ (class)

   _____ (order)

   _____ (family)

   _____ (genus)

   species

OBJECTIVE NO. 2-024

The pupil can identify the terms which are used to classify man according to kingdom, phylum, class, order, genus, and species.

SAMPLE TEST ITEMS

1. Column 1 lists the terms used in the classification of animals. These terms have been arranged in order, ranging from the most general group to the most specific one. Column 2 lists certain precise terms which are used to classify man according to this system. Match each term in Column 2 with a group from Column 1, and write the letter of that group in the appropriate space.

Column 1	(Answers)	Column 2
A. kingdom	(E)	Homo
B. phylum	(D)	primates
C. class	(F)	sapiens
D. order	(C)	mammalia
E. genus	(A)	animalia
F. species		

2. Homo sapiens is the scientific name for man. *True/False

3. Man is the only animal which belongs to the order of primates. True/False*

OBJECTIVE NO. 2-025

The pupil can identify variations in animals of the same species.

SAMPLE TEST ITEMS

1. After reading the following paragraph indicate whether the statements below are true or false.

> Two people are sitting next to each other on a bus. One is a short, dark-skinned man from Greece. The other is a tall, blond woman from Sweden.

(a) These two people look alike. True/False*

(b) Both of these people are of the same nationality. True/False*

(c) Both of these people belong to the same animal species. *True/False

2. Answer the questions relating to the following drawings.

(a) The animals illustrated belong to the same animal species. *True/False

(b) The animals illustrated are identical. True/False*

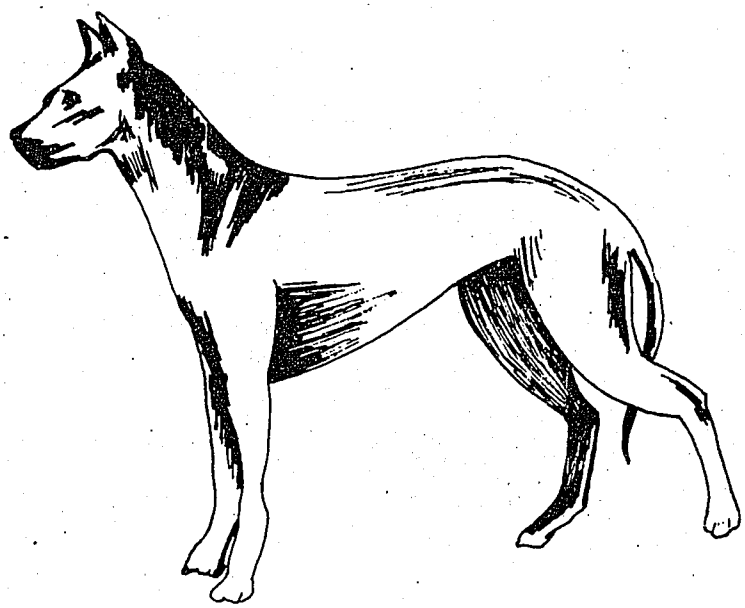
(c) Most animals of the same species can interbreed. *True/False

(d) Both the animals illustrated are mammals. *True/False

3. Which of the following is not a way in which the two animals in the drawing differ?

(a) length of legs
(b) shape of body
*(c) species of animal
(d) length of tail

OBJECTIVE NO. 2-025



OBJECTIVE NO. 2-026

The pupil can identify certain characteristics of the following vertebrate classes, namely Aves (birds), Pisces (fish), Reptilia (reptiles), Amphibia (amphibians), and Mammalia (mammals).

SAMPLE TEST ITEMS

1. An animal that lives part of its life in water and the rest of its life on land is a/an

   (a) bird
   (b) fish
   (c) reptile
   *(d) amphibian

2. A cold-blooded egg-laying animal whose body is covered with bony scales or plates is called

   (a) a bird
   (b) a fish
   *(c) a reptile
   (d) an amphibian

3. An animal that possesses hair is called

   (a) a fish
   (b) a reptile
   (c) an amphibian
   *(d) a mammal

4. Which of the following is <u>not</u> true of all birds?

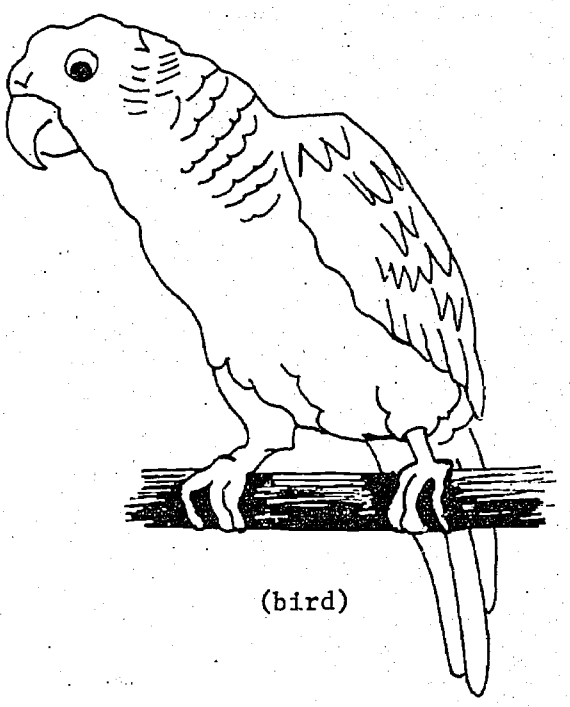
   *(a) they can fly
   (b) they have feathers
   (c) they have two legs
   (d) they have lungs

OBJECTIVE NO. 2-027

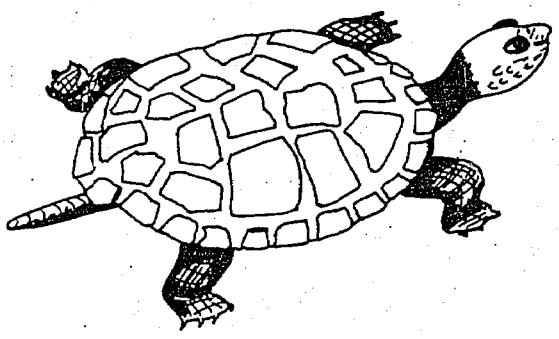
The pupil can identify certain animals which belong to the following vertebrate classes: Mammalia, Reptilia, Aves (birds), Pisces (fish).

SAMPLE TEST ITEMS

1. Animals belonging to different vertebrate classes are illustrated in the following drawings. Identify the class to which each animal belongs by writing the name of the class below the appropriate drawing.



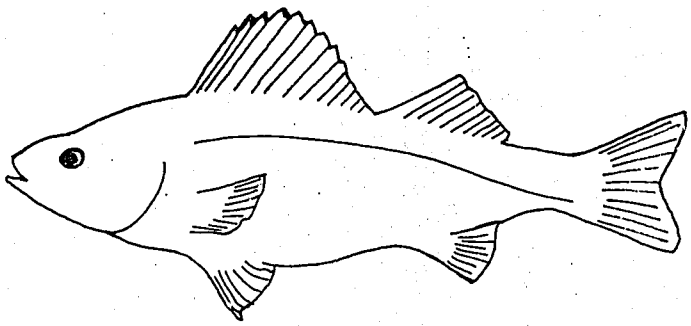
(bird)



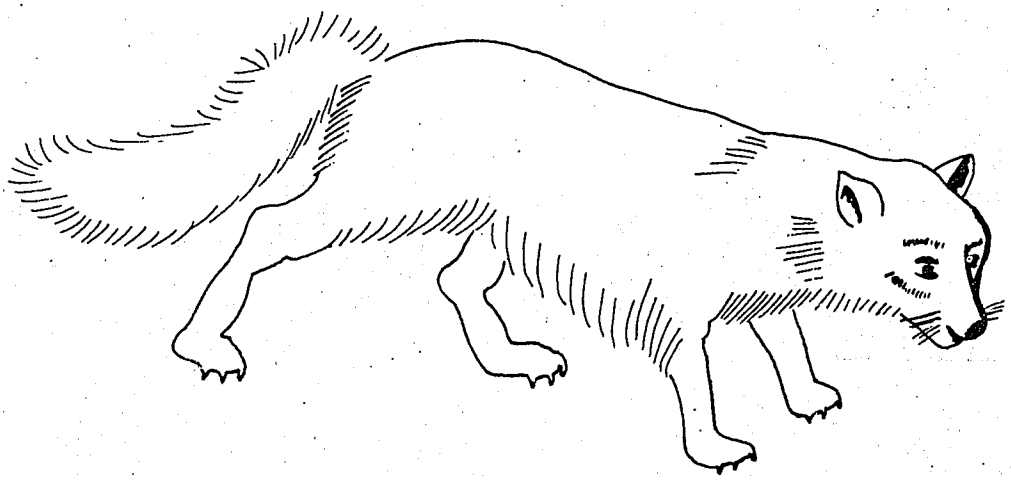
(reptile)

continued

OBJECTIVE NO. 2-027



(fish)



(mammal)

OBJECTIVE NO. 2-028

The pupil can name examples of mammals which can be classified as marsupials, insectivores, primates, rodents, and carnivores.

SAMPLE TEST ITEMS

1. Beside each of the following mammalian orders write the name of a mammal that belongs to that particular order.

   marsupials - (e.g. kangaroo, opossum)

   insectivores - (e.g. mole, hedgehog)

   primates - (e.g. gorilla, gibbon, chimpanzee)

   rodents - (e.g. squirrel, rat, mouse, beaver)

   carnivores - (e.g. dog, wolf, fox, lion)

2. The left-hand column gives the names of some animals. The right-hand column gives the order to which these animals belong. Match the animal to its correct order by putting the letter of the animal in the blank beside each order.

Column 1 Animal		Column 2 Order
	(Answers)	
A. kangaroo	(C)	insectivore
B. guinea pig	(E)	primate
C. mole	(B)	rodent
D. whale	(A)	marsupial
E. gorilla	(F)	carnivore
F. wolf		

OBJECTIVE NO. 2-029

The pupil can distinguish whether certain commonly found animals are chiefly meat-eaters, plant-eaters, or have a varied diet (i.e. are carnivores, herbivores, or omnivores, respectively).

SAMPLE TEST ITEMS

1. An animal that eats both plants and meat is the

   (a) snake
   *(b) human
   (c) rabbit
   (d) seal

2. Which of the following animals eats only plants?

   (a) frog
   (b) bear
   (c) dog
   *(d) horse

3. Decide whether each of the following animals eats mainly plants or animals, or both plant and animals, and write the name of the animal under the correct heading.

   Animals: grasshopper, human, sheep, wolf, goat, monkey, bison, owl, coyote.

Plant-eaters	Meat-eaters	Both plant-eaters & meat-eaters
(grasshopper)	(owl)	(monkey)
(goat)	(wolf)	(human)
(sheep)	(coyote)	
(bison)		

OBJECTIVE NO. 2-030

The pupil can distinguish between animal species that bear live young and those that lay eggs.

SAMPLE TEST ITEMS

1. Which of the following types of animals gives birth to living young?

   (a) reptiles
   *(b) mammals
   (c) birds
   (d) insects

2. The female robin lays eggs. *True/False

3. The duckbill platypus lays eggs. *True/False

4. Some fish produce live young. *True/False

5. Reptiles, birds, and mammals lay shelled eggs. True/False*

OBJECTIVE NO. 2-031

The pupil can identify that birds of different species build nests of varying shapes.

SAMPLE TEST ITEMS

1. Birds that live in the same area will have the same type of nests. True/False*

2. It is possible to identify different species of birds by the shape of their nests. *True/False

3. If a bird has the correct nesting material available it will build the same shape nest no matter where it is. *True/False

4. All birds build their nests out of straw and twigs. True/False*

OBJECTIVE NO. 2-032

The pupil can identify aspects of the nesting behavior of various species of birds.

SAMPLE TEST ITEMS

1. In certain species of birds while the female is laying her eggs the male will

   *(a) protect its territory and the nest
   (b) try to attract another female by singing
   (c) challenge other birds for their territory
   (d) build another nest for the female

2. In some species of birds the male is responsible for building the nest. *True/False

3. In some species of birds both the male and female help to build the nest. *True/False

4. All species of birds make nests in which they lay their eggs. True/False*

5. Certain birds such as the cuckoo lay their eggs in

   (a) a nest they have carefully built
   (b) any place other than a nest
   *(c) the nests of other birds
   (d) none of the above

OBJECTIVE NO. 2-033

The pupil can identify certain distinguishing features of monocotyledonous and dicotyledonous plants.

SAMPLE TEST ITEMS

1. A dicotyledon has seeds with

   *(a) two seed leaves or cotyledons
   (b) one seed leaf or cotyledon
   (c) many seed leaves or cotyledons
   (d) none of the above

2. One can distinguish between a monocotyledon and a dicotyledon by all of the following, except

   (a) the type of roots
   (b) the shape of the leaves
   (c) the number of flower parts
   *(d) the color of the flowers

3. Flowers of a dicotyledon usually have

   (a) six petals
   *(b) five petals
   (c) twelve petals
   (d) no petals

4. Flowers of a monocotyledon usually have

   *(a) no sepals
   (b) five sepals
   (c) ten sepals
   (d) six sepals

continued

OBJECTIVE NO. 2-033

4. In the following list of structures indicate whether each of them is likely to be found in a monocotyledon (M) or a dicotyledon (D) by writing an M or D in the space provided next to each structure.

Tap root system (D)

Flower parts arranged in multiples of three (M)

Parallel veins in the leaves (M)

Two cotyledons in the seed (D)

Flower made up of petals and sepals (D)

Adventitious roots (M)

Woody stem (D)

One cotyledon in the seed (M)

OBJECTIVE NO. 2-034

The pupil can identify certain characteristics by which flowering plants (angiosperms) can be distinguished from conifers (gymnosperms).

SAMPLE TEST ITEMS

1. The following list includes characteristics of either angiosperms or gymnosperms. Identify which plant division each characteristic belongs to by writing an A for angiosperm or a G for gymnosperm in the correct space provided.

   (a) they produce flowers (A)

   (b) their seeds develop on naked scales (G)

   (c) their leaves are called needles (G)

   (d) their seeds develop inside an ovary (A)

   (e) they are called evergreens (G)

   (f) they can be subdivided into monocotyledons and dicotyledons (A)

2. Seeds are produced in both angiosperms and gymnosperms *True/False

3. Conifers are gymnosperms which produce seeds in cones. *True/False

OBJECTIVE NO. 2-035

The pupil can identify certain plants as being either gymnosperms or angiosperms.

SAMPLE TEST ITEMS

1. Which of the following plants is not an angiosperm?

   (a) lilac tree
   (b) petunia
   (c) rose tree
   *(d) pine tree

2. The following list provides names of various plants which are either angiosperms or gymnosperms. Identify which plants belong to each division by writing the name of the plant under the correct heading.

   Names of plants: spruce, maple, rose, pine, carnation, elm, corn, grass, fir.

Angiosperm	Gymnosperm
(maple)	(spruce)
(rose)	(pine)
(carnation)	(fir)
(elm)	
(corn)	
(grass)	

OBJECTIVE NO. 2-036

The pupil can identify certain plants which produce seeds in simple or compound flowers and those which produce seeds in cones.

SAMPLE TEST ITEMS

1. The seeds of pine trees are produced in cones. *True/False

2. Tulip seeds are produced in a composite flower. True/False*

3. Dandelion seeds are produced in a composite flower. *True/False

4. The seeds of the rose are produced in a simple flower. *True/False

5. Spruce trees produce seeds in cones. *True/False

6. Indicate whether the following plants produce seeds in (A) simple flowers, (B) composite flowers, (C) cones by writing an A, B, or C in the space provided next to the name of each plant.

tulip	(A)
daisy	(B)
rose	(A)
pine	(C)
dandelion	(B)
spruce	(C)

3. PLANTS AND ANIMAL PARTS, FUNCTIONS, PROCESSES AND SYSTEMS

OBJECTIVE NO. 3-001

The pupil can identify the main parts of a flower: sepal, petal, stamen (filament and anther), pistil (stigma, style, and ovary).

SAMPLE TEST ITEMS

1. Which of the following is not a part of the pistil of a flower?

   (a) style
   *(b) anther
   (c) ovary
   (d) stigma

2. The stamen of a flower has a filament and

   (a) a sepal
   (b) a stigma
   *(c) an anther
   (d) a style

3. The most colorful part of a flower is usually the

   *(a) petal
   (b) sepal
   (c) style
   (d) pistil

4. Pollen is produced by the

   (a) stigma
   (b) sepal
   *(c) stamen
   (d) ovary

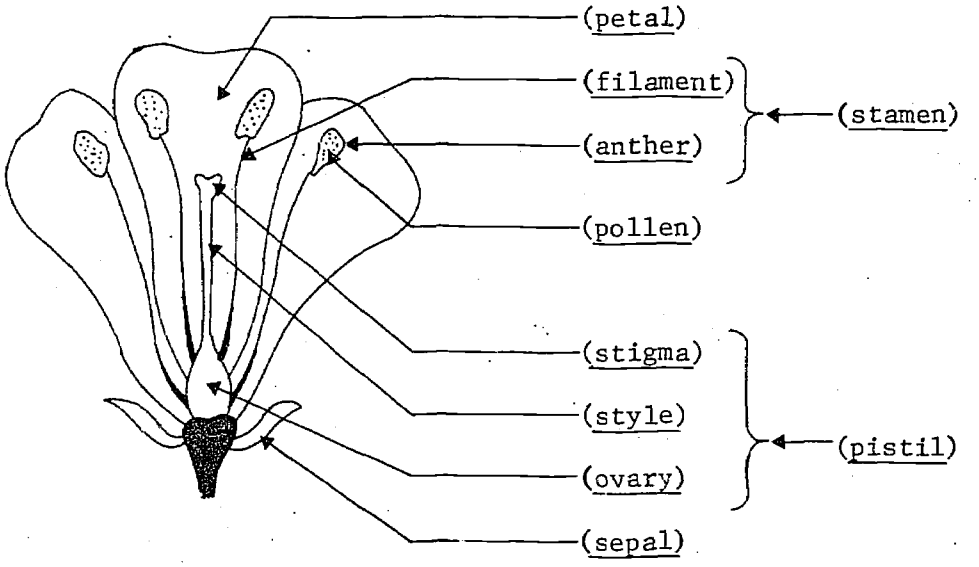
5. The flower is protected as a bud by the

   *(a) sepals
   (b) petals
   (c) style
   (d) anthers

continued

OBJECTIVE NO. 3-001

6. Label the following diagram of a typical flower by writing the correct name in the blank next to the arrow pointing to that particular part.



SIMPLIFIED DIAGRAM OF A FLOWER

OBJECTIVE NO. 3-002

The pupil can identify the parts of a plant that produce seeds.

SAMPLE TEST ITEMS

1. Seeds are produced in the ovary when pollen combines with an ovule. *True/False

2. Seeds are produced in the _____(ovary) of a flower.

3. Seeds are produced when _____(pollen) combines with an _____(ovule).

OBJECTIVE NO. 3-003

The pupil can distinguish between a composite flower (e.g. a daisy) and a simple flower (e.g. a petunia).

SAMPLE TEST ITEMS

1. Which of the following is an example of a composite flower?

   (a) lily
   *(b) daisy
   (c) rose
   (d) pansy

2. A simple flower has only one pistil (i.e. stigma, style, and ovary). *True/False

3. All the flowers or florets of a composite flower are able to produce seeds. True/False*

OBJECTIVE NO. 3-004

The pupil can identify various parts of a germinating seed.

SAMPLE TEST ITEMS

1. Which part of a germinating seed grows to form the root?

   *(a) radicle
   (b) plumule
   (c) cotyledon
   (d) epidermis

2. Which of the following is not a part of a germinating seed?

   (a) cotyledon
   (b) radicle
   *(c) flower)
   (d) plumule

3. The part of a germinating bean seed which grows to form the stem and leaves of the plant is the

   (a) radicle
   (b) cotyledon
   (c) endosperm
   *(d) plumule

4. In a corn seed the stored food is contained in the

   (a) cotyledon
   *(b) endosperm
   (c) epidermis
   (d) radicle

continued

OBJECTIVE NO. 3-004

5. The cotyledons of a bean seed contain the stored food. *True/False

6. The seed is enclosed in a seed coat or testa. *True/False

7. The scar where the seed was attached to the pod is called the hilum. *True/False

OBJECTIVE NO. 3-005

The pupil can identify the functions of various parts of a seed. (e.g. seed coat, stored food, embryo)

SAMPLE TEST ITEMS

1. The seed coat is the outer covering that protects a seed. *True/False

2. Food is stored in the seed for use by the plant when it is full grown. True/False*

3. The embryo is the part of a seed that grows to form the plant. *True/False

4. The food stored in the seed is used when

   *(a) the seed starts to germinate
   (b) the seed is formed
   (c) the plant is full grown
   (d) the plant produces flowers

5. The part of a seed that grows to form the plant is

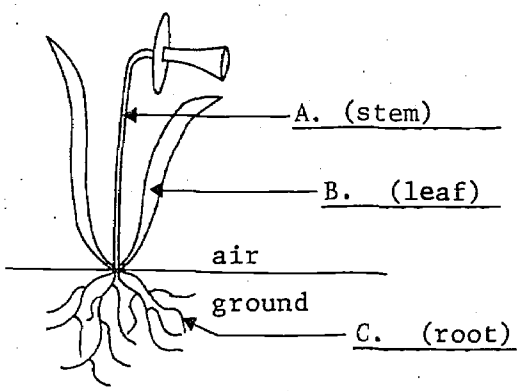
   (a) the seed coat
   *(b) the embryo
   (c) stored food
   (d) none of the above

OBJECTIVE NO. 3-006

The pupil can name the root, stem, and leaf of a flowering plant.

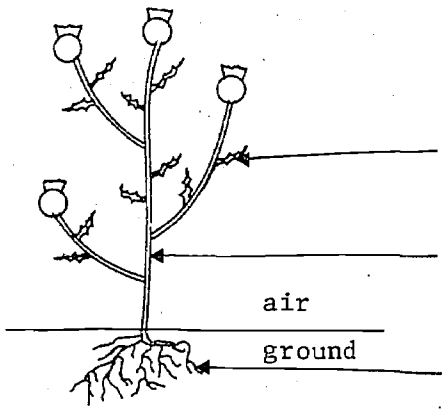
SAMPLE TEST ITEMS

1. In the following diagram of a flowering plant, name the parts indicated.



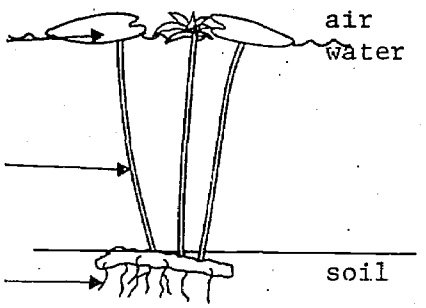
Daffodil

2. In the following diagrams label the root, stem, and leaf of each plant



Thistle

(leaf)*
(stem)*
(root)*



Waterlily

OBJECTIVE NO. 3-007

The pupil can identify the functions of the main parts of a plant: roots, stem, leaves, and flower.

SAMPLE TEST ITEMS

1. Which of the following is not a function of a root?

   (a) to anchor the plant
   (b) to store food
   *(c) to support leaves
   (d) to absorb water

2. Which of the following is not a function of a stem?

   *(a) to anchor the plant
   (b) to support the leaves
   (c) to transport materials
   (d) to store food

3. The main function of a leaf is to make food. *True/False

4. The roots of all plants absorb water from the soil. True/False*

5. In some plants seeds are produced in flowers. *True/False

6. In certain plants a single leaf can grow to form a new plant. *True/False

OBJECTIVE NO. 3-008

The pupil can identify some of the functions of plant roots.

SAMPLE TEST ITEMS

1. When a seed starts to grow it gives rise to a structure which anchors the plant firmly. This is called the

   (a) stem
   (b) leaf
   *(c) root
   (d) flower

2. One of the main functions of roots is

   (a) to give out water and mineral salts
   (b) to store water and mineral salts
   (c) to prevent the entry of water and mineral salts
   *(d) to take in water and mineral salts

3. The roots of plants such as carrots and beetroots are specialized to

   (a) make food
   *(b) store food
   (c) use food
   (d) none of the above

4. Which of the following is <u>not</u> a function of the roots of any plant?

   (a) to anchor the plant in the soil
   *(b) to make food for the plant
   (c) to absorb water for use by the plant
   (d) to store food for later use by the plant

OBJECTIVE NO. 3-009

The pupil can distinguish whether the part of a certain fruit or vegetable, eaten by man, is a modified root, stem, leaf, flower, or seed.

SAMPLE TEST ITEMS

1. The part of a carrot or turnip which is eaten by man is the

   (a) leaf
   (b) stem
   (c) seed
   *(d) root

2. Man normally eats the seeds only of which of the following plants?

   (a) orange
   (b) peach
   *(c) coconut
   (d) apple

3. The part of the potato eaten by man is formed from the

   (a) leaf
   *(b) stem
   (c) seed
   (d) root

continued

OBJECTIVE NO. 3-009

4. The edible "fleshy" portion of an apple develops from part of the

(a) stem
*(b) flower
(c) root
(d) seed

5. The part of an onion eaten by man consists of modified

*(a) leaves
(b) stems
(c) fruit
(d) seeds

OBJECTIVE NO. 3-010

The pupil can identify certain internal structures of a stem or root e.g. open vascular bundles (xylem, phloem and cambium tissue); closed bundles (xylem and phloem tissue); pith.

SAMPLE TEST ITEMS

1. Which of the following types of plant tissue is found in an open vascular bundle but not in a closed vascular bundle?

   (a) xylem
   (b) phloem
   *(c) cambium
   (d) none of the above

2. Which of the following types of plant tissue is found right in the center of a dicotyledonous stem?

   *(a) pith
   (b) xylem
   (c) epidermis
   (d) phloem

3. Vascular bundles are found in both roots and stems. *True/False

4. The arrangement of the vascular bundles differs in stems of monocotyledons and dicotyledons. *True/False

OBJECTIVE NO. 3-011

The pupil can identify certain functions of the types of plant tissue found in the vascular bundles of roots, stems, and leaves (i.e. xylem, phloem, cambium).

SAMPLE TEST ITEMS

1. A function of xylem tissue is to

   (a) allow the stem to increase in diameter
   (b) conduct manufactured food in the plant
   *(c) conduct water and mineral salts in the plant
   (d) store food in the plant

2. Which of the following types of plant tissue allows the stem of a hardwood tree to get thicker?

   (a) phloem
   (b) pith
   (c) epidermis
   *(d) cambium

3. In certain plants food which is made in the leaves is taken to be stored in an underground bulb by passing through the

   (a) xylem
   *(b) phloem
   (c) cambium
   (d) pith

4. The veins of a leaf are made up of xylem and phloem tissue. *True/False

OBJECTIVE NO. 3-012

The pupil can identify basic parts of a generalized plant cell: cell wall, cell membrane, nucleus, protoplasm, cytoplasm, and vacuole.

SAMPLE TEST ITEMS

1. Which of the following terms refers to the entire contents of a plant cell found within the cell membrane?

   (a) vacuole
   *(b) protoplasm
   (c) cytoplasm
   (d) nucleus

2. The term cytoplasm refers to that part of a cell which

   *(a) excludes the nucleus
   (b) includes the nucleus
   (c) excludes the protoplasm
   (d) none of the above

3. In the following diagram of a generalized plant cell, label the parts indicated by writing the letter of the correct part in the appropriate space.

   A - nucleus*
   B - protoplasm*
   C - cell wall*
   D - vacuole*
   E - cell membrane*
   F - cytoplasm*

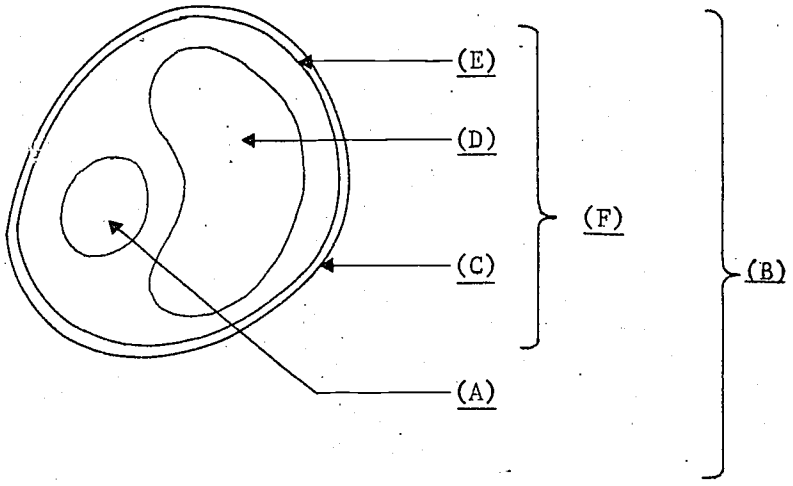


DIAGRAM OF GENERALIZED PLANT CELL

OBJECTIVE NO. 3-013

The pupil can identify ways in which plant and animal cells are specialized to perform various functions.

SAMPLE TEST ITEMS

1. Which of the following is not a specialized function of an animal cell?

   (a) to conduct a nervous impulse
   (b) to secrete digestive juices
   *(c) to pump the blood around the body
   (d) to produce a female gamete

2. Certain plant cells are specialized to give support to the plant. *True/False

3. Some plant and animal cells are specialized for storing various food substances. *True/False

4. The red blood cells of animals are specialized to destroy bacteria. True/False*

5. Some animal cells are specialized to form bone. *True/False

6. Plant cells may be specialized for all of the following functions except

   (a) storage of food substances
   (b) support of the plant
   (c) protection of the plant from drying-out
   *(d) conduction of nervous impulses

OBJECTIVE NO. 3-014

The pupil can identify some of the functions of the ear.

SAMPLE TEST ITEMS

1. Which of the following is not a function of the ear?

   (a) to enable us to hear
   (b) to stop us from getting dizzy
   (c) to tell us where a sound is coming from
   *(d) to allow us to make sounds

2. We can hear better with two ears than with one. *True/False

3. Some animals such as the rabbit use their ears to control how much heat they lose from their body. *True/False

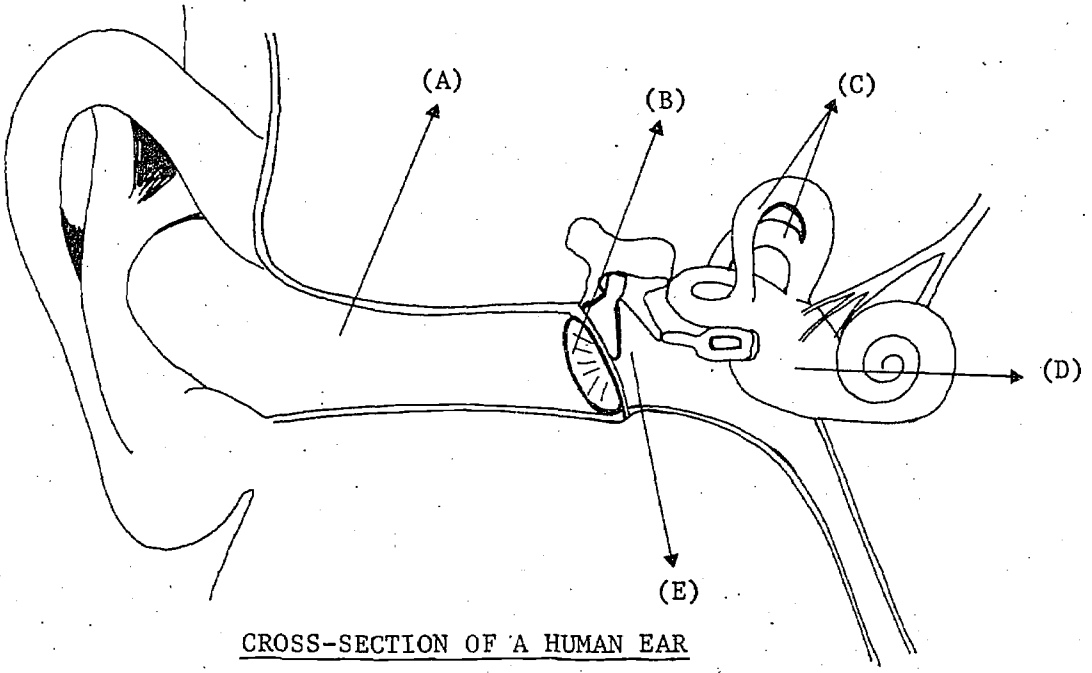
4. A function of the ear is to produce sound. True/False*

OBJECTIVE NO. 3-015

The pupil can name the main parts of the human ear, namely outer ear, inner ear, middle ear, and semi-circular canals.

SAMPLE TEST ITEMS

1. The following diagram represents the internal structure of the human ear. The letters A to E refer to parts of the ear. Write the name of each part indicated in the space provided below the diagram.



CROSS-SECTION OF A HUMAN EAR

(A) _____(external ear)*

(B) _____(ear drum)*

(C) _____(semi-circular canals)*

(D) _____(inner ear)*

(E) _____(middle ear)*

OBJECTIVE NO. 3-016

The pupil can identify functions of the main parts of the human ear: outer ear, middle ear, inner ear, semi-circular canals, and Eustachian tube (tube leading to the throat).

SAMPLE TEST ITEMS

1. Match the part of the ear in Column 1 with its correct function in Column 2 by writing the letter of the part in the appropriate space.

Column 1 Part	Column 2 Function
	(Answers)
A. outer ear	(C) causes the small bones in the ear to move
B. middle ear	(E) helps us to keep our balance
C. ear drum	(A) helps "catch" the sound waves
D. tube leading to throat (Eustachian tube)	(D) helps us to hear properly again after our ears have "popped" when we go up in an airplane.
E. semi-circular canal	

2. "Messages" are taken to the brain from the

(a) outer ear
*(b) inner ear
(c) middle ear
(d) ear drum

continued

OBJECTIVE NO. 3-016

3. The following describes the path of sound through the ear. Choose the correct term from the list provided and write the letter of that term in the appropriate space.

(A) inner ear, (B) middle ear, (C) outer ear, (D) ear lobe

(E) ear drum.

Sounds enter the ear through the _____(C). From here the sound passes to the _____(E). This causes the movement of little bones in the _____(B). Nerves then take a "message" to the brain from the _____(A)

OBJECTIVE NO. 3-017

The pupil can distinguish between certain animals which possess an outer ear and those which do not.

SAMPLE TEST ITEMS

1. Which one of the following animals has a visible outer ear?

   (a) fish
   (b) turtle
   *(c) bat
   (d) hawk

2. Which of the following animals does not have a visible outer ear?

   *(a) frog
   (b) man
   (c) elephant
   (d) rat

3. A rabbit has large outer ears which improve its sense of hearing. *True/False

4. A turtle has an "ear" which is not externally visible. *True/False

continued

OBJECTIVE NO. 3-017

6. Arrange the following names of animals into the two columns provided according to whether or not they have a visible outer ear.

	Visible Outer Ear	No Visible Outer Ear
bat	(bat)	(hawk)
hawk	(cat)	(fish)
fish	(rabbit)	(frog)
cat		(snake)
frog		
rabbit		
snake		

OBJECTIVE NO. 3-018

The pupil can name various parts of the eye which are ancillary to the eyeball, e.g. eyelashes, eyelids, tear glands, oil glands, and nictitating membrane.

SAMPLE TEST ITEMS

1. Name five structures external to the eyeball, which help certain animals to see clearly.

   1. _____(eyelid)

   2. _____(eyelash)

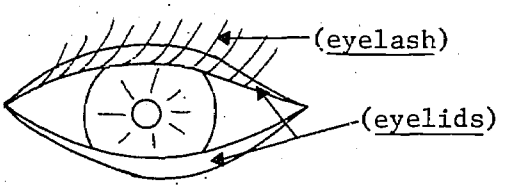
   3. _____(tear gland)

   4. _____(nictitating membrane)

   5. _____(oil gland)

2. In each blank supply the name of a part of the eye.

   (a)



   (b) tears are produced in man by the _____(tear gland)

   (c) tears are produced in birds, reptiles, and amphibians by the _____(oil gland)

   (d) frogs protect their eyes underwater by means of a _____(nictitating membrane).

OBJECTIVE NO. 3-019

The pupil can identify certain functions of the main parts of a mammalian eye (i.e. retina, optic nerve, cornea, lens, iris, pupil, ciliary muscles).

SAMPLE TEST ITEMS

1. Column 1 lists the functions of certain parts of the eye and Column 2 lists the names of various parts of the eye. Match each function to the correct part by writing the letter of that function in the appropriate answer space.

Column 1 Functions		Column 2 Parts
		(Answers)
A.	controls the amount of light which enters the eye	(C) lens
		(E) cornea
B.	takes "messages" to the brain about what has been seen	( ) conjunctiva
C.	focuses the light on the back of the eye to form an image	(B) optic nerve
		(A) iris
D.	"Picks up" the image formed, by means of light-sensitive rods and cones	(D) retina
E.	covers the front of the eye but allows light to pass through	

continued

OBJECTIVE NO. 3-019

2. When it gets dark the pupil of the eye enlarges to allow more light to enter the eye. *True/False

3. The ciliary muscles of the eye regulate the shape of the lens. *True/False

4. Air in the eye helps to focus the image on the retina. True/False*

5. The color of the iris determines the color of the eye. *True/False

OBJECTIVE NO. 3-020

The pupil can name some of the main internal structures of a human eye (i.e. retina, optic nerve, cornea, lens, iris, pupil, ciliary muscle).

SAMPLE TEST ITEMS

1. In the following diagram of the internal structures of a human eye, label the parts indicated by writing the name of each part in the appropriate space provided.

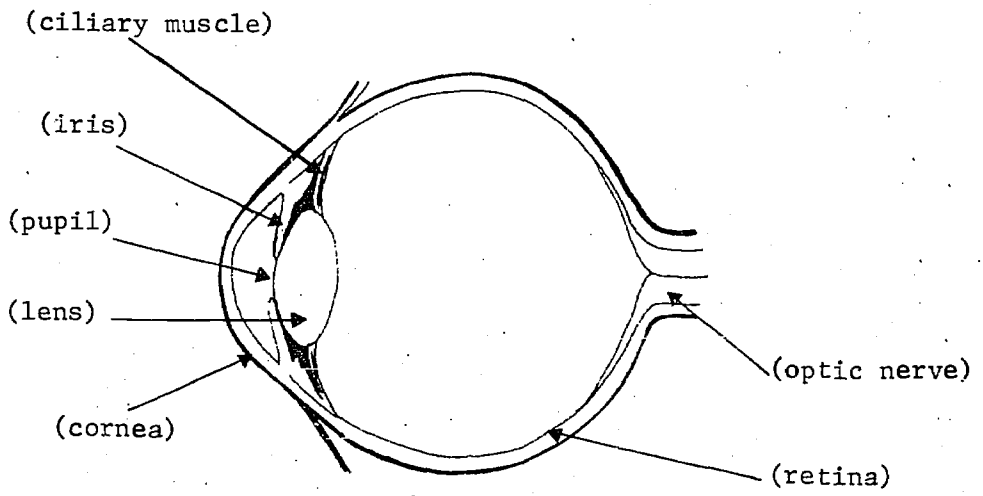


DIAGRAM OF CROSS-SECTION OF A HUMAN EYE

OBJECTIVE NO. 3-021

The pupil can name some of the functions of a mammalian nose.

SAMPLE TEST ITEMS

1. A function of the nose is to

1. Help clean the air breathed in.	*True/False
2. Take in oxygen from out of the air.	True/False*
3. Help us to keep our balance.	True/False*
4. Help elephants pick up things.	*True/False
5. Help warm cold air breathed in.	*True/False
6. Help animals judge distance.	True/False*
7. Help a cat to recognize her kittens.	*True/False

2. Which of the following is not a function of the nose?

(a) to allow us to breathe in air
*(b) to allow us to judge distance
(c) to warm the air breathed in
(d) to enable us to smell

OBJECTIVE NO. 3-022

The pupil can name the major external body parts of a grasshopper.

SAMPLE TEST ITEMS

1. Grasshoppers have two types of eyes: _____(simple) and _____(compound).

2. Grasshoppers breathe through holes in their abdomen called _____(spiracles).

3. A grasshopper's body is divided into three parts, the _____ (head), _____(thorax), and _____(abdomen).

4. The hearing membrane of a grasshopper is on the part of the body called the _____(abdomen).

5. Grasshoppers are covered with a hard material which gives support and protection to their inside parts. This hard material is called _____(chitin).

6. Grasshoppers are assigned to the phylum of arthropods because they have jointed _____(legs).

continued

OBJECTIVE NO. 3-022

7. Label the parts of the grasshopper that are indicated.

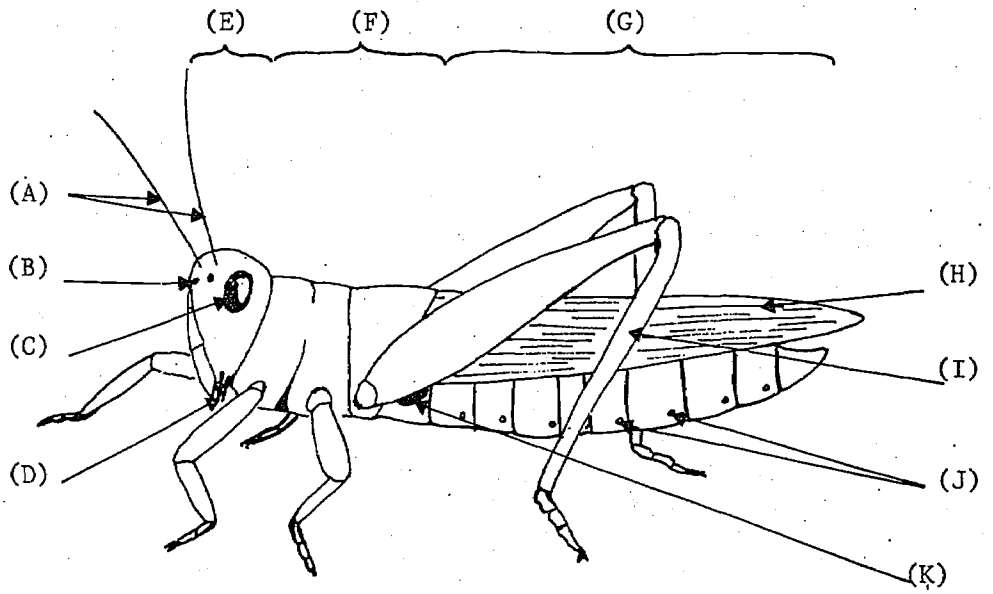


DIAGRAM OF GRASSHOPPER

Answers

A - antennae

B - simple eye

C - compound eye

D - mouth parts

E - head

F - thorax

G - abdomen

H - wing

I - leg

J - spiracles

K - "ear" or tympanum

OBJECTIVE NO. 3-023

The pupil can identify some of the functions of the following external body parts of a grasshopper: (1) antenna, (2) head , (3) eyes, (4) mouth, (5) legs, (6) thorax, (7) abdomen, and (8) wings.

SAMPLE TEST ITEMS

1. Column 1 lists certain functions of external body parts of a grasshopper. Column 2 lists certain body parts. Match each function to its correct part by putting the letter of the function in the appropriate answer space.

Column 1 Functions	(Answers)	Column 2 Parts
A. sight	(A)	eyes
B. feeding	(C)	antennae
C. sensing vibrations	( )	wings
D. jumping	(D)	legs
	(B)	mouth

2. A grasshopper has eight legs for moving about on land. True/False*

3. A grasshopper has three pairs of legs. Which legs are specialized for jumping?

(a) the front pair
(b) the first two pair
*(c) the back pair
(d) all six legs

continued

OBJECTIVE NO. 3-023

4.	The antennae of a grasshopper act as sense organs.	*True/False
5.	The grasshopper uses only one pair of wings for flying.	True/False*
6.	The mouth parts of a grasshopper are modified for sucking.	True/False*

OBJECTIVE NO. 3-024

The pupil can identify the main roles of the various members of a bee colony.

SAMPLE TEST ITEMS

1. Each of the following statements refers to an activity of either a drone (A), a worker (B) or the queen (C) of a bee colony. By writing either an A,B,or C after each statement, indicate which member is likely to carry out that particular activity.

   1. feed the young with royal jelly (B)
   2. fertilize the queen (A)
   3. clean out brood cells (B)
   4. produce wax and build the cells (B)
   5. receive nectar and pollen from other bees (B)
   6. lay fertilized and unfertilized eggs (C)
   7. guard the entrance of the hive (B)
   8. fly out to collect nectar and pollen (B)
   9. return to the colony after the wedding flight (C)

OBJECTIVE NO. 3-025

The pupil can identify certain benefits of communal living to social insects.

SAMPLE TEST ITEMS

1. Social insects benefit by living in a colony because they

   *(a) share the food which has been stored
   (b) have company as often as they please
   (c) can mate frequently with the queen
   (d) migrate frequently from one place to another

2. An insect colony gives protection to each individual member of the colony. *True/False

3. A termite colony is a highly organized community because

   (a) the colony has a good "director"
   (b) all the members have to gather food
   *(c) certain members perform specialized roles
   (d) none of the above

OBJECTIVE NO. 3-026

The pupil can identify some of the activities of certain social insects: bees, termites, and ants.

SAMPLE TEST ITEMS

1. In a termite colony, it is the task of the workers to prevent the entry of enemies. True/False*

2. Bee workers and termite workers provide special food for the young and the queens. *True/False

3. The queen bee gives orders for the work to be done according to the needs of the colony. True/False*

4. The duties of the worker bee change with the needs of the colony. *True/False

5. In the fall, worker bees kill drones and throw them out of the hive to save stored food for others. *True/False

6. Soldiers and workers in a termite colony may be either male or female. *True/False

7. Drones in a bee colony defend the entrance when other insects try to enter the colony. True/False*

OBJECTIVE NO. 3-027

The pupil can identify stages in the life cycle of the common house fly (e.g. egg, larva, pupa, adult).

SAMPLE TEST ITEMS

1. Complete the life cycle of the house fly by filling in the missing stages.

(_____) → larva → (_____) → adult
egg* pupa*

2. Label the stages in the following diagram of the life cycle of a house fly.

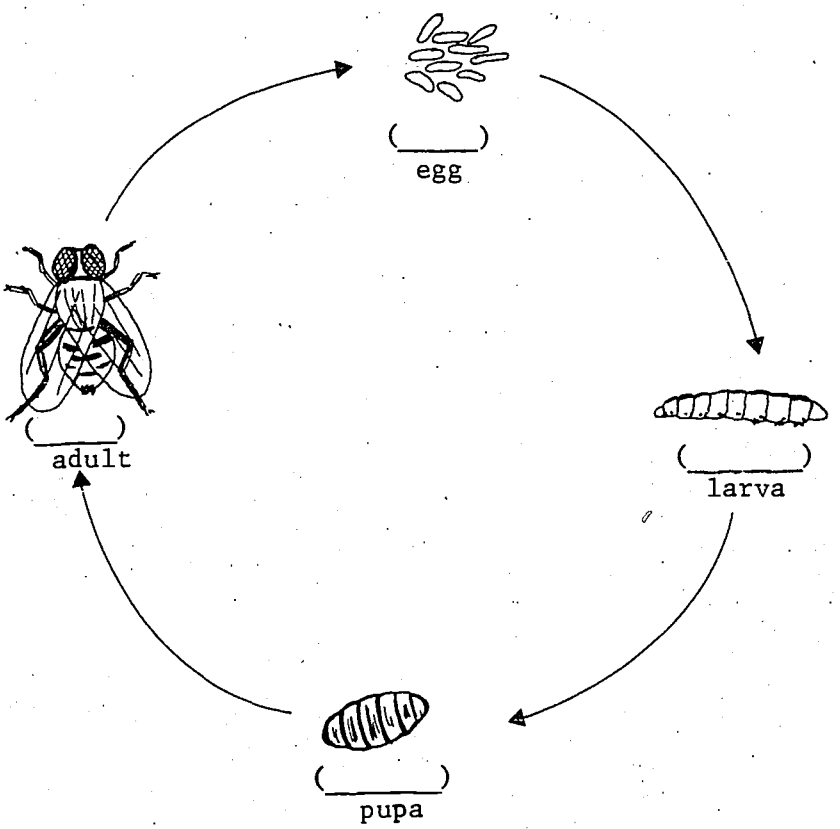


DIAGRAM OF LIFE CYCLE OF THE HOUSE FLY

OBJECTIVE NO. 3-028

The pupil can identify stages in the life cycles of a butterfly, (egg, pupa, larva, adult) and a grasshopper (egg, nymph, adult).

SAMPLE TEST ITEMS

1. Which is the correct order of the stages in the life cycle of a butterfly?

   *(a) eggs, larvae, pupae, adults
   (b) eggs, nymphs, pupae, adults
   (c) adults, eggs, pupae, nymphs
   (d) eggs, pupae, larvae, adults

2. Which of the following is not a stage in the life cycle of a grashopper?

   (a) nymph
   *(b) pupa
   (c) adult
   (d) eggs

3. The "resting" stage of an insect is called the

   *(a) pupa
   (b) egg
   (c) larva
   (d) adult

4. An insect that undergoes "incomplete metamorphosis" has only three stages in its life cycle. Which of the following is not one of these stages?

   (a) egg
   (b) nymph
   *(c) pupa
   (d) adult

OBJECTIVE NO. 3-029

The pupil can identify the definition of the term growth, as applied to living organisms.

SAMPLE TEST ITEMS

1. All organisms are composed of one or more cells. In order for an organism to grow these cells must

   (a) change shape
   (b) group together to form a mass of cells
   *(c) increase in size and/or number
   (d) assume a definite function

2. Growth occurs when cells increase in number and/or size within an organism. *True/False

OBJECTIVE NO. 3-030

The pupil can distinguish between the concepts of growth and differentiation within multi-cellular organisms.

SAMPLE TEST ITEMS

1. In a multi-cellular organism, increase in the number of cells takes place during

   (a) differentiation
   *(b) growth
   (c) specialization
   (d) none of the above

2. In multi-cellular organisms, when cells become specialized to perform a special function they are said to have undergone

   (a) growth
   *(b) differentiation
   (c) multiplication
   (d) division

3. When cells become specialized to form a certain type of tissue they have undergone differentiation. *True/False

4. During growth, cells increase in both size and number. *True/False

5. The terms growth and differentiation refer to the same process. True/False*

OBJECTIVE NO. 3-031

The pupil can identify essential life activities that are carried on by every living cell.

SAMPLE TEST ITEMS

1. The process by which non-living materials are changed into protoplasm is called

   (a) absorption
   *(b) assimilation
   (c) oxidation
   (d) digestion

2. The process by which living things are able to make more living things of the same kind is called

   (a) respiration
   (b) digestion
   (c) assimilation
   *(d) reproduction

OBJECTIVE NO. 3-032

The pupil can identify water as the chief component of living cells.

SAMPLE TEST ITEMS

1. Which one of the following is most abundant in living cells?

   (a) protein
   *(b) water
   (c) fats
   (d) sugar

2. The substance present in largest amounts in protoplasm is

   (a) iodine
   (b) protein
   (c) starch
   *(d) water

OBJECTIVE NO. 3-033

The pupil can identify the ways in which living cells are dependent upon water.

SAMPLE TEST ITEMS

1. Which of the following is not a way in which living cells make use of water?

   (a) water forms part of the protoplasm
   (b) water acts as a solvent for salts and sugar
   (c) water is the medium in which cell activities occur
   *(d) water makes up the chloroplasts

2. The most important substance needed in the germination of bean seeds is

   *(a) water
   (b) sand
   (c) light
   (d) minerals

OBJECTIVE NO. 3-034

The pupil can identify various types of animal tissue.

SAMPLE TEST ITEMS

1. Your skin is made up of which type of tissue?

   (a) connective tissue
   (b) skeletal tissue
   *(c) epithelial tissue
   (d) none of the above

2. Which of the following is not an animal tissue?

   (a) blood
   (b) cartilage
   *(c) stomach
   (d) nerve

OBJECTIVE NO. 3-035

The pupil can distinguish between animal tissues, organs, and systems.

SAMPLE TEST ITEMS

1. A single type of tissue is made up of a group of

   *(a) cells
   (b) molecules
   (c) organs
   (d) systems

2. An organ is made up of a number of

   (a) systems
   (b) joints
   (c) bones
   *(d) tissues

3. The heart and lungs are both

   *(a) organs
   (b) systems
   (c) cells
   (d) tissues

4. A number of organs working together form a

   (a) cell
   (b) tissue
   *(c) system
   (d) skeleton

5. The stomach is one of the organs of the digestive

   (a) gland
   (b) set
   *(c) system
   (d) cell

OBJECTIVE NO. 3-036

The pupil can identify various organs of the human body which are interrelated.

SAMPLE TEST ITEMS

1. The exocrine glands would most affect

   *(a) digestion
   (b) heart rate
   (c) hearing
   (d) growth

2. Which two senses are most closely related?

   (a) sight and hearing
   *(b) taste and smell
   (c) sight and taste
   (d) hearing and touch

3. Our sense of balance is most closely linked with our

   (a) eyes
   (b) nose
   *(c) ears
   (d) mouth

OBJECTIVE NO. 3-037

The pupil can identify definitions of the following animal processes: absorption, digestion, secretion, assimilation, and excretion.

SAMPLE TEST ITEMS

1. Which of the following describes the process of absorption?

   *(a) the intake of dissolved substances into a cell or the blood
   (b) the breakdown of food to be used by the body
   (c) the intake of oxygen into the lungs and the release of carbon dioxide
   (d) the transport of substances from one part of the body to another

2. Digestion is the intake of dissolved substances into the blood. True/False*

3. Secretion involves the release by glandular tissue of various dissolved substances. *True/False

4. Assimilation is the process by which food supplied to the cell is changed into living tissue. *True/False

continued

OBJECTIVE NO. 3-037

5. Each of the statements in Column 1 defines a term in Column 2. Match a term to each definition by writing the letter of that definition in front of the correct term.

Column 1 Definitions	Column 2 Terms
	(Answers)
A. breakdown of food for use in the body	(E) absorption
	(A) digestion
B. release of urine from the body	(D) secretion
C. conversion of absorbed food into the living tissue	( ) oxidation
D. release of dissolved substances from the glands	(C) assimilation
	(B) excretion
E. intake or passage of dissolved substances into the blood.	

6. Excretion is the process by which

(a) food substances are broken down for intake into the cells
*(b) perspiration and urine are expelled from the body
(c) dissolved food substances are carried in the blood
(d) undigested food is expelled from the body

OBJECTIVE NO. 3-038

The pupil can identify the interrelationship between the processes of photosynthesis and respiration in plants.

SAMPLE TEST ITEMS

1. The oxygen released during photosynthesis is used in the process of

   (a) transpiration
   *(b) respiration
   (c) digestion
   (d) reproduction

2. During the daytime green plants usually carry out

   (a) photosynthesis only
   (b) respiration only
   *(c) photosynthesis and respiration
   (d) neither photosynthesis nor respiration

3. Plants respire both at night and during the day. *True/False

4. During the day carbon dioxide, released by a plant when it respires, is used by the plant to make food. *True/False

5. During the day the effects of photosynthesis (i.e. taking in carbon dioxide and giving out oxygen) are more marked than those of respiration (i.e. taking in oxygen and giving out carbon dioxide). *True/False

6. At night both respiration and photosynthesis stop. True/False*

OBJECTIVE NO. 3-039

The pupil can identify certain factors which are needed by the plant during the process of photosynthesis, (e.g. carbon dioxide, light, chlorophyll).

SAMPLE TEST ITEMS

1. Which of the following is not needed by the plant during photosynthesis?

   *(a) oxygen
   (b) carbon dioxide
   (c) light
   (d) chlorophyll

2. Which of the following combination of factors would enable a plant to make its own food?

   (a) oxygen, water, light
   (b) carbon dioxide, water, chlorophyll
   *(c) carbon dioxide, light, chlorophyll
   (d) oxygen, nitrogen, light

3. Photosynthesis usually takes place at night. True/False*

4. A plant can make its own food only if it has chlorophyll present. *True/False

OBJECTIVE NO. 3-040

The pupil can identify certain activities which occur during the process of photosynthesis (e.g. the energy of light is converted into chemical energy [sugar]; oxygen is released).

SAMPLE TEST ITEMS

1. The primary food substance made by a plant during photosynthesis is

   (a) protein
   (b) fat
   (c) carbohydrate
   *(d) sugar

2. Which of the following gases is given out during the process of photosynthesis?

   (a) carbon dioxide
   (b) nitrogen
   *(c) oxygen
   (d) hydrogen

3. Light energy is converted into chemical energy during the process of photosynthesis. *True/False

4. Green plants normally give out oxygen during the day time. *True/False

5. Plants are often removed from a bedroom at night-time because they would then be taking in oxygen and giving out carbon dioxide. *True/False

OBJECTIVE NO. 3-041

The pupil can identify the process by which green plants make their own food (i.e. photosynthesis).

SAMPLE TEST ITEMS

1. Green plants make their own food by the process of

   (a) respiration
   *(b) photosynthesis
   (c) transpiration
   (d) none of the above

2. The term photosynthesis refers to the process by which

   (a) food is obtained from other plants
   (b) food is stored in the plant
   (c) water is released from the plant
   *(d) food is made in the plant

3. All plants are able to make their food by means of photosynthesis. True/False*

OBJECTIVE NO. 3-042

The pupil can identify various stages in the process of transpiration.

SAMPLE TEST ITEMS

1. Water and mineral salts are absorbed from the soil through the

   (a) lenticels
   (b) xylem
   (c) thin bark
   *(d) root hairs

2. Water in the plant is conducted from the roots to the leaves in the

   *(a) xylem
   (b) phloem
   (c) pith
   (d) none of the above

3. Transpiration is the process by which plants

   (a) make their own food
   *(b) lose water through the leaves
   (c) break down stored food
   (d) reproduce themselves

4. Water is passed out of plants through the

   (a) chloroplasts
   (b) epidermis
   *(c) stomata
   (d) lenticels

OBJECTIVE NO. 3-043

The pupil can identify ways in which leaves are modified to prevent the excessive loss of water from the plant by transpiration.

SAMPLE TEST ITEMS

1. Desert-living plants usually conserve as much water as possible. In order to do this their leaves may be modified in all of the following ways except

   (a) the leaves have sunken stomata
   *(b) the leaves are large and thin
   (c) the leaves are covered with hairs
   (d) the leaves have a waxy cuticle

2. The smaller the exposed surface area of the leaf the less water will be lost by transpiration. *True/False

3. Plants which live in a desert usually have thick fleshy leaves which help to cut down on the amount of water lost during transpiration. *True/False

4. All plants lose the same amount of water during transpiration regardless of the size and shape of their leaves. True/False*

OBJECTIVE NO. 3-044

The pupil can identify the environmental conditions necessary for the normal growth of a green plant (e.g. sunlight, air, water, minerals salts, and space in which to grow).

SAMPLE TEST ITEMS

1. Which of the following is not necessary for the normal growth of a green plant?

   (a) light
   (b) air
   *(c) sugar
   (d) water

2. Which of the following is not necessary for normal seed germination?

   (a) water
   (b) warmth
   (c) oxygen
   *(d) light

3. Green plants need light to make their food. *True/False

4. Nitrates and other chemicals are essential for the normal growth of green plants. *True/False

5. All plants need sunlight for growth. True/False*

6. Plants do not grow well if they are in a confined space. *True/False

OBJECTIVE NO. 3-045

The pupil can identify stages in two types of seed germination, namely epigeal germination as in the bean seed, and hypogeal germination as in corn.

SAMPLE TEST ITEMS

1. The following diagrams represent stages in two different types of seed germination. Identify the stages indicated in the diagrams by choosing the correct sentence from the list below and writing the letter of that sentence in the correct space provided.

   A. The cotyledonary leaves and leaves of the mature plant appear.

   B. The plumule grows into the air leaving the cotyledon in the soil.

   C. The radicle develops from the seed.

   D. The cotyledons are dragged above the surface of the soil.

continued

OBJECTIVE NO. 3-045

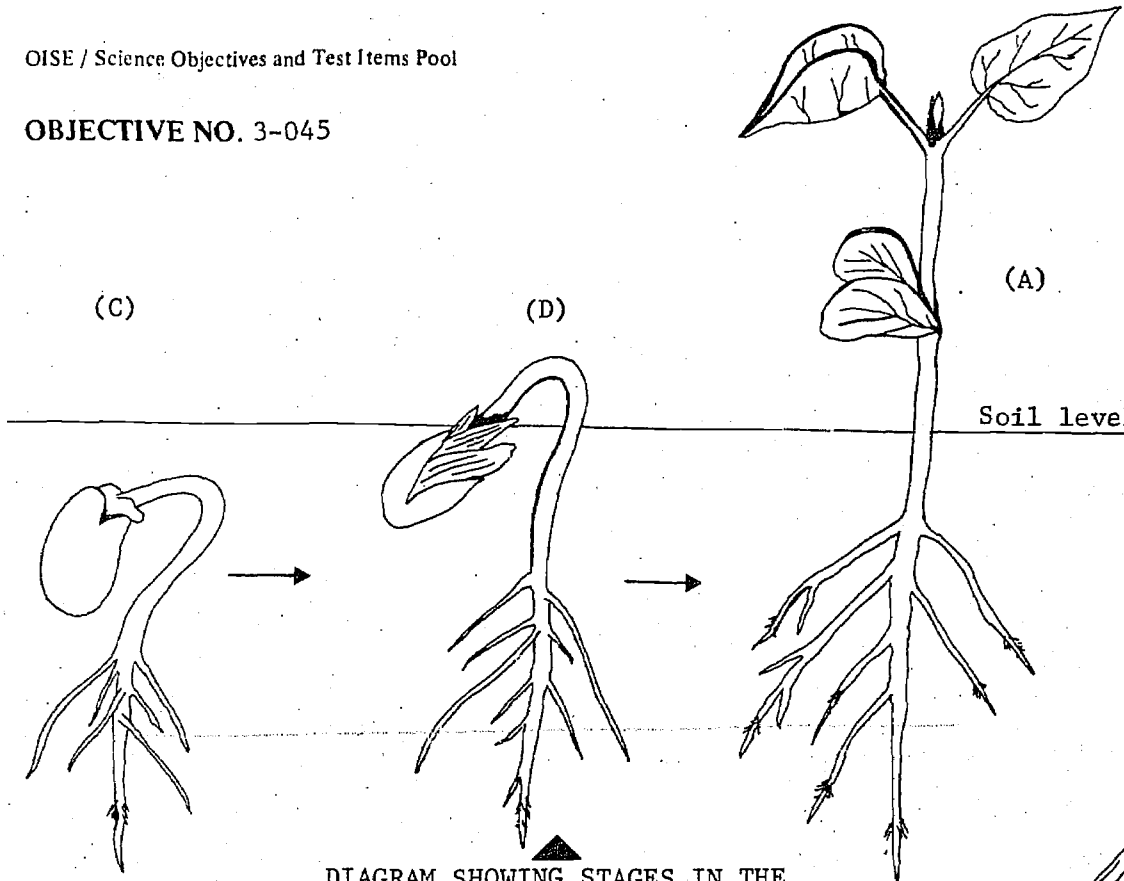


DIAGRAM SHOWING STAGES IN THE GERMINATION OF A BEAN SEED

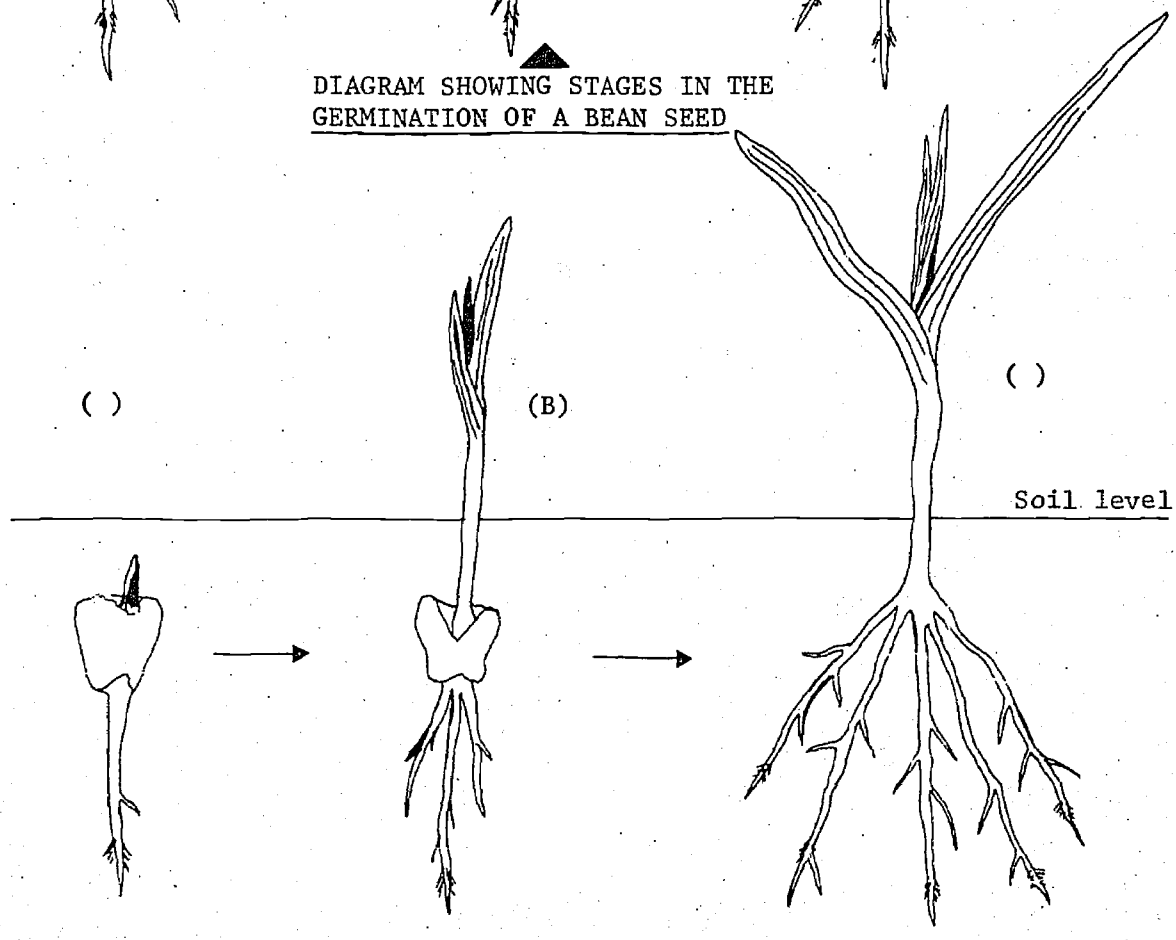


DIAGRAM SHOWING STAGES IN THE GERMINATION OF CORN

OBJECTIVE NO. 3-046

The pupil can identify characteristics of sexual and asexual reproduction in plants.

SAMPLE TEST ITEMS

1. When two gametes unite to form a zygote, the reproductive process is said to be

   (a) unisexual
   (b) bisexual
   *(c) sexual
   (d) asexual

2. Asexual reproduction is characterized by the presence of how many parents?

   (a) many
   (b) two
   *(c) one
   (d) none

3. Asexual reproduction occurs when a single parent gives rise to offspring. *True/False

4. A self-pollinating plant is said to undergo asexual reproduction. True/False*

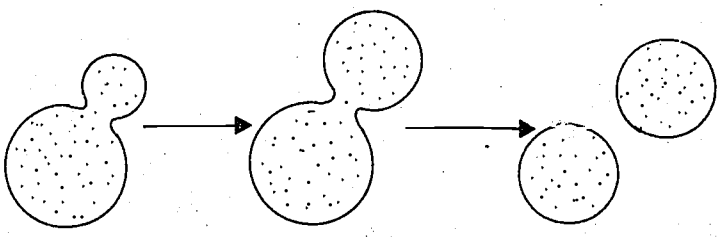
5. For sexual reproduction to occur a male gamete and a female gamete must fuse. *True/False

6. Asexual reproduction involves the production of zygotes. True/False*

Continued

OBJECTIVE NO. 3-046

7. Reproduction of yeast cells by budding is shown in the accompanying diagram. This type of reproduction is asexual. *True/False



Yeast Cells

OBJECTIVE NO. 3-047

The pupil can distinguish between sexual and asexual (vegetative) reproduction in plants.

SAMPLE TEST ITEMS

1. Which of the following structures would not take part in asexual or vegetative reproduction in plants?

   (a) roots
   (b) stem
   *(c) flowers
   (d) leaves

2. Which of the following is not an example of asexual or vegetative reproduction?

   (a) a cactus leaf gives rise to a number of new plants
   *(b) a bean seed germinates to produce a new plant
   (c) a strawberry plant produces "runners", giving rise to new plants
   (d) the roots of certain plants give rise to new plants

OBJECTIVE NO. 3-048

The pupil can distinguish between certain plants which reproduce vegetatively (asexually), and those which reproduce sexually.

SAMPLE TEST ITEMS

1. Which of the following plants reproduces only by means of seeds?

   (a) carnation
   (b) African violet
   *(c) corn
   (d) potato

2. Which of the following plants grows most easily by means of vegetative reproduction?

   *(a) geranium
   (b) corn
   (c) tomato
   (d) chestnut

OBJECTIVE NO. 3-049

The pupil can distinguish between certain plants which are seed-producing and others which are spore-producing.

SAMPLE TEST ITEMS

1. Which of the following plants does not produce seeds?

   (a) elm trees
   (b) petunias
   *(c) mushrooms
   (d) asters

2. Which of the following plants does not produce spores?

   (a) ferns
   *(b) roses
   (c) mosses
   (d) mushrooms

3. Which of the following plants does not produce seeds from flowers?

   (a) roses
   (b) tulips
   (c) maple tree
   *(d) pine tree

4. Which of the following plants does not produce seeds from cones?

   *(a) elm tree
   (b) cedar
   (c) balsam fir
   (d) spruce

continued

OBJECTIVE NO. 3-049

5. Which of the following plants produces seeds?

(a) fungi
(b) mold
*(c) grass
(d) algae

6. Which of the following plants produces spores?

*(a) mold
(b) pine tree
(c) grass
(d) maple tree

OBJECTIVE NO. 3-050

The pupil can identify various stages in the sexual life cycle of a flowering plant.

SAMPLE TEST ITEMS

1. In the following diagram of the life cycle of a flowering plant identify the stages of the life cycle by writing the letter which corresponds to a particular stage in the correct place on the diagram.

   Stages in Life cycle

   A. germination of the seed

   B. seed develops in the ovary

   C. pollination takes place

   D. seeds ready to germinate

   E. plant produces flower

   F. ripening of ovule and pollen grains

continued

OBJECTIVE NO. 3-050

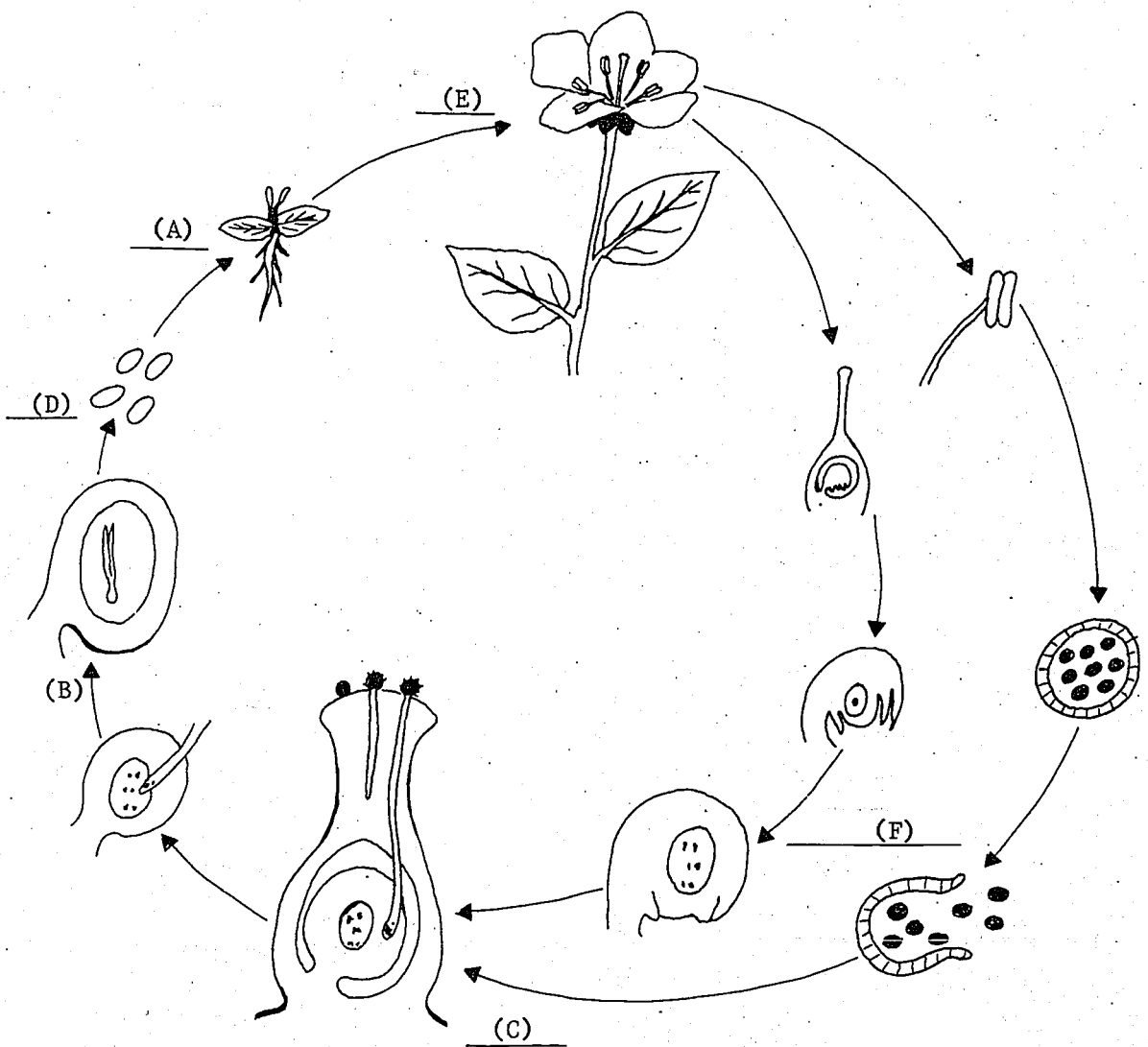


DIAGRAM OF LIFE CYCLE OF FLOWERING PLANT

OBJECTIVE NO. 3-051

The pupil can identify the two types of asexual reproduction in yeast (i.e. fission and budding).

SAMPLE TEST ITEMS

1. Which of the following pairs of terms includes both types of asexual reproduction in yeast cells?

   (a) fragmentation, budding
   (b) budding, mitosis
   *(c) budding, fission
   (d) fission, meiosis

2. The two types of asexual reproduction occuring in yeast cells are _____(fission) and _____(budding).

3. Budding and fission are types of reproduction found to occur in yeast cells. *True/False

OBJECTIVE NO. 3-052

The pupil can identify stages in the budding of yeast cells.

SAMPLE TEST ITEMS

1. Which of the following is not a stage of budding in yeast cells?

   (a) the bud begins to grow larger and becomes distinctly rounded in shape
   *(b) the mother cell beings to divide in half
   (c) the bud begins to separate from the mother cell
   (d) the bud breaks away and becomes independent of the mother cell

2. In yeast,the mother cell is formed from the bud. True/False*

3. In yeast cells the bud begins to grow larger and becomes distinctly rounded in shape. *True/False

4. In yeast cells the bud remains joined to the mother cell. True/False*

5. In yeast cells the bud breaks away but remains dependent on the mother cell. True/False*

OBJECTIVE NO. 3-053

The pupil can identify certain similarities between plant reproduction and animal reproduction.

SAMPLE TEST ITEMS

1. Some animals and plants reproduce themselves by dividing in half. *True/False

2. Some plants and animals reproduce both sexually and asexually. *True/False

3. In sexual reproduction of plants or animals the male and the female make equal contributions to the offspring. *True/False

4. The female reproductive parts of the flower are the stamens. True/False*

5. The male sex cell in both animals and plants is called the sperm cell. *True/False

6. In plants and animals the male and female sex cells or gametes fuse to form a zygote. *True/False

7. The seed of a plant and the egg of a bird both provide food for the earlier stages of development of the young. *True/False

8. Animals and plants have no similarities in their methods of reproduction. True/False*

OBJECTIVE NO. 3-054

The pupil can identify the function of the reproductive system as a means of producing offspring similar to the parent.

SAMPLE TEST ITEMS

1. An animal's reproductive system is a mechanism for

   (a) digesting food
   *(b) producing offspring
   (c) causing movement
   (d) remembering facts

2. The reproductive system is a mechanism for producing offspring similar to the parent. *True/False

OBJECTIVE NO. 3-055

The pupil can list the following terms in an order which reflects progressive stages in the development of a mammalian fetus (e.g. gametes, coitus, fertilization, zygote, embryo, fetus, and birth).

SAMPLE TEST ITEMS

1. Coitus occurs before fertilization. *True/False

2. Zygotes produce a gamete. True/False*

3. A human fetus is a developing unborn child. *True/False

4. The zygote grows to form the embryo. *True/False

5. After coitus the male gamete fertilizes the female gamete to produce a zygote. *True/False

6. List the following stages or events in the order in which they occur:

   birth, fertilization, fetus, embryo, zygote

   *(fertilization, zygote, embryo, fetus, birth)

OBJECTIVE NO. 3-056

The pupil can identify each of the following terms as it relates to the development of a human being: birth, blastula, fertilization, fetus, gametes, gastrula, and zygote.

SAMPLE TEST ITEMS

1. The left-hand column gives definitions of some terms related to human development. The right-hand column lists the names of the terms. Match the term to its correct definition by putting the letter in front of the definition in the brackets beside the term.

Definitions	(Answers)	Terms
A. an act of transferring male gametes	(A)	coitus
	(E)	fertilization
B. male and female reproductive cells	(D)	fetus
C. the process during which a child is born	(B)	gametes
	(F)	zygote
D. an unborn child		
E. the process of joining male and female gametes		
F. the structure formed by the fusion of male and female gametes		

2. The blastula and gastrula are stages in the development of a zygote. *True/False

continued

OBJECTIVE NO. 3-056

3. Fertilization is the joining of two _____(gametes) to produce a _____(zygote).

4. Which of the following does not develop from a zygote

(a) blastula
*(b) gamete
(c) gastrula
(d) fetus

5. Birth is the process by which a child is expelled from the uterus. *True/False

OBJECTIVE NO. 3-057

The pupil can identify the main parts (ovum, ovary, Fallopian tube, vagina, and uterus) of the human female reproductive system.

SAMPLE TEST ITEMS

1. The left-hand column gives definitions of some parts of the human reproductive system. The right-hand column lists the names of parts of this system. Match the part to its correct definition by putting the letter of the correct definition in the blank beside each part.

Definitions	Names of Parts (Answers)
A. egg cell	(D) Fallopian tube
B. organ producing egg cells	(E) vagina
C. external area of female human reproductive system	(A) ovum
D. link between ovary and uterus	(F) uterus
E. external opening of the female reproductive system	(B) ovary
F. area for development of the fetus.	

2. The Fallopian tube is a link between the ovary and the uterus. *True/False

3. The ovum is produced in the ovary. *True/False

4. The vagina is the external opening of the ovary. True/False*

OBJECTIVE NO. 3-058

The pupil can identify some of the parts of the digestive system of animals.

SAMPLE TEST ITEMS

1. Which of the following is not a part of the digestive system of an animal?

   (a) stomach
   (b) gizzard
   *(c) kidney
   (d) gastric mill

2. Which of the following lists parts of the human digestive system in the correct order? Food passes from the

   *(a) esophagus → stomach → duodenum → small intestine

   (b) mouth → stomach → esophagus → rectum

   (c) esophagus → stomach → large intestine → small intestine

   (d) none of the above

3. Which of the following is not a part of the digestive system of a bird?

   (a) crop
   (b) gizzard
   (c) intestine
   *(d) diaphragm

4. All animals have a well developed digestive system. True/False*

5. A cow has more than one "stomach". *True/False

OBJECTIVE NO. 3-059

The pupil can identify some of the functions of parts of the human digestive system.

1. The esophagus is the

   (a) windpipe
   *(b) food pipe
   (c) cell membrane
   (d) saliva

2. In the stomach food is

   *(a) partly digested
   (b) stored for later use
   (c) completely digested
   (d) sent to all parts of the body

3. The large intestine stores

   (a) partly digested food
   (b) extra food for later use
   (c) juices to aid in digestion
   *(d) food you cannot digest

4. Juices which help break down food are given out in the

   (a) liver and stomach
   (b) small intestine and large intestine
   *(c) stomach and small intestine
   (d) pancreas and liver

OBJECTIVE NO. 3-060

The pupil can name various parts of the human digestive system (e.g. esophagus, stomach, small intestine, large intestine, rectum).

SAMPLE TEST ITEMS

1. Which of the following is not a part of the human digestive system?

   (a) stomach
   *(b) kidney
   (c) intestine
   (d) esophagus

2. The part of the human digestive system which passes from the mouth to the stomach is called the

   (a) trachea
   (b) intestine
   (c) artery
   *(d) esophagus

3. The lungs are an important part of our digestive system. True/False*

4. The rectum, esophagus, small intestine and duodenum are all parts of the human digestive system. *True/False

continued

OBJECTIVE NO. 3-060

5. Label parts of the human digestive system by writing the name of the part in the appropriate answer space in the diagram.

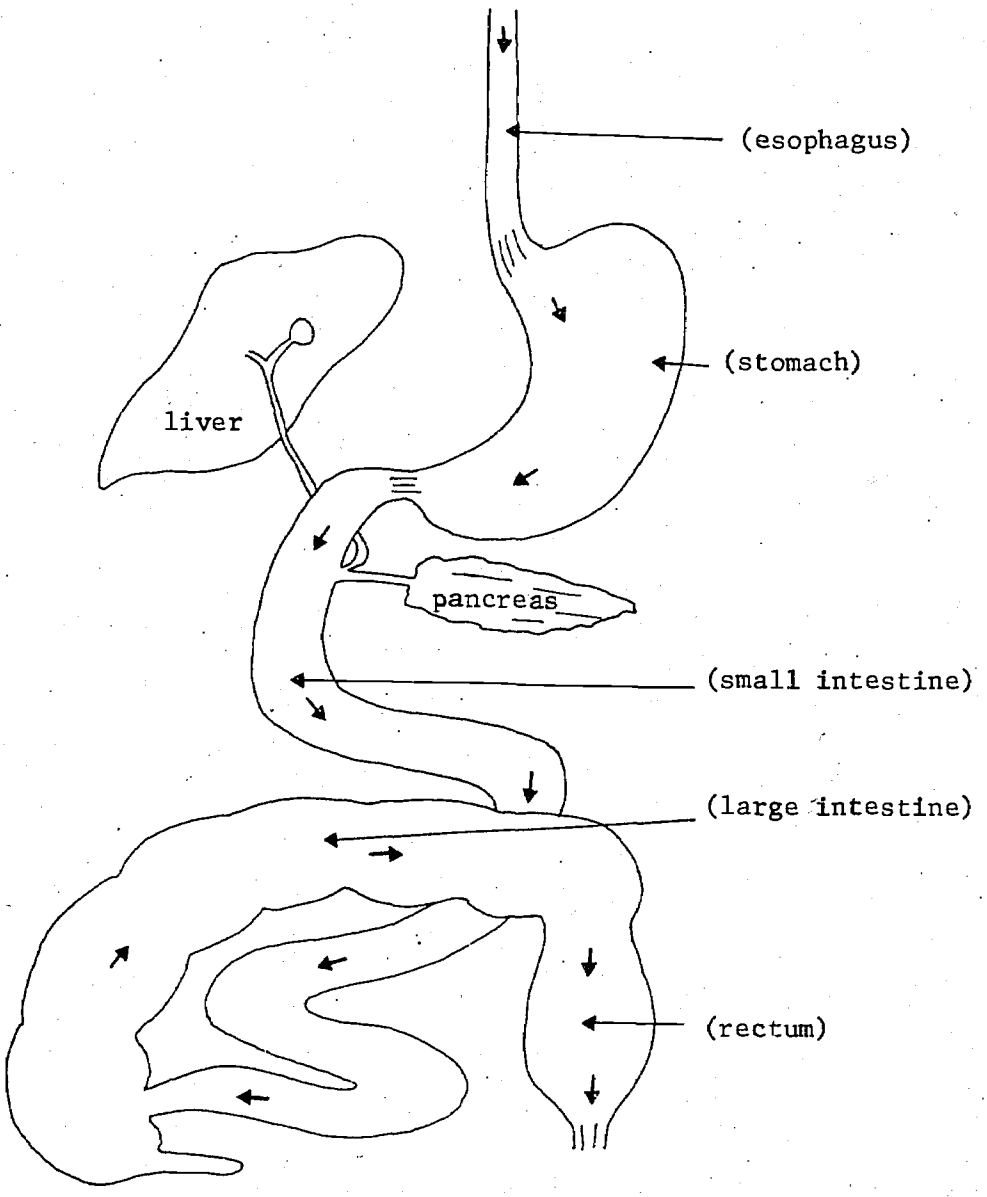


DIAGRAM OF HUMAN DIGESTIVE TRACT

OBJECTIVE NO. 3-061

The pupil can distinguish two sets of teeth that develop in man: deciduous (milk or temporary) teeth and permanent teeth.

SAMPLE TEST ITEMS

1. Which of the following statements is true?

   (a) humans usually have only one set of teeth during their lifetime
   (b) most babies are born with a full set of teeth
   *(c) milk teeth develop before permanent teeth
   (d) a second set of teeth, called eye teeth, develops in man

2. More permanent teeth than milk teeth develop in man. *True/False

3. Permanent teeth erupt when the child is about six months old. True/False*

OBJECTIVE NO. 3-062

The pupil can identify the role of teeth and saliva in the breakdown of food.

SAMPLE TEST ITEMS

1. Solid pieces of food are broken up by the

   (a) tongue
   (b) trachea
   *(c) teeth
   (d) throat

2. The food is moistened by secretions from glands in the mouth. This fluid is called

   (a) perspiration
   (b) thyroxin
   (c) adrenalin
   *(c) saliva

OBJECTIVE NO. 3-063

The pupil can identify certain structures associated with breathing in animals and with the intake of air in plants (e.g. trachea, lung, gill, nose, stoma, lenticel,etc.).

SAMPLE TEST ITEMS

1. In the following list underline the names of those structures which could assist in breathing in some animals.

   skin, feathers, intestine, lungs, kidneys, gills, air sacs,

   trachea, fins, bronchioles, nose, stomach

2. In the following list underline the names of those structures which enable some plants to take in air.

   lenticels, chloroplasts, stoma, cuticle

3. Label the parts indicated in the following diagrams by choosing a name from the list of terms provided and writing the letter corresponding to that term in the correct space.

   (A) air space; (B) air sac; (C) bronchus; (D) guard cell; (E) nostril; (F) lung; (G) gill; (H) stoma; (I) lenticel; (J) trachea

continued

OBJECTIVE NO. 3-063

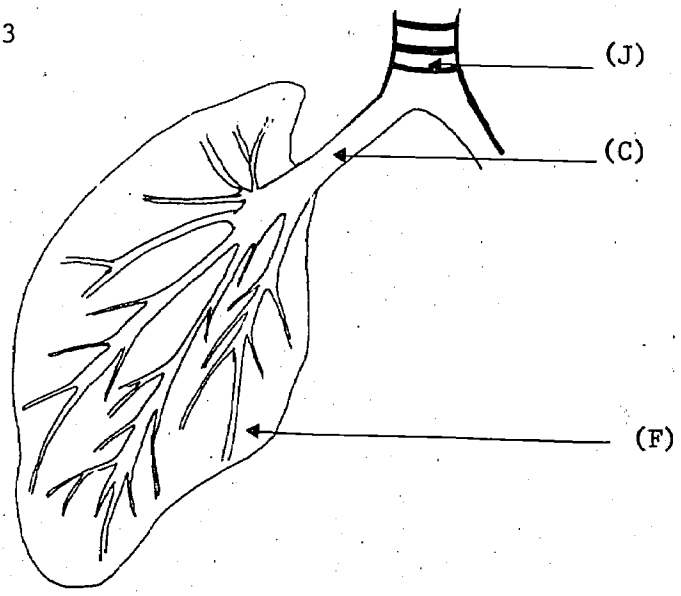


DIAGRAM OF BREATHING ORGANS OF MAN

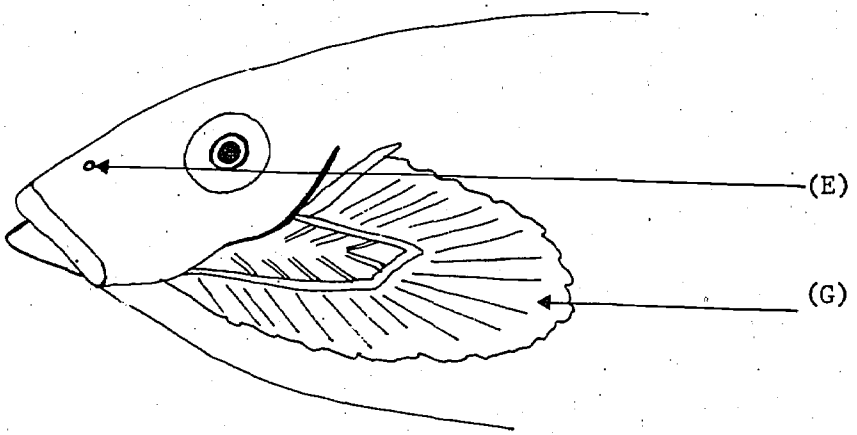


DIAGRAM OF BREATHING ORGANS OF A FISH

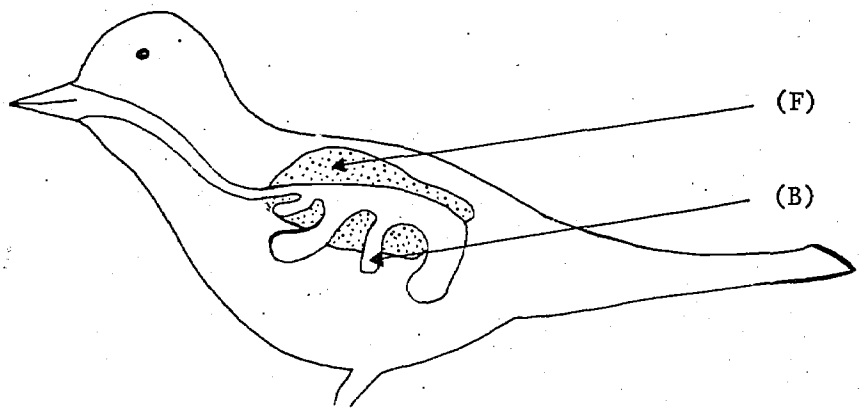


DIAGRAM OF BREATHING ORGANS OF A BIRD

continued

OBJECTIVE NO. 3-063

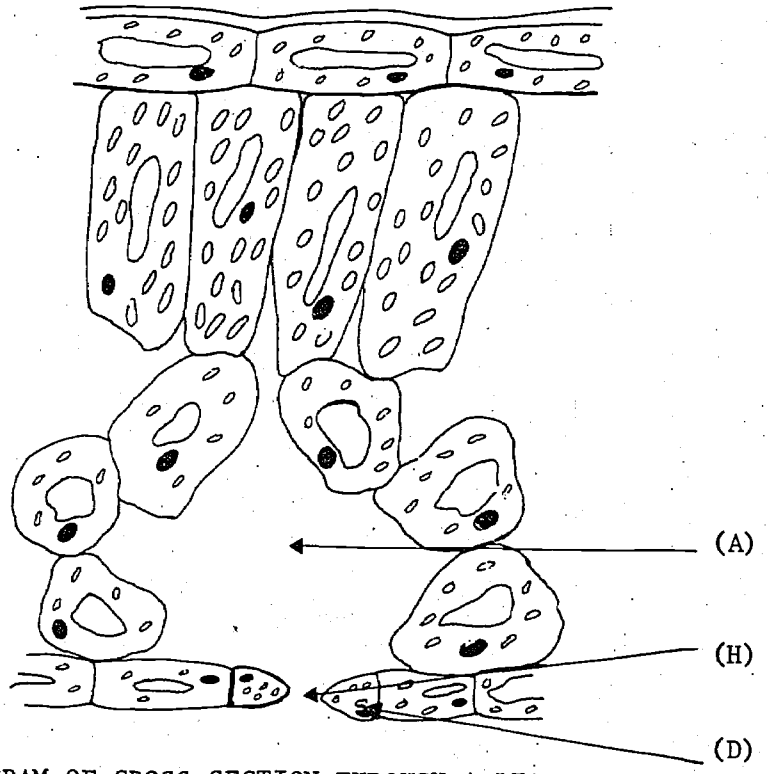


DIAGRAM OF CROSS-SECTION THROUGH A LEAF

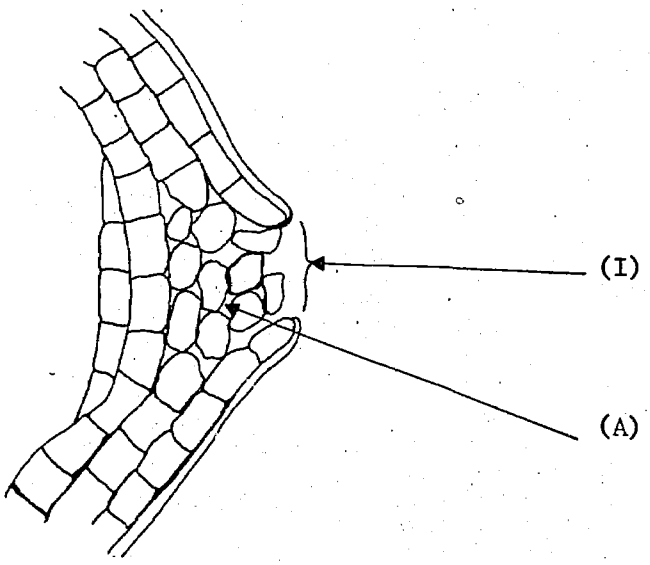


DIAGRAM OF A SECTION THROUGH THE BARK OF A TREE

OBJECTIVE NO. 3-064

The pupil can indicate the functions of the main parts of the human respiratory system, (i.e. epiglottis, larynx, trachea, lung, bronchus, air sacs, and diaphragm).

SAMPLE TEST ITEMS

1. Match the part of the human respiratory system in column 1 with its correct function in column 2, by writing the letter of the part in the appropriate space.

Column 1 Part		Column 2 Function
	(Answers)	
A. epiglottis		(A) protects the wind-pipe and prevents food from going into it.
B. larynx		
C. bronchus		(C) passes air from the trachea or wind-pipe into each lung.
D. trachea		
E. lung		(G) controls the movement of air in and out of the lungs.
F. air sac		(B) produces the sound when we speak.
G. diaphragm		(D) passes air that is breathed in from the nose to the lungs.
		(F) allows oxygen to pass into the blood stream.

2. The air sacs are found in the

(a) gills
(b) trachea
*(c) lungs
(d) larynx

OBJECTIVE NO. 3-065

The pupil can name the main parts of the human respiratory system, (e.g. epiglottis, larynx, trachea, lung, bronchus, air sacs, and diaphragm).

SAMPLE TEST ITEMS

1. The following diagram represents the internal structure of the human respiratory system. The letters A - F refer to parts of that system. Write the name of each part indicated in the space provided on the next page.

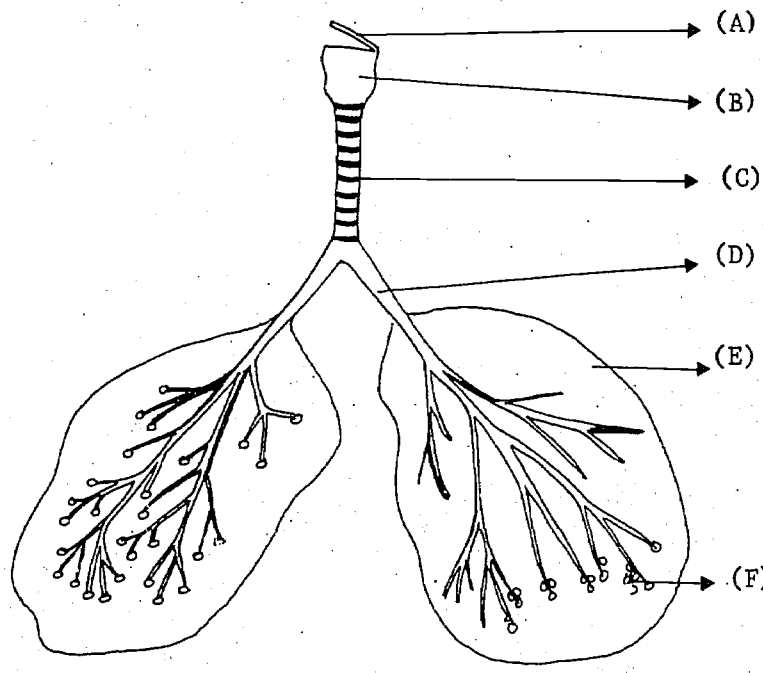


DIAGRAM OF HUMAN RESPIRATORY SYSTEM

continued

OBJECTIVE NO. 3-065

(A) _____(epiglottis)*

(B) _____(larynx)*

(C) _____(trachea)*

(D) _____(bronchus)*

(E) _____(lung)*

(F) _____(air sac)*

2. Which of the following is not a part of the human respiratory system.

(a) lungs
(b) trachea
(c) bronchus
*(d) heart

OBJECTIVE NO. 3-066

The pupil can identify the differences between the processes of cellular respiration and breathing.

SAMPLE TEST ITEMS

1. The chemical process of respiration in animals takes place only in the lungs. True/False*

2. Respiration is basically the same chemical process in both plant cells and animal cells. *True/False

3. Which of the following gases is used in the process of cellular respiration?

   *(a) oxygen
   (b) nitrogen
   (c) carbon dioxide
   (d) argon

4. Cellular respiration can be distinguished from breathing by the fact that during cellular respiration

   (a) air is taken into the body
   *(b) energy is produced in the process
   (c) carbon dioxide is given out by the body
   (d) none of the above

OBJECTIVE NO. 3-067

The pupil can identify a function of the nervous system.

SAMPLE TEST ITEMS

1. The nervous system is responsible for controlling the actions of the body. *True/False

2. Which of the following is a function of the nervous system?

   (a) control of breathing
   (b) control of muscle action
   (c) remembering
   *(d) all of the above

OBJECTIVE NO. 3-068

The pupil can identify some functions of the main parts of the mammalian central nervous system: brain (cerebellum, cerebrum, medulla) and spinal cord.

SAMPLE TEST ITEMS

1. Column 1 lists functions of some parts of the central nervous system. Column 2 lists the names of parts of this system. Match the part to its correct function by putting the letter of the appropriate function in the brackets beside each part.

Column 1 Functions	(Answers)	Column 2 Parts
A. controls the working together of muscles	(E)	medulla
	(D)	cerebrum
B. controls reflex actions	(F)	nerve
C. fully controls our reproductive cycle	(A)	cerebellum
D. controls the memory	(B)	spinal cord
E. controls breathing		
F. conducts nerve impulses		

2. The brain takes no part in "triggering off" a reflex action. *True/False

3. Since man has a larger cerebrum than other primates, he has a better memory. *True/False

4. The medulla controls our breathing and our heart beat. *True/False

OBJECTIVE NO. 3-069

The pupil can identify the main parts of the human central nervous system: the brain (cerebellum, cerebrum, medulla) and the spinal cord.

SAMPLE TEST ITEMS

1. In the following diagram of the human central nervous system label the parts indicated.

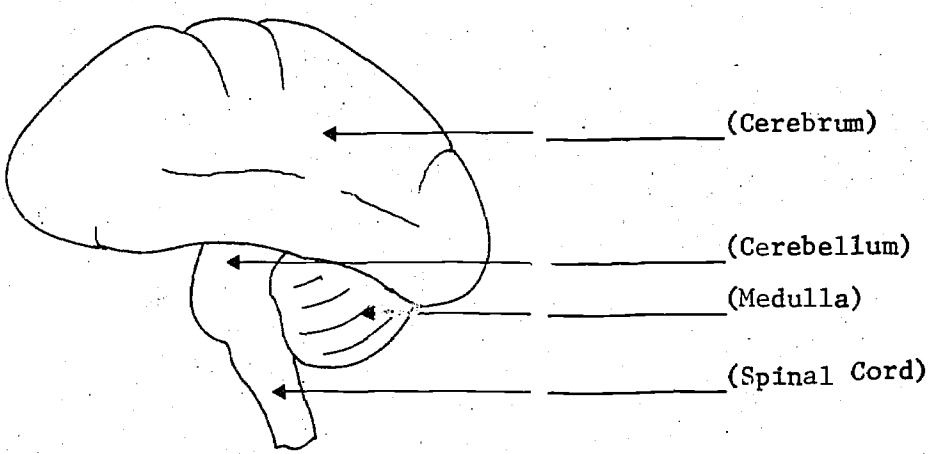


DIAGRAM OF THE
HUMAN CENTRAL NERVOUS SYSTEM

2. Which of the following is not a part of the human brain?

(a) cerebellum
*(b) spinal cord
(c) medulla
(d) cerebrum

OBJECTIVE NO. 3-070

The pupil can identify an important function of the skeleton of each of the following vertebrates: (1) fish, (2) frog, (3) turtle, (4) hawk, and (5) cat.

SAMPLE TEST ITEMS

1. Which one of the following is not an important function of a cat's skeleton?

   (a) to enable the animal to move
   *(b) to allow the animal to detect its food
   (c) to protect vital organs of the body
   (d) to allow for muscle attachment

2. A hawk's skeleton is well adapted for flight owing to

   (a) the presence of extra thickening of the bones
   (b) the presence of a rigid backbone
   *(c) the presence of air spaces in the bones
   (d) none of the above

3. The fins of fish are modified limbs. *True/False

4. Part of the frog's backbone consists of a number of fused small bones (vertebrae). This helps the frog in

   *(a) locomotion
   (b) reproduction
   (c) breathing
   (d) none of the above

5. A fish possesses a skeleton that plays an important part in its ability to swim through the water. *True/False

6. The ability of a frog to move about on land is related to its overall skeletal development. *True/False

continued

OBJECTIVE NO. 3-070

7. The turtle has a hard "shell" encasing its body. This is formed from

   *(a) fused ribs and backbone
   (b) a hardened external skin
   (c) an extension of the skull plate
   (d) a secretion of calcium produced by skin glands

8. The following statements refer to the skeleton of a cat. Which of the following is not an adaptation for speed?

   (a) the bones of the hind limbs are well developed
   (b) the animal walks on the digits (toes) of its feet
   *(c) the bones are made lighter by the presence of air pockets
   (d) the bones of the front limbs are well developed

9. The hard shell encasing the body of a turtle is formed by fusion of bony plates. *True/False

OBJECTIVE NO. 3-071

The pupil can identify some of the functions of bones of the pelvic girdle, leg, and foot of man.

SAMPLE TEST ITEMS

1. The hip bones or pelvic girdle of man serve as a support for the

   (a) organs in the chest cavity
   (b) respiratory organs
   *(c) abdominal organs
   (d) circulatory organs

2. The bones of our toes help us to keep our balance. *True/False

3. A function of the bones of our hips, legs, and feet is

   (a) to pump blood to the heart
   *(b) to enable us to move
   (c) to protect the inner organs
   (d) none of the above

OBJECTIVE NO. 3-072

The pupil can define the term circulatory system (e.g. the blood system of animals).

SAMPLE TEST ITEMS

1. The term circulatory system can be defined as

   (a) a system of nerves through which messages are conducted
   *(b) a system of vessels through which a current of liquid is kept moving
   (c) a system of vessels through which food is passed out of the body.
   (d) none of the above

2. The term circulatory system is used when we are talking about the

   (a) digestive system
   *(b) blood system
   (c) nervous system
   (d) reproductive system

OBJECTIVE NO. 3-073

The pupil can identify some of the functions of the main parts of the mammalian circulatory system, e.g. heart (atrium, ventricle), vein, artery, and capillary.

SAMPLE TEST ITEMS

1. The vessels carrying blood to the heart are called arteries. True/False*

2. Capillaries carry blood to the skin. *True/False

3. The atria receive the blood coming into the heart. *True/False

4. A function of an artery is to

   (a) bring blood to the heart
   *(b) take blood away from the heart
   (c) purify the blood
   (d) none of the above

5. The ventricles of the heart have thick muscular walls which help to

   (a) pump blood into the atria
   (b) keep the blood at a constant temperature
   (c) draw blood into the heart from the veins
   *(d) pump blood out of the heart

OBJECTIVE NO. 3-074

The pupil can identify certain functions of the heart.

SAMPLE TEST ITEMS

1. Which of the following is the main function of the heart?

   (a) to warm the blood
   (b) to purify the blood
   (c) to add oxygen to the blood
   *(d) to circulate the blood

2. The heart pumps blood through the body. *True/False

3. The heart enables us to love. True/False*

4. The heart passes messages to the brain. True/False*

5. The heart passes blood to the lungs via an artery. *True/False

6. The heart maintains our blood pressure. *True/False

7. The pumping of the heart causes our "pulse". *True/False

8. The heart causes us to breathe in air. True/False*

9. The heart acts as a storehouse for all the blood in our body. True/False*

OBJECTIVE NO. 3-075

The pupil can identify a function of the heart (i.e. to pump blood through a complete circuit of tubes in the body.

SAMPLE TEST ITEMS

1. The blood is moved about in our bodies through a set of tubes by being

   (a) moved when we talk
   (b) moved when we breathe in
   *(c) pumped by the heart
   (d) pumped by the stomach

2. The blood fills up all the empty spaces between the organs in our bodies. True/False*

3. If the heart stopped pumping, the blood in our bodies would stop moving. *True/False

4. The blood is pumped from our heart to our skin and evaporates (vanishes) into the air. True/False*

5. The brain controls the movement of blood in our body. True/False*

6. The heart pumps blood through a system of tubes in our body. *True/False

7. We have to keep moving so that the blood doesn't all collect in our feet and legs. True/False*

8. There is a system of tubes in our bodies that takes blood from the heart and in a complete circle back to the heart again. *True/False

continued

OBJECTIVE NO. 3-075

9. The blood swishes backwards and forwards in our body when we move. True/False*

10. If you tied something tight around your wrist the blood would not be able to flow in and out of your hand. *True/False

11. When the heart beats faster the blood goes around the body faster. *True/False

OBJECTIVE NO. 3-076

The pupil can identify the route along which blood moves in the body in terms of arteries, veins, capillaries, and heart.

SAMPLE TEST ITEMS

1. Choose words from the following list to show the correct order of the path of the blood through the body, and write the letter of the appropriate word in each space.

   A. heart

   B. veins

   C. arteries

   D. capillaries

   heart → *(C) → *(D) → veins → *(A)

2. Which of the following is the correct order for the blood to pass through the body?

   (a) heart, veins, arteries, capillaries, heart

   *(b) heart, arteries, capillaries, veins, heart

   (c) heart, capillaries, arteries, veins, heart

   (d) heart, arteries, capillaries, veins, arteries

OBJECTIVE NO. 3-077

The pupil can identify certain characteristics of blood.

SAMPLE TEST ITEMS

1. The red color of mammaliam blood is caused by

   (a) melanin
   (b) plasma
   *(c) hemoglobin
   (d) hemocyanin

2. The fluid part of our blood is called

   *(a) plasma
   (b) marrow
   (c) red blood cells
   (d) white blood cells

3. Red blood cells are often made in the

   (a) blood vessels
   (b) plasma
   (c) heart
   *(d) bone marrow

4. After coming from our lungs the blood is often a brighter red than before, owing to the presence of

   (a) nitrogen
   *(b) oxygen
   (c) water
   (d) none of the above

continued

OBJECTIVE NO. 3-077

5. All animals have red blood. True/False*

6. In any volume of normal mammalian blood there are usually more red blood cells than white blood cells. *True/False

7. White blood cells often collect around the site of an infection. *True/False

OBJECTIVE NO. 3-078

The pupil can define the term hemorrhage.

SAMPLE TEST ITEMS

1. The loss of a large volume of blood from the body is called

   (a) a transfusion
   *(b) a hemorrhage
   (c) anemia
   (d) an operation

2. The term hemorrhage can be defined as

   (a) a disease in which the white blood cell count is high
   (b) a disease in which the red blood cell count is high
   *(c) the loss of a large volume of blood from the body
   (d) a method of increasing the volume of blood in the body

OBJECTIVE NO. 3-078

The pupil can define the term hemorrhage.

SAMPLE TEST ITEMS

1. The loss of a large volume of blood from the body is called

   (a) a transfusion
   *(b) a hemorrhage
   (c) anemia
   (d) an operation

2. The term hemorrhage can be defined as

   (a) a disease in which the white blood cell count is high
   (b) a disease in which the red blood cell count is high
   *(c) the loss of a large volume of blood from the body
   (d) a method of increasing the volume of blood in the body