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ABSTRACT

The Heard Museum (Phoenix, Arizona) has developed and updated an integrated curriculum for use in grades K-3. The goals for this curriculum are to: (1) share museum resources with schools; (2) promote cross-cultural understanding through a focus on rain, a universal requirement for life; (3) help students understand that Native Americans are contemporary people maintaining identity and values in the modern world; (4) develop an awareness of the varied expressions of rain in the art, literature, and customs of the native people of the greater southwest; and (5) use culturally specific materials as a vehicle for developing essential skills, especially as they relate to the Arizona Student Assessment Program. The curriculum may be used in any order. This unit contains: (1) art prints of artifacts in the Heard Museum collection related to rain; (2) specific cultural information and materials relating to a particular Native American tribe or nation featured through the art prints this cultural information is the basis for some of the lessons in mathematics, science, and language skills; (3) mathematics lessons with a special emphasis on measuring and comparing; (4) science lessons, usually hands-on or observational units; (5) language skills, including reading, listening comprehension, writing, vocabulary, and poetry skills; and (6) art projects. (BT)

CLOUDS

After the Rain:

Heard Museum
2301 North Central Avenue
Phoenix, Arizona 85004-1323

http://www.heard.org/rain/rain_pdf_main.html

Updated 2001

Introduction

The Heard Museum has developed this integrated curriculum for use in schools in grades K through 3. The overriding goals for this program are to:

- 1. Share museum resources with schools;
- 2. Promote cross-cultural understanding through a focus on rain, a universal requirement for life on earth;
- 3. Help students to understand that Native Americans are contemporary people maintaining identity and values in the modern world;
- 4. Develop an awareness of the varied expressions of rain in the art, literature and customs of the native peoples of the Greater Southwest;
- 5. Use culturally specific materials as a vehicle for developing essential skills, especially as they relate to the Arizona Student Assessment Program.

This curriculum is divided into six units that can be used in any order.

Each unit contains:

- 1. **Art Prints** of artifacts in the Heard Museum collection related to rain. While these prints are used for art history and aesthetics lessons, these artifacts are also used to begin lessons in math, science and language skills.
- 2. **Specific cultural information and materials** relating to a particular Native American tribe or nation featured through the art prints. This information includes a map, text from the RAIN exhibit applicable to the people, and other information of special interest to children. This cultural information is the basis for some of the lessons in math, science and language skills.
- 3. **Math lessons** with a special emphasis on measuring and comparing.
- 4. **Science lessons**, usually hands-on or observational units.
- 5. **Language skills**, including reading, listening comprehension, writing, vocabulary and poetry skills.
- 6. **Art projects**

This K-3 curriculum was developed teachers by Arlene Old Elk (Dine') and Jackie Stoklas during a year-long residency at the Heard Museum, made possible by the Lila Wallace-Readers Digest Museum Accessibility Fund. Additional information was developed by the Heard Museum Education Department staff.

Rain

The Southwest United States and Northwest Mexico exist in a rain shadow cast by mountain ranges to the west. Rainfall is light and undependable. There are two rainy seasons: summer and winter. Often, summer rains are brief and highly localized, as clouds suddenly boil up from the south in the afternoon and early evening. Winter storms come from the Pacific Ocean and may arrive in waves, soaking the ground. In higher elevations, the rain becomes snow. In between these two seasons are dry periods, when great care must be taken to ensure life and growth until the next rain.

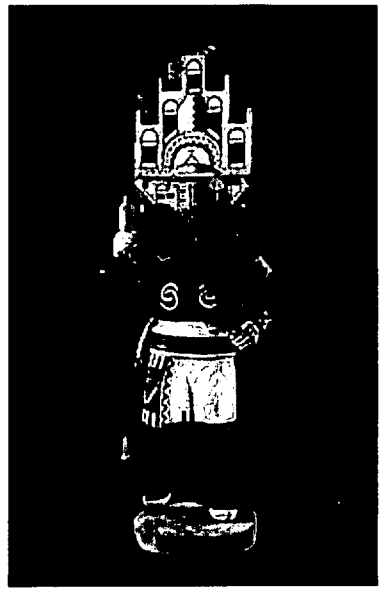
The indigenous people of the Southwest welcome rain into their lives and land, praying for the blessing of rain through a variety of ceremonies and creative expressions. Many expressions of rain and water focus on rain's connection to making life and growth possible. Expressions may be enduring, such as embroidered figures on a ceremonial garment. Some are intended to be temporary, such as body paint on a ceremonial participant or the pigments of a sand painting. Other expressions take the form of music, song, oratory, poetry, and prayer.

For all of the cultures in this exhibit, rain has deep meanings that reflect a culture's unique experience with the universe. This deep spiritual relationship is far from the stereotype of the "Indian Rain Dance", or feeble jokes suggesting a superficial and simplistic magic.

As you look at specific designs or symbols, please remember that they are part of a whole and have meaning as part of that whole. Expressions of rain span centuries. Some of the forms change, but the intent of people to bring the blessings that come from rain into their lives and the world remains unchanged.

ARTS

It Looks Like Spilt Milk



Activity: Students create a class big book or bulletin board.

Focus Activity: Look at the art print Hemis Kachina Doll by Tino Youvella (Hopi). Look at the *kopetsoki*(headpiece). This terraced shape is a cloud: but what else could this shape be?

Outcomes:

1) Students will learn to look at clouds with a creative eye.

2) Students will experience the sight words: *Sometimes it looked like...*

3) Students will experience torn paper lines.

Vocabulary:

- soft, fuzzy, curve

Materials:

- "It Looked Like Spilt Milk", oversized blue paper, glue, several small pieces of white paper to experiment with tearing and shape techniques, copy of the worksheet for each child. **No pencils or scissors.**

Procedure:

1) Read "It Looked Like Spilt Milk" to the class.

2) Demonstrate tearing paper into a shape by holding the paper tight with one hand and tearing with the other. Point out the soft feel of the line.

3) Assure children that they will have plenty of paper to experiment with. (Note: Having pictures, objects or picture dictionaries available will ensure better cloud shapes.)

4) After all students have created cloud forms and chosen their favorite, they need to write the text. Use the worksheet for this purpose. Students might, for example, write: "It looks like a giant golden arches sign over Ronald McDonald's house, but it isn't a giant golden arches sign over Ronald McDonald's house."

5) Assembling the book may be something you or a volunteer can do after class, or it can be a group project. Each student may show his/her picture, read his/her sentence and then glue the work in place while the next child is sharing his/hers with the class.

Assessment:

1) Are the students pointing out interesting formations to each other?

2) Are the students saying the correct words as they "read" their line?

3) Are the students pointing to the words they are saying?

4) Does the illustration match the writing?

5) Has every student torn at least one shape that satisfies him/her?

Extension:

- Once the children feel free to work with the torn paper collage, they can use this technique to illustrate stories or poems, or as a form of free expression. Colored paper, wallpaper, magazine pictures and wrapping paper scraps are all good materials for torn paper collages. A wet paper towel to wipe fingers sticky with glue is also a help.

Sometimes, it looked like a

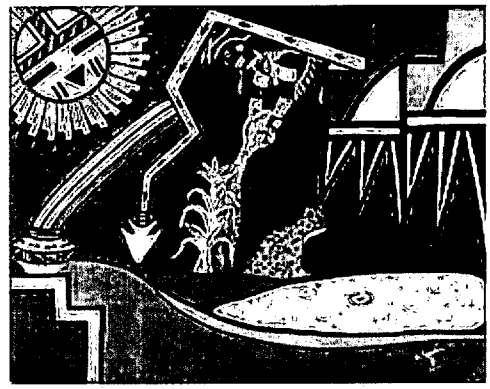
_____,

but it wasn't a _____.

Mosaic Cloud

Activity: Students create a cloud design by using "mosaic" pieces.

Focus Activity: Look at the clouds in Hopi artist Milland Lomakema's "Summer Results." Notice that he has used several shapes of different colors, which fit within each other to portray a cloud.



Outcomes:

- Students will have an understanding of the technique of mosaic work.

Vocabulary: mosaic

Materials:

- glue, scissors, copy of the cloud design for each student, copy of the mosaic pieces for each student

Procedure:

1) If you wish, copy the mosaic design pieces onto colored paper (turquoise and red coral are good choices). If the copies are in color, have students cut out the shapes. If you copy the design pieces on white paper, have the children color the pieces before cutting out the shapes.

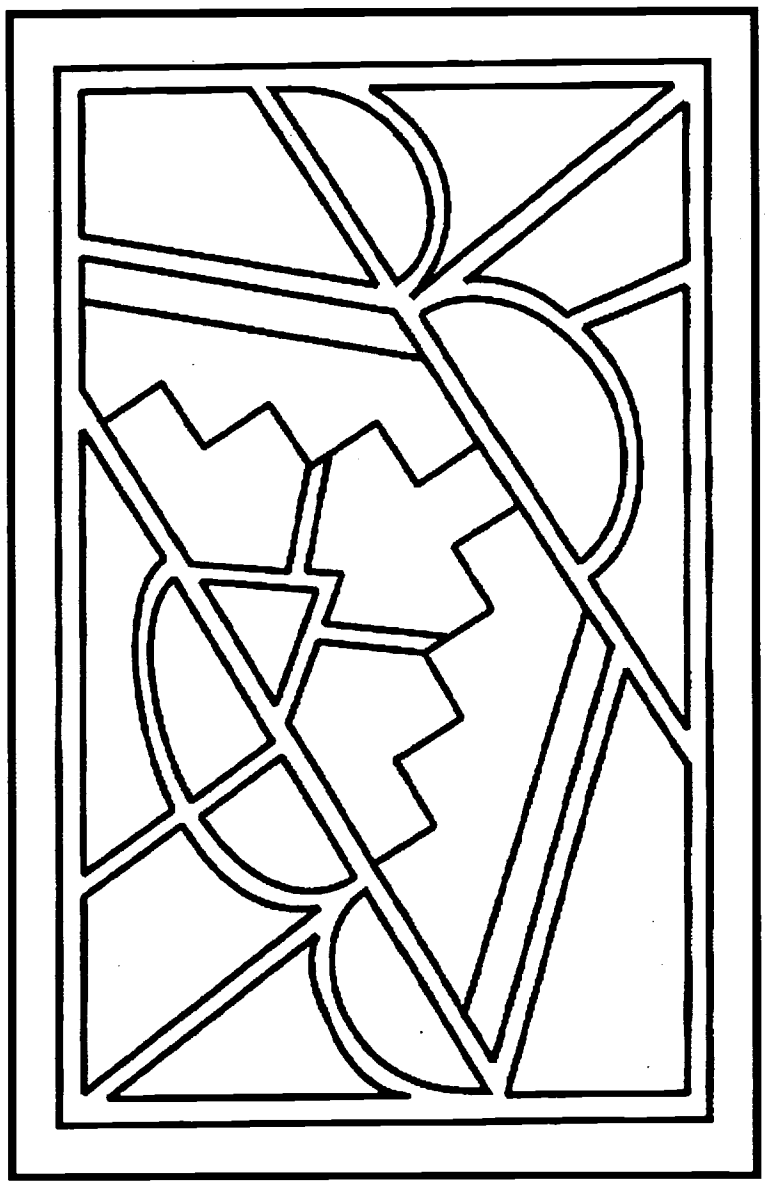
2) Have the children select the "mosaic pieces" they wish to use. Remind the children that each space and piece is unique. They must find which pieces fit correctly into each area of the design.

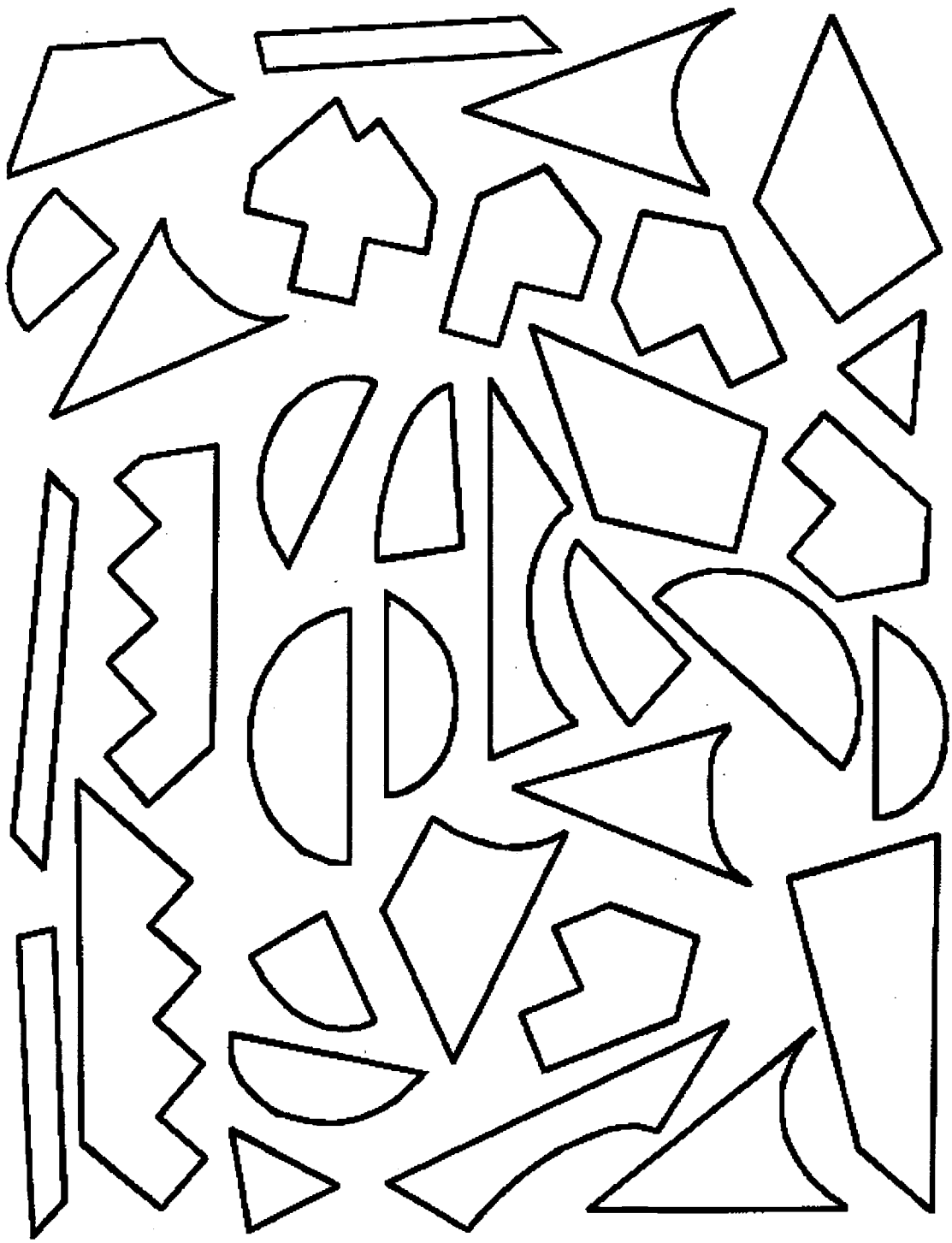
3) After the children have selected their mosaic pieces and placed the pieces on the design to make sure they fit, have children glue the pieces in place.

4) Have a display of the work. make note of the variations in the colors. Remind the students that there is no "right" way to do this exercise. They are creating their work the same way the artist did: by selecting colors that are pleasing to them.

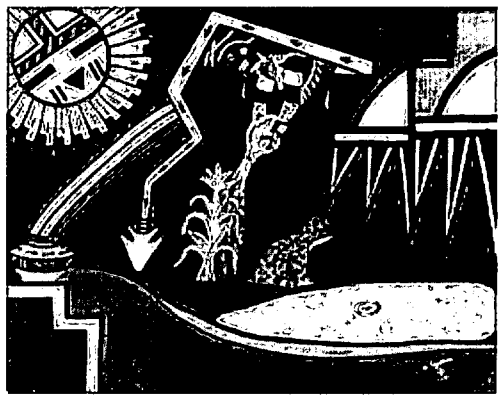
Assessment:

1) Can the children also see the cloud design in the finished work?





Cotton Clouds



Activity: Students make a scene with dimensional clouds.

Focus Activity: Look at the art print "Summer Results" by Milland Lomakema (Hopi). Discuss how the artist has shown the cloud and the rain.

Outcomes:

1) The students will create a scene with clouds.

2) The students will review the different kinds of clouds.

Vocabulary:

- stratus, nimbostratus, cumulus, stratocumulus, cumulonimbus, altostratus, altocumulus, cirrocumulus, cirrostratus, cirrus

Materials:

- Cloud Chart (available from Frank Schaffer Publications, Inc.), cotton balls, glue, crayons, paper

Procedure:

1) Use the pictures from the Cloud Chart to discuss different types of clouds.

2) Children decide to make a scene with one particular type of cloud. Either you can assign cloud types, or allow the children to select. Try to make sure that all types are represented by at least two students.

3) Children draw a scene appropriate for the type of cloud they are representing.

4) Children use the cotton balls to make the clouds in the sky. Work with the students to create the appropriate cloud shape and density.

5) Have a display in your classroom of the students' work.

Clouds

Assessment:

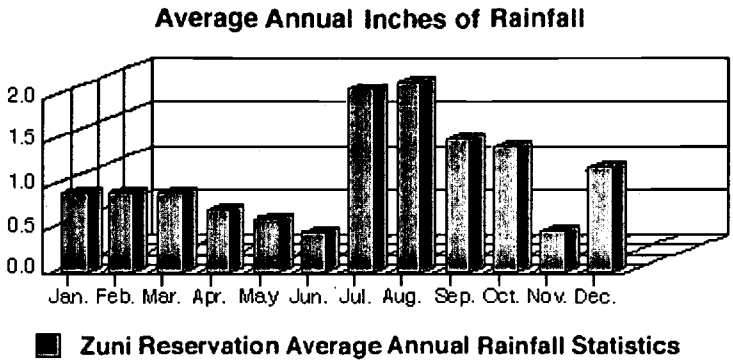
1) Are the students able to recognize and describe different clouds?

2) Are the students able to create an appropriate scene to go with their clouds?

CULTURAL

Rain in Life

Zuni Pueblo is located along the Zuni River in western New Mexico. Although the river is a permanent stream, its flow is very limited in dry seasons. Rainfall at the Pueblo, which can be fairly erratic from year to year, increases as the elevation of the land increases. Most people live at the 6,000 to 7,000 foot level which receives 11 to 16 inches of rainfall annually. Fierce summer storms account for up to half of the precipitation at Zuni Pueblo. Water from these sudden storms runs off quickly, causing occasional flash floods. By contrast, the slow drizzle of winter storms and gradual melting of the snow pack allows rain to soak into the ground.



Rain in Ceremony

In Zuni religion, for each of the six directions there are six *U'wanami* (rain priests or water spirits) who live along the shores of oceans and in springs. When they leave their houses of cumulus clouds, they may take the form of clouds, rainstorms, fog or dew. They have six "spokesmen", who are water-bringing birds. Thunder and lightning are made by their Bow Priests. Frogs are their children.

Zuni people offer song-prayers for rain, the growth of crops and good health to spirit beings who live at the junction of the Zuni and the Little Colorado Rivers, near St. John's, Arizona. When a Zuni person dies, the soul travels to this place to join with the ancestors. These ancestor spirits return to Zuni Pueblo by traveling up the Zuni River in the form of ducks, rain or snow to bring life and guidance to the living. Six important ceremonies occur after the summer solstice and are associated with the need for the summer rainy season to begin and continue.

Expressions of Rain

Expressions of rain are most frequently seen on ceramics and jewelry. Zuni potter Eileen Yatsattie comments:

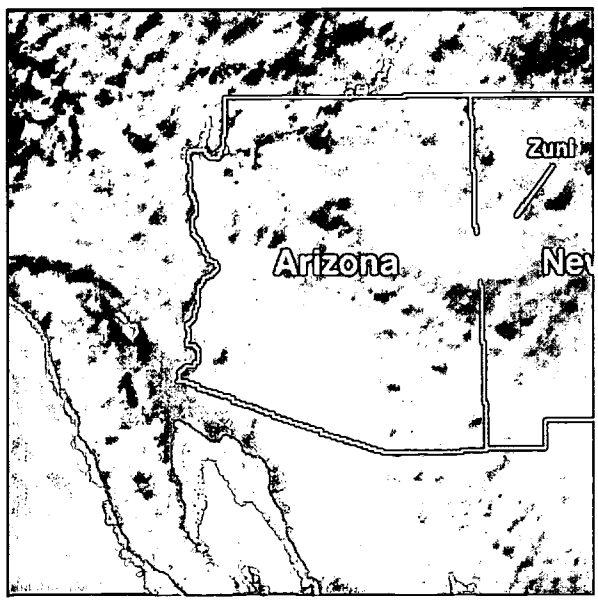
"These crafts that we make are part of prayers for moisture. So these images represent life in Zuni. Without the water, we wouldn't be alive."

Ceramics used in ceremonies have terraced edges that represent clouds and are painted in a distinct style that features animals associated with water. On water jars made for sale or use, abstract designs of rain take meaning from connections to adjoining designs that represent vegetation, thus linking rain to growth, nourishment and a good life.

Zuni lapidary work is a commercial art form that has frequently depicted water animals and, occasionally, symbols associated with the Zuni Gods of War, including rainbow bows and lightning arrows.

The People of the Pueblo of Zuni

Many, many years ago, the *A:shiwi* (*Ahhhh-she-we*, the name the Zuni people call themselves) came up to this earth from the underworld at a place that is identified as either the Grand Canyon or the Mojave Desert. For many generations, the *A:shiwi* wandered throughout the area. Finally, they settled in the place they are now. They call this area the center or middle place.



There is physical evidence of permanent farming villages in the Zuni area from A.D. 700. The Spanish first met the Zuni in A.D. 1540, when they encountered the *A:shiwi* living in six villages. Village homes were in use during the winter, but in the summer the *A:shiwi* lived closer to their fields in one of the many communities scattered over a 20 mile radius from the villages. In recent times, the *A:shiwi* have abandoned all but one village, Halona:wa, on the Zuni River near the center of the reservation.

A:shiwi lives revolve around the annual cycle of religious ceremonies and the network of obligations to families and religious observances. Community life and well-being is of primary importance.

The *A:shiwi* have always enjoyed peaceful relations with their Puebloan neighbors, including the Hopi, Acoma and other peoples of the Rio Grande area. All of these indigenous peoples were labeled "Pueblo Indians" by the Spanish, who discovered them living in towns or villages. Although the villages and life ways may appear similar, each pueblo is distinctly different from every other pueblo. In addition, the *A:shiwi* speak a language that is unique and not related to any other language. The name "Zuni" comes from a word used by their neighbors in Acoma Pueblo to refer to the *A:shiwi*.

Zuni Beliefs

Zuni Beliefs link the *A:shiwi* to the Earth

The three most powerful supernatural beings are Earth Mother, Sun Father and Moonlight-Giving Mother. Sunlight is recognized as vital for life, and the word for "daylight" and "life" are the same word in the Zuni language. Sunrise is a special and very sacred time.

For the *A:shiwi*, there are six directions: North, South, East, West, Above and Below. Because of the extra two directions, there is also the "middle", which is the connecting point.

In addition to ceremonies honoring and thanking supernatural beings and natural forces for health and well-being, there are rituals to mark important times in each person's life including birth, coming of age, marriage and death.

A woman's mother assists with the birth of a child, but the father's mother is the first to visit and to pray for the child's well-being. For eight days, the mother and child rest and are taken care of by the father's mother. On the morning of the eighth day, as the sun rises, the child is bathed, given cornmeal and taken out to meet the rising sun by the paternal grandmother. It is the father's mother who names the baby. Children are sometimes named after a relative who has had a long and happy life.

When a girl is ready to become a woman, she goes to the home of her father's mother to grind corn all day long. Because corn is a sacred food, given to the *A:shiwi* by the six corn maidens, the preparation and use of corn is very important. A girl therefore shows that she is ready to take part in the important ceremonies of her pueblo by preparing cornmeal.

When boys are ready to become men, the parents select a spiritual "father" who instructs and guides the young boy through the ceremony. Boys are initiated into one of many societies and learn to assume the religious and secular or political duties associated with that society.

Marriage ceremonies are not a single event but rather a series of steps that end with the joining of two people and their families. Exchanges of gifts and food are important, and the final act is for the groom to arrive at the home of his bride to share the evening meal with her family.

When a person dies, it is the responsibility of the father's sister to prepare the body for burial. New clothes are put on the deceased, but the clothes are torn or slashed so that they, too, are no longer of this world. Often, items are placed with the body to assist the person in the next life. What the deceased does not take is frequently destroyed. The brothers of the person who died are responsible for burying the body. All relatives mourn for four days, since it is believed that the soul must journey four days to reach the afterlife.

A:shiwi recognize many relatives. Closest to an individual is the immediate family and all those related by blood. The associations are then extended to all clan relatives, who are families related thorough traditional histories. Finally, each person is related to many people through religious ties. Each *A:shiwi* person is supported and helped by a large network of these relatives and must, in turn, assist and support many people.

A:shiwi Food

In the past, *A:shiwi* men were farmers. They prepared the fields, planted the seed and harvested the crops. Corn was, and still is, the most important crop.

Rainfall is the major concern for farmers at the Pueblo of Zuni. The only sources of running water are the Zuni River, which is small, and some natural springs. The people built dams to collect and divert this water and the run-off from storms to water the fields. They were so successful that, in the past, it was not unusual for the *A:shiwi* to produce enough surplus corn to last for two years.

In addition to farming, the men also hunted for deer, rabbit, birds and other animals. Women did some farming too, closer to home. *A:shiwi* women planted "waffle gardens" to grow chilies, herbs, spices and vegetables. The name comes from the way the gardens look: low mounds of dirt are piled up in a grid pattern to retain water, making the garden look like a waffle.

In addition to gardening, *A:shiwi* women are responsible for all the preparations of food, especially the corn dishes that are so essential to ceremonies.

A:shiwi Pottery

The *A:shiwi* have been making pottery for a long, long time. Many of the old ways and new ways are the same.

Potters use local clay to make pottery, and they prepare the clay by grinding, sifting and mixing with water. Pots are made by building up coils of clay and smoothing the surface with a scraper.

A slip, or thin layer of clay, is applied to the smooth surface of the pot. Then the pot is polished with a stone. The design is painted with a commercial brush, although some potters may still use the old-style yucca brush.

Sheep dung is used to fire the pottery. The kilns or ovens used by the Zuni people has remained the same for thousands of years.

In the past, primarily women were potters. Today, some women still learn to make pottery from their mothers and grandmothers, while others learn by taking pottery-making classes at the school. Today, men are an important force in pottery-making too. There are currently more *A:shiwi* men maing pottery than women.

The *A:shiwi* use several designs on pottery that are characteristic of the Pueblo. One is a deer. Deer are often associated with water containers. *A:shiwi* women say that they paint deer so their husbands will have success in hunting. The deer has an arrow drawn from the mouth into the body, which is called a "heart line". Potters know that it is important to leave a white space between the red heart line and the rest of the deer. The white space is the entrance for the breath of life.

The deer is often placed under an arch. This design is called "deer in his house".

A:shiwi potters often draw birds on water jars. Since birds live near water, *A:shiwi* potters say, the jar will never be empty. Birds are sometimes placed "in a house" as well.

A:shiwi Jewelry

The *A:shiwi* are recognized as fine jewelers. They have been making jewelry for thousands of years using the old ways and materials. Today, artists have introduced many new ideas, new materials and new ways into this art.

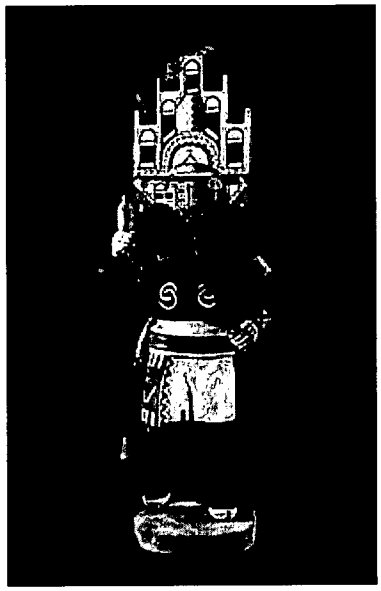
In the past, jewelry was primarily made from turquoise, coral, shell and jet. Today, silver, as well as precious and semi-precious stones, are also used.

A pump-drill was used to make holes. Beads were smoothed and rounded using sand and stones. Now, jewelers use power tools for shaping, drilling and polishing.

Most of the jewelry-making in the past was probably done by men. But today, both *A:shiwi* men and women make jewelry, and it is a family business.

LANGUAGE

Terraced Cloud Poem



Activity: Students will write a poem.

Focus Activity:

Look at the art print of the *Hemis* Kachina Doll by Tino Youvella (Hopi). Look closely at the *kopetsoki* or headdress. This is a terraced cloud. When large clouds pile up like this in the sky, people can look forward to rain. Notice that the terraced cloud can also be seen on the kilt.

Materials:

scrap paper, pencils, copy of the terraced cloud worksheet in English for each student

Vocabulary:

adverb

Procedure:

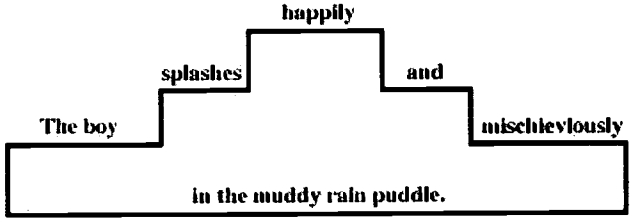
1. Select a subject for the poem. The subject in the example given here is "boy".

2. Create a list of verbs or actions that the subject does.

3. Create a list of adverbs describing the actions of the subject.

4. Create a list of locations where these actions might take place.

5. Together as a class, select one verb, two adverbs and one location. Write the words on the "Terraced Cloud" form as shown below.



6. Now ask the students to create a poem of their own. Using scrap paper, have each student create the subject, verb, adverb and location lists.

7. Ask students to select one verb, two adverbs and one location. Tell them to write the words on the "Terraced Cloud" worksheet in the correct places.

Assessment:

- Do the children generate nouns, verbs, adverbs and phrases?
- Do the poems fit a feeling, mood or picture?

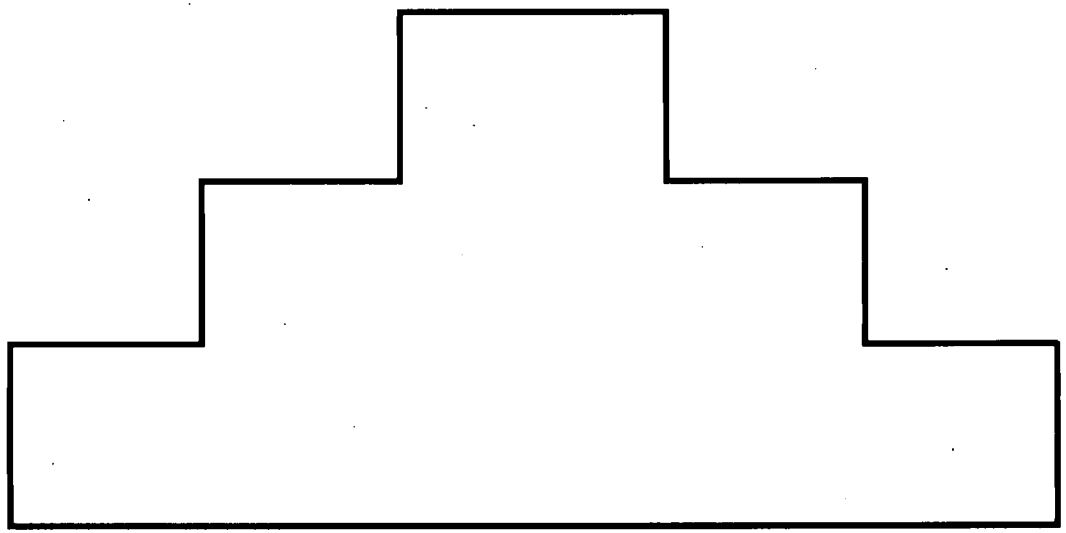
Extension:

- Students could cut out their poems and post them on a bulletin board to create a pattern.

Name _____ **Date** _____

_____

(Title)



Comparison Poem

Activity: Students will write a poem connecting attributes of a cloud with a dissimilar object having some of the same attributes.

Focus Activity: Look at the art print of the Contemporary Water Jar by Zuni artists Josephine Nahohai, Randy Nahohai and Milford Nahohai. Remind the children that the cloud on the pot is filled with rain: the thin, parallel lines represent rain. Discuss with the children how the artists have made us think about how much rain is in the cloud and how it would fall to the earth in a storm.

Materials:

- pencils, paper

Outcomes:

1. Students will focus on the attributes of a specific cloud.

2. Students will use divergent thinking skills.

Vocabulary:

- attribute

Procedure:

1. Begin by discussing clouds. Use images from this presentation, illustrations in books or images from magazines.

2. As a class, begin by deciding on a color for your cloud. Write the color of the cloud on the board.

3. Ask students to name things that are the same color as your cloud. Ask them to be specific: do they mean *new paper* white or *old baseball shoe* white?

4. Ask the class: "If a cloud had a taste, what would it taste like? How would it smell? Or sound?" Repeat the procedure used above.

5. When all of the lists are completed, choose the favorite from each column and write the poem in the following way:

- **Clouds**
  - **look toothpaste white,**
  - **feel baby bunny soft,**
  - **sound butterfly quiet,**

6. End with a last line that is a statement or a question. For example, end this poem with:

But they're too far away!

7. Have students write their own poem. Encourage them to choose items with the same attributes that are most unlike clouds.

Assessment:

- Are the students creating pictures with words?
- Do the poems share feelings and moods?
- Did students select items with the same attributes as clouds?

"Thank you" Hero Twins

Activity: Students write a "thank you" letter to the Hero twins fro slaying the monster.

Focus Activity: Look at the art prints showing the pottery from the Pueblo of Zuni: the Terraced Bowl by Myra Eraicho; the Contemporary Water Jar by Josephine Nahohai, Randy Nahohai and Milland Nahohai; and the older Water Jar by an unknown Hopi artist. Review the designs that refer to rain and clouds. Discuss how important rain is for the Zuni people.

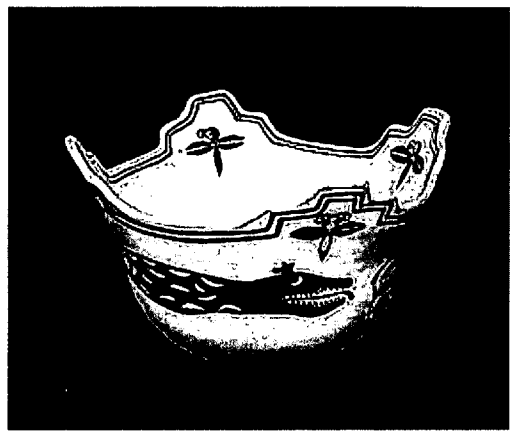
Outcomes:

1. Students will practice listening and memory skills.

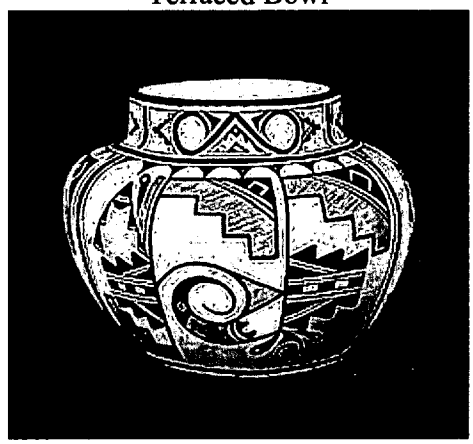
2. Students will practice writing a letter.

Materials:

- "The Cloud Swallower", pencils, paper



Terraced Bowl



Contemporary Water Jar

older Water Jar

Procedure:

1. Read the story "The Cloud Swallower" to the class and ask the students to just listen to the story.

2. Read the story a second time.

3. Ask the students to write down some of the events they recall from the story that deserve a "thank you". Either review the list of events as a group, or have the children work in pairs to review it.

4. Have the children write a letter to the Hero Twins, saying "thank you" and telling the Twins why people are so grateful to them.

Assessment:

- Were the children able to order the events of the story?
- Did the children help each other remember the events and the order?

Extension:

- As an art project, students might illustrate this story.

The Cloud Swallower

*A Zuni Legend**

Once upon a time there was a terrible giant who lived on top of a cliff near Canyon de Chelly. He liked to eat people, and when he was thirsty he took the clouds from the sky and put them in his mouth. Since he was swallowing the clouds, the snow stopped falling, the rain stopped falling, the mist above the mountains disappeared and the springs started drying up. After a while the crops were dying, and some of the very old and very young people were dying of hunger and thirst. Many brave men from the village tried to kill the giant, but they were thrown off the cliff or were eaten up by the giant. The people in the village were very sad. They did not know what to do.

The Hero twins who lived in the village wanted to help, so one day they set out to find the giant. On the way they met Grandmother Spider.

"Hello, Grandmother Spider", said the Hero Twins.

"Hello grandchildren", replied Grandmother Spider. "Where are you going?"

The Hero Twins said: "We are going to find the giant and kill him, because he is swallowing all the clouds and now there is no more rain. Some of our village people are dying."

Grandmother Spider was happy to hear that the Hero Twins wanted to help. She said: "I will tell you a secret. The giant pretends to be asleep and when you go near him, he will grab you and toss you off the canyon or eat you up."

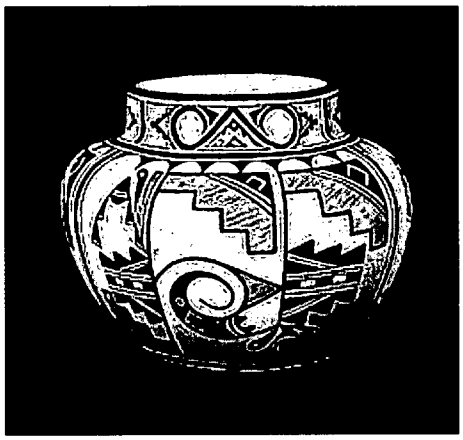
Grandmother Spider thought for awhile, then she said: "I have a plan! Wait here and then follow me." Grandmother Spider left on the trail to the home of the giant. When she got there, the giant was pretending to be asleep. Grandmother Spider was so small that the giant did not see her. She quietly climbed on a rock and let herself down on a strand of her web. She landed on his forehead and quickly wove her web across his eyes so that he could not open them.

The Hero Twins carried their clubs and sang war songs on the way to the home of the giant. When they arrived, they decided to split up. One of the Hero Twins struck the giant in the head with a club. The other Twin struck the giant in the stomach. The giant tried to get up and see who was hitting him but he could not see anything at all. The Hero Twins kept hitting him until they killed him. Then they threw him off the cliff into the canyon.

The people in the village were very happy that the Hero twins had killed the giant. Now the clouds are able to pass through the mountains, the snow returned, the rains came and the springs flowed once more. The crops gave everyone plenty of food at harvest time and the people in the village had plenty to eat. They always give thanks for the rain.

*retold by Jacklyn Stoklas

Parts Make the Whole



Activity:

Students will practice dividing words into syllables.

Focus Activity:

Look at the images of the pots from Zuni Pueblo. One is an old Contemporary Water Jar by Josephine Nahohai, Randy Nahohai and Milford Nahohai (Zuni). Have the students look closely at the way the artists have divided the surface of the water jar to create the design. The neck area, for example, is set off by a line. Then the body of the pot has been sectioned off as well. When finished, however, all the sections work together to make the pot.

Materials:

- copy of the worksheet for each student, pencils, dictionary (optional)

Outcomes:

1. Students will review the rules and practice dividing words into syllables.

Vocabulary:

- syllable
- vowel
- consonant
- prefix
- suffix

Procedure:

1. Review with students the rules and practice of dividing words into syllables.

   Rule #1: When a word has a prefix or a suffix, the word is divided between the prefix or the suffix and the root word.

Rule #2: When two vowels are together in a word and have separate sounds, the word is divided between the vowels.

Rule #3: When a vowel is sounded alone in a word, it is a syllable by itself.

Rule #4: When two consonants come between two vowels in a word, it is usually divided between the two consonants.

2. Give each student a copy of the worksheet.

3. Have students complete the work on their own.

4. Have children check their work, using a dictionary (optional).

Assessment:

Were the students able to divide the words into syllables correctly?

Name_____ Date_____

A single sound that forms a word or a part of a word is called a *syllable*. Use a hyphen to divide the following words into syllables.

Unhappy _____

Prepay _____

Science _____

Arguing _____

Goodness _____

Decimals _____

Population _____

Automobile _____

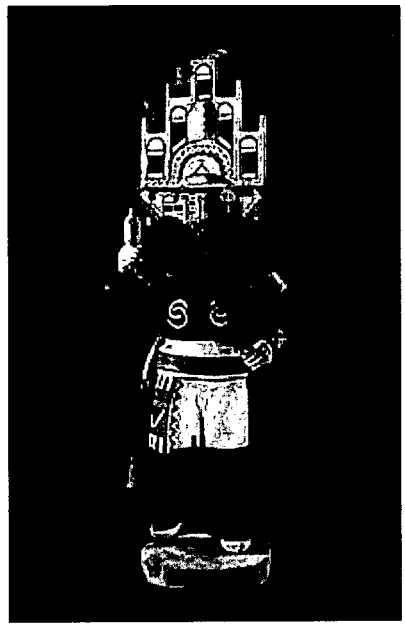
Director _____

Paragraph _____

Illustration _____

MATH

Bean Around?



Activity: Students will estimate the number of dried beans needed to make a rain symbol, and find the difference between their estimate and the actual number of rocks needed.

Focus Activity: Look at the art prints featuring the Hemis Kachina Doll by Tino Youvella, "Summer Results" by Milland Lomakema and all three of the Zuni Jars. Review with the students the designs referring to clouds. As students isolate each element, draw that design on the board to emphasize the shapes.

Outcomes:

1. Students will gain experience in number skills.

2. Students will understand the concept perimeter.

Vocabulary: perimeter, estimate, actual, difference, shape

Materials: Copy of one of the cloud shapes (Terraced cloud, Pueblo cloud, Zuni cloud, Hopi cloud) for each student, copy of the worksheet for each student, dried beans, cloud shapes in color for display

Procedure:

1. Explain the concept of perimeter to students by showing them the perimeter of familiar objects (a desk, the door, their classroom).

2. Tell students that they are going to make the perimeter of the symbols using beans. Give each student a page with a cloud symbol and a small pile of dried beans. Then:

   a. Students estimate how many beans they will need to go around the perimeter of their design.

   b. Students count out the number of beans they have estimated that they will need.

   c. Students put beans around the perimeter of their cloud design.

d. Using the worksheet, students compare their estimate to the actual number. Did they need to get more? How many? Did they have too many? How many?

3. Students can write the number sentence and a strategy for future estimating.

4. Students then exchange their design for another design and repeat the exercise.

Assessment:

1. Did students' estimates improve from the first attempt to future attempts?

2. Were students able to develop a strategy for future estimating activities?

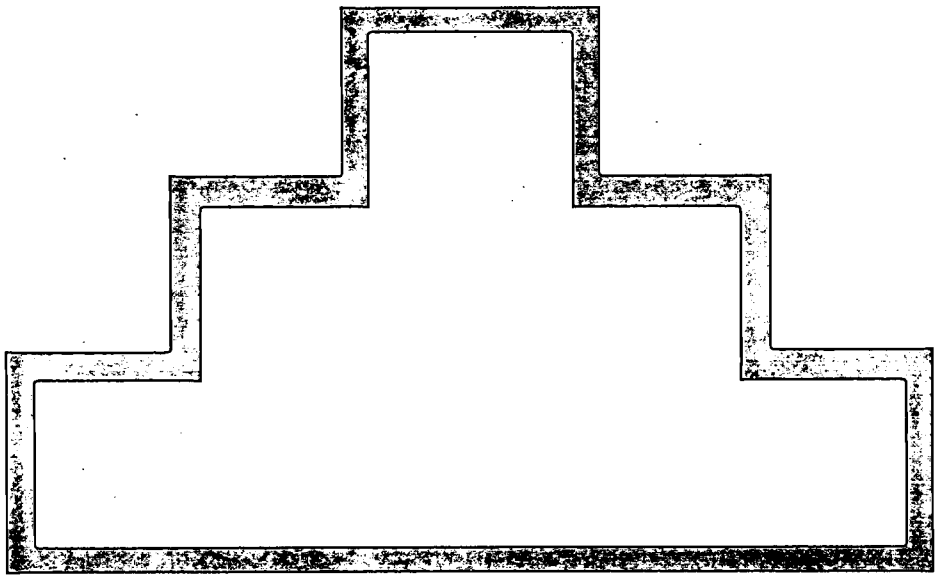
3. Did students use appropriate vocabulary when discussing their work?

Extension:

1. Students could participate in cooperative learning groups to work with larger figures.

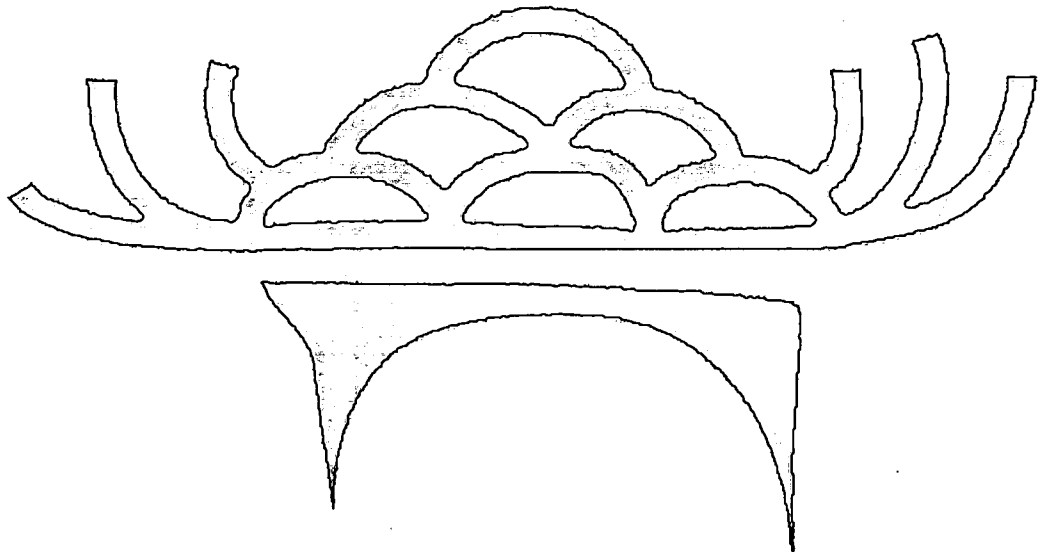
Terraced Cloud

This shape is used by Pueblo peope as a symbol of rain.



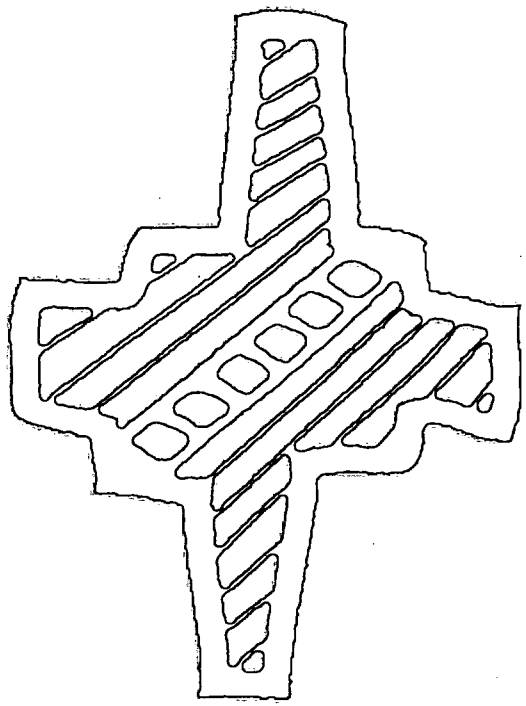
Pueblo Cloud

This cloud looks much like cumulus clouds.
The arch below represents rain in the distance.



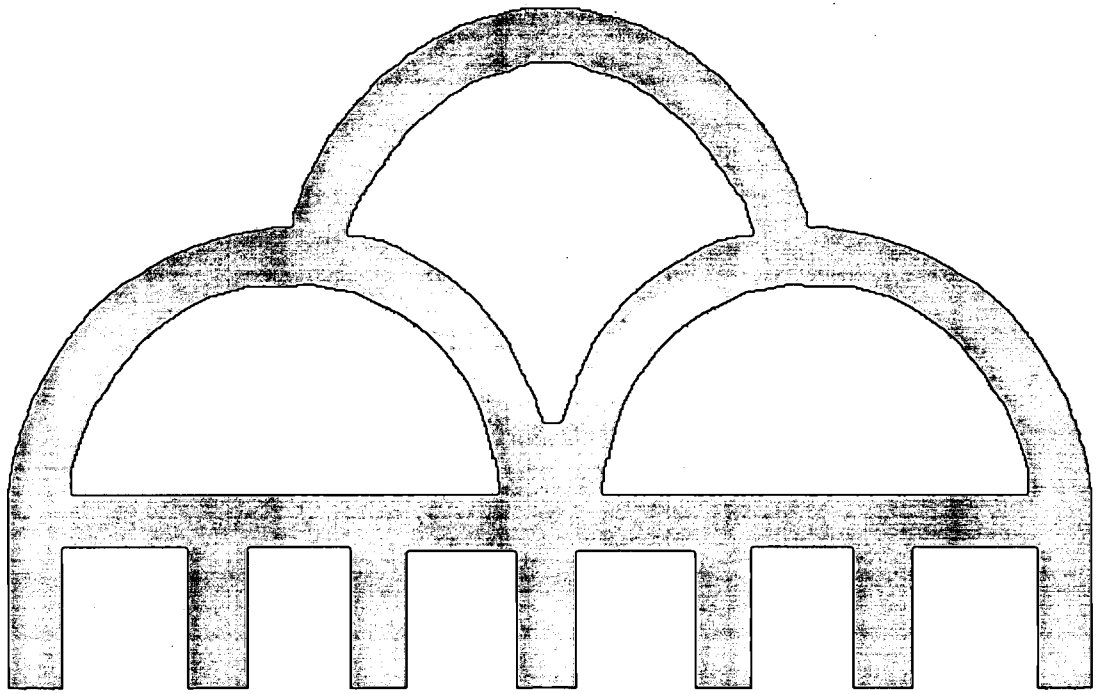
Zuni Cloud

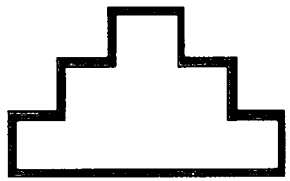
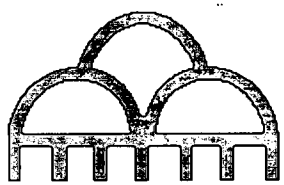
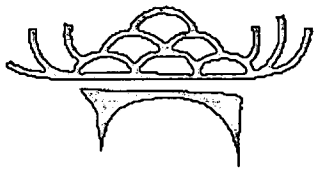
This cloud symbol has the parallel lines that represent rain.
The band through the middle is the Milky Way.



Hopi Cloud

The billowing clouds are on top and
the lines below represent rain falling.

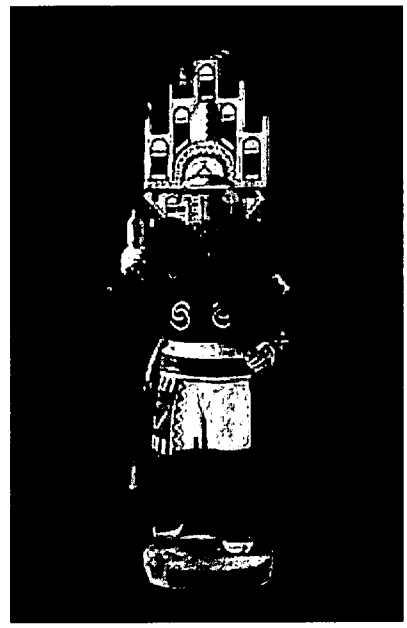


Symbol	Estimate	Did you need...	The difference is...
		More? _____ Less? _____	
		More? _____ Less? _____	
		More? _____ Less? _____	
		More? _____ Less? _____	

Predicting Spinning Clouds

Activity: Using the spinner, students determine the probability of landing on one of three cloud symbols.

Focus Activity: Look at the art prints Hemis Kachina Doll by Tino Youvella and Terraced Bowl by Myra Eriacho. Emphasize that both the Hopi and Zuni artists have used a stepped cloud design to refer to clouds and rain. Then, look carefully at the old Water Jar from Zuni, made in the 1800s. Look at the top cross design that shows a cloud. These designs are two of the three images that students will be working with in this section.



Outcomes:

1. Students will experience probability with an even probability for each outcome, but with three possible outcomes.

Vocabulary: sometimes, never, always, probability, outcome

Materials: spinner for each pair of children, copy of "Predicting Clouds" worksheet for each pair of students, pencils

Procedure:

1. First, each team predicts how many times the spinner will land on each of three different cloud designs. Remind the students that the total must add up to ten.

2. Taking turns, each student in the team spins the spinner. The other student marks the box where the spinner lands. In each vertical row, only one box is marked.

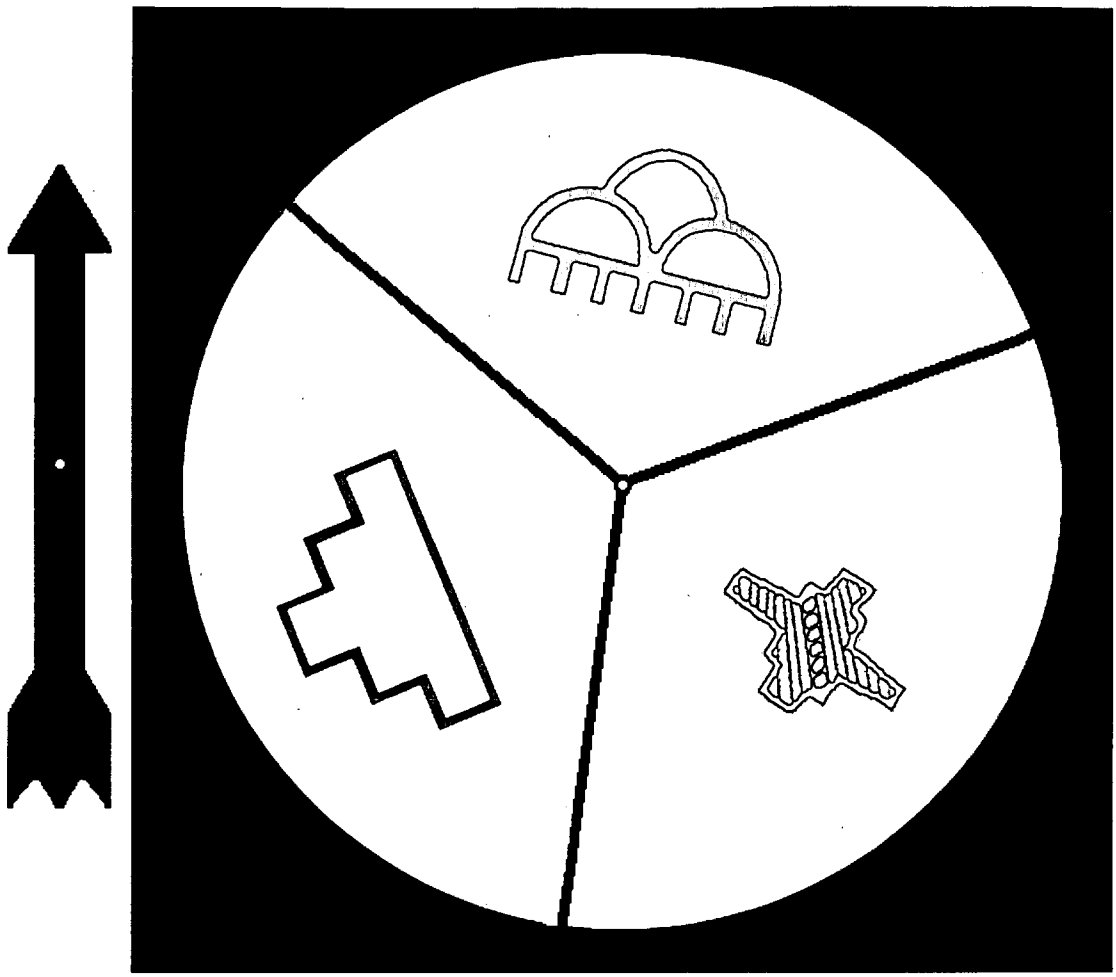
3. At the end of ten spins, students add up the number of times each cloud design was selected. The total will again be ten.

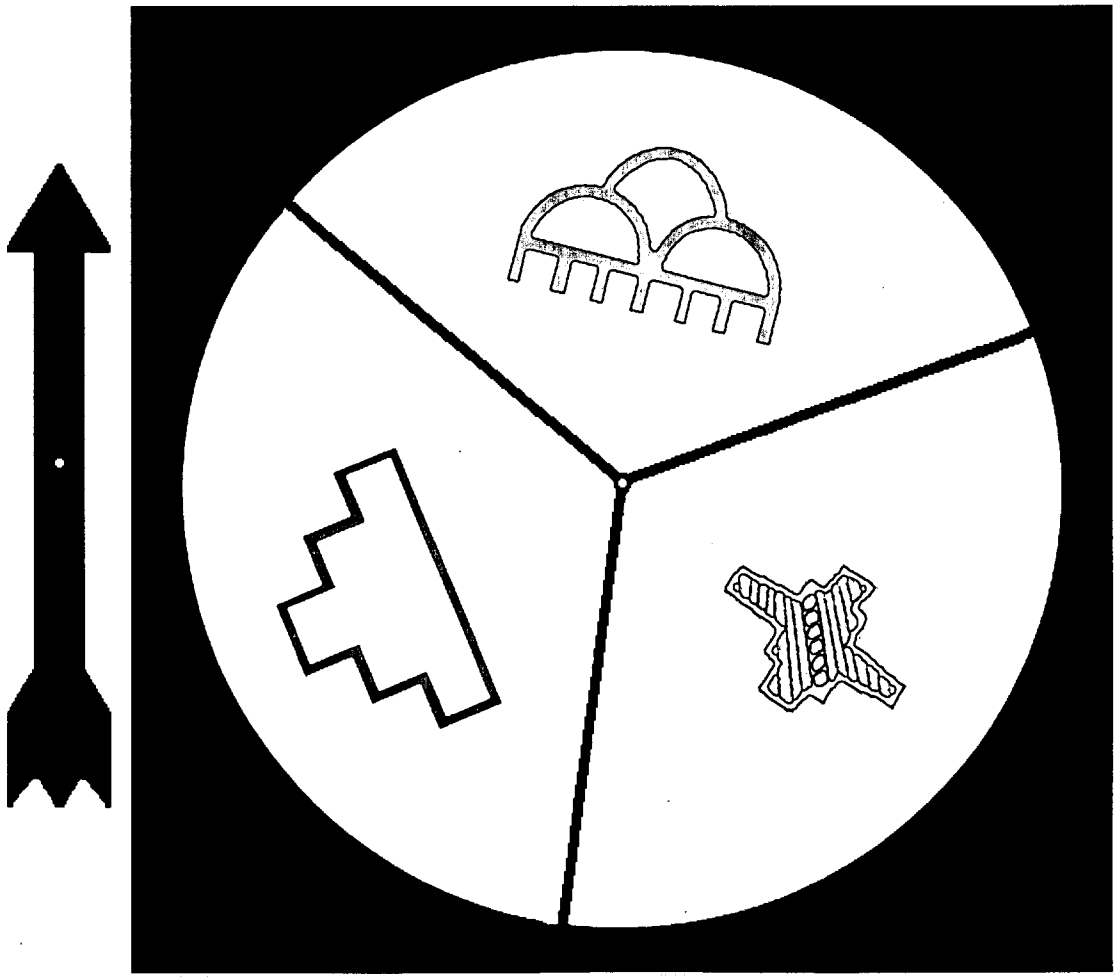
4. Students complete the worksheet.

Assessment:

1. Did student predictions demonstrate an even probability among the three possible outcomes?

2. Were students able to use their data to form a probability statement?

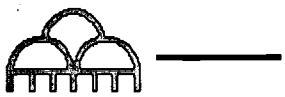
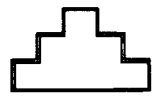


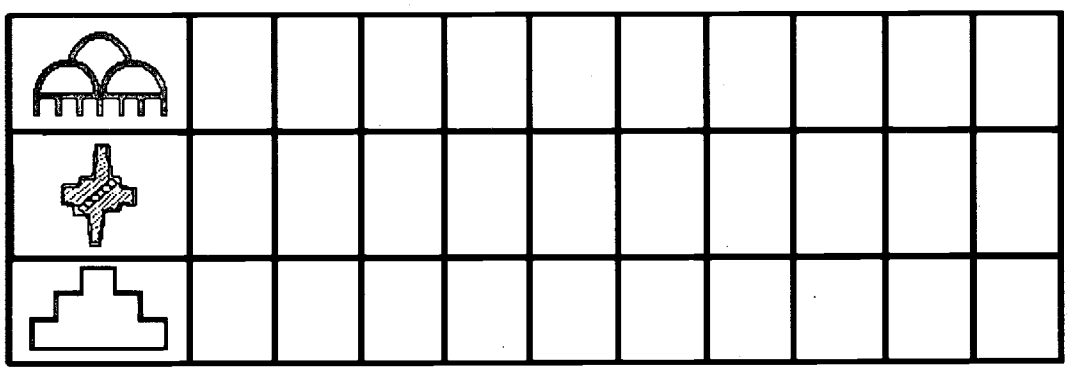


Name_____ Date_____

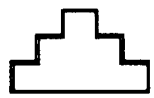
Predicting Clouds

If you take 10 turns, how many times will you get each cloud?

 _____  _____  _____



How many times did you get each cloud?

 _____  _____  _____

Write a number sentence to show the difference.

_____

What happened sometimes?

_____

_____

What always happened?

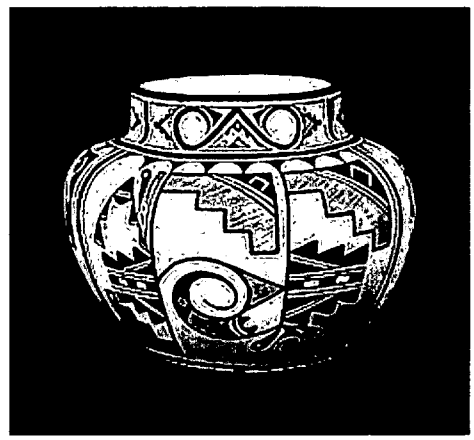
_____

What never happened?

_____

Write what you learned on the back of this paper.

Graphing Perimeters



Activity: Students find coordinates on graph paper to draw clouds and rain designs.

Focus Activity: Look at the art print of the Contemporary Water Jar by Josephine Nahohai, Randy Nahohai and Milford Nahohai. Look closely at the stepped or terraced cloud shapes in the center area of the jar. Discuss how the viewer can see the shape as the white shape -- or as the filled-in shape. Think about drawing the black line that defines the shape: look at how straight the lines are; how even the segments are; and how the points match.

Outcomes:

1. Students will gain the skills of locating points on a grid.

2. Students will work with the concept of perimeter.

Vocabulary: grid, perimeter

Materials: Copy of grid worksheet for each student, a copy of one of the design directions (Clouds, Terraced Clouds, Lightning, Dine' Storm Pattern) for each student, pencils

Procedure:

1. Discuss with students how to find points on a grid.

2. Explain to students that by following the directions, they will reveal a design on their grid. Have students all work on one design you have selected.

3. Have students assist each other, so that each person has a finished design.

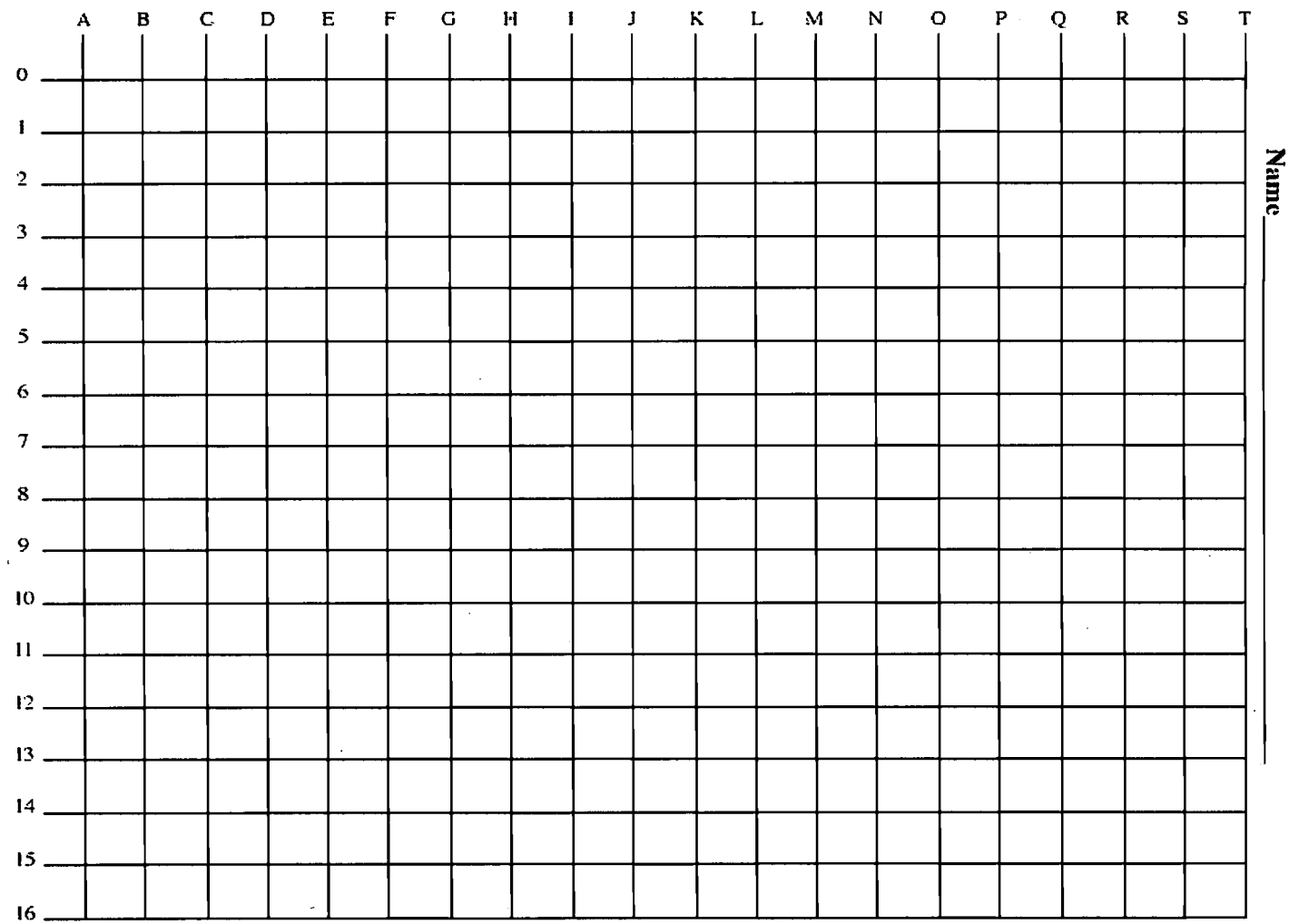
4. On each of the following three days, have students work with a different design. You will need additional designs for each day.

Assessment:

1. Did the exercise become easier each time the students worked with a new design?

Extension:

1. Have students draw a picture on grid paper. Then, have them write the directions to create the design. Have each student give the design to another student and have that student draw the design.



Use this paper to find the points and draw the lines. When you have finished, you will have a special design!

Clouds

Use the grid paper to make a cloud design. Draw the lines to connect these points:

Draw a line from 1F to 1L.
Draw a line from 1L to 4I.
Draw a line from 4I to 1F.

And

Draw a line from 4F to 4L.
Draw a line from 4L to 7I.
Draw a line from 7I to 4F.

Then

Draw a line from 7F to 7L.
Draw a line from 7L to 10I.
Draw a line from 10I to 7F.

Finally...

Draw a line from 10F to 10L.
Draw a line from 10L to 13I.
Draw a line from 13I to 10F.

Congratulations! You did it! How many clouds are there?

Terraced Clouds

Use the grid paper to make a terraced cloud design. Draw the lines to connect these points:

Draw a line from 1B to 3B.
Draw a line from 3B to 3D.
Draw a line from 3D to 5D.
Draw a line from 5D to 5F.

And

Draw a line from 5F to 7F.
Draw a line from 7F to 7H.
Draw a line from 7H to 9H.
Draw a line from 9H to 9J.

And

Draw a line from 9J to 7J.
Draw a line from 7J to 7L.
Draw a line from 7L to 5L.
Draw a line from 5L to 5N.

And

Draw a line from 5N to 3N.
Draw a line from 3N to 3P.
Draw a line from 3P to 1P.
Draw a line from 1P to 1B.

Good for you! You did it!

Can you find at least one terraced cloud on each of the six art prints?

Lightning

Use the grid paper to make a lightning design. Draw the lines to connect these points:

Draw a line from 13A to 13D.
Draw a line from 13D to 11D.
Draw a line from 11D to 11F.
Draw a line from 11F to 9F.

And

Draw a line from 9F to 9H.
Draw a line from 9H to 7H.
Draw a line from 7H to 7J.
Draw a line from 7J to 5J.

And

Draw a line from 5J to 5L.
Draw a line from 5L to 3L.
Draw a line from 3L to 3N.
Draw a line from 3N to 1N.

And

Draw a line from 1N to 1P.
Draw a line from 1P to 0P. (This point is zero-P).
Draw a line from 0P to 0M. (This point is zero-M).

WOW! Now...

Draw a line from 13A to 12A.
Draw a line from 12A to 12C.
Draw a line from 12C to 10C.
Draw a line from 10C to 10E.

And

Draw a line from 10E to 8E.
Draw a line from 8E to 8G.
Draw a line from 8G to 6G.
Draw a line from 6G to 6I.

And

Draw a line from 6I to 4I.
Draw a line from 4I to 4K.
Draw a line from 4K to 2K.
Draw a line from 2K to 2M.

AND!!
Draw a line from 2M to 0M. (This point is zero-M).

Good for you! You did it!

Can you see the lightning?

Dine' Storm Pattern

Use the grid paper to make a storm pattern design. Draw the lines to connect these points:

Draw a line from 8G to 8L.
Draw a line from 8L to 5L.
Draw a line from 5L to 5G.
Draw a line from 5G to 8G.

Then

Draw a line from 13B to 12B.
Draw a line from 12B to 12D.
Draw a line from 12D to 10D.
Draw a line from 10D to 10F.

And

Draw a line from 10F to 8F.
Draw a line from 8F to 8G.

Then

Draw a line from 0B (Zero-B) to 1B.
Draw a line from 1B to 1D.
Draw a line from 1D to 3D.
Draw a line from 3D to 3F.

And

Draw a line from 3F to 5F.
Draw a line from 5F to 5G.

OK! Now...

Draw a line from 13Q to 12Q.
Draw a line from 12Q to 12O.
Draw a line from 12O to 10O. (This is ten-letter O).
Draw a line from 10O to 10M.

And

Draw a line from 10M to 8M.
Draw a line from 8M to 8L.

Finally...

Draw a line from 0Q (zero-Q) to 1Q.
Draw a line from 1Q to 1O. (This is one-letter O).
Draw a line from 1O to 3O.
Draw a line from 3O to 3M.

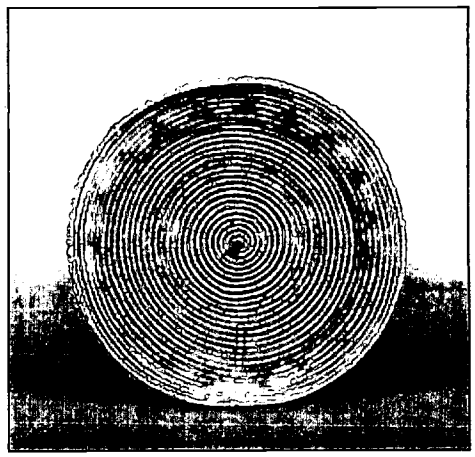
And

Draw a line from 3M to 5M.
Draw a line from 5M to 5L.

Good for you! You did it!

Match and Count

Activity: Students play a game of concentration with cloud designs, and then add up the results.



Focus Activity: Look at the Diné Ceremonial Basket. Focus on the terraced cloud shapes. Ask the children to count the number of black clouds in the basket. Then count the number of tan (natural fiber colored) terraced shapes. Have the students examine "Summer Results" by Milland Lomakema (Hopi). How many cloud shapes can they identify?

Outcomes:

1. Students will be gain experience in visual memory skills.

2. Students will gain experience in addition.

Materials: Set of cards (These can be output on an 11" X 14" color printer).

Procedure:

1. Have the students place one deck of cards face down on a surface. The cards should be placed individually in neat rows of eight cards each.

2. The first student turns over two cards: if the design and color match, the player keeps the pair and tries again. If the cards do not match in design and color, the player turns them back face down, and it is the next player's turn.

3. This game, also known as "Concentration", can be played by three or four children at one time

4. After all of the cards have been picked up in pairs, the children can:

   A. Count their cards; or

   B. Count their points (2 points for a green pair, 3 points for a blue pair, 4 points for a red pair.)

Assessment:

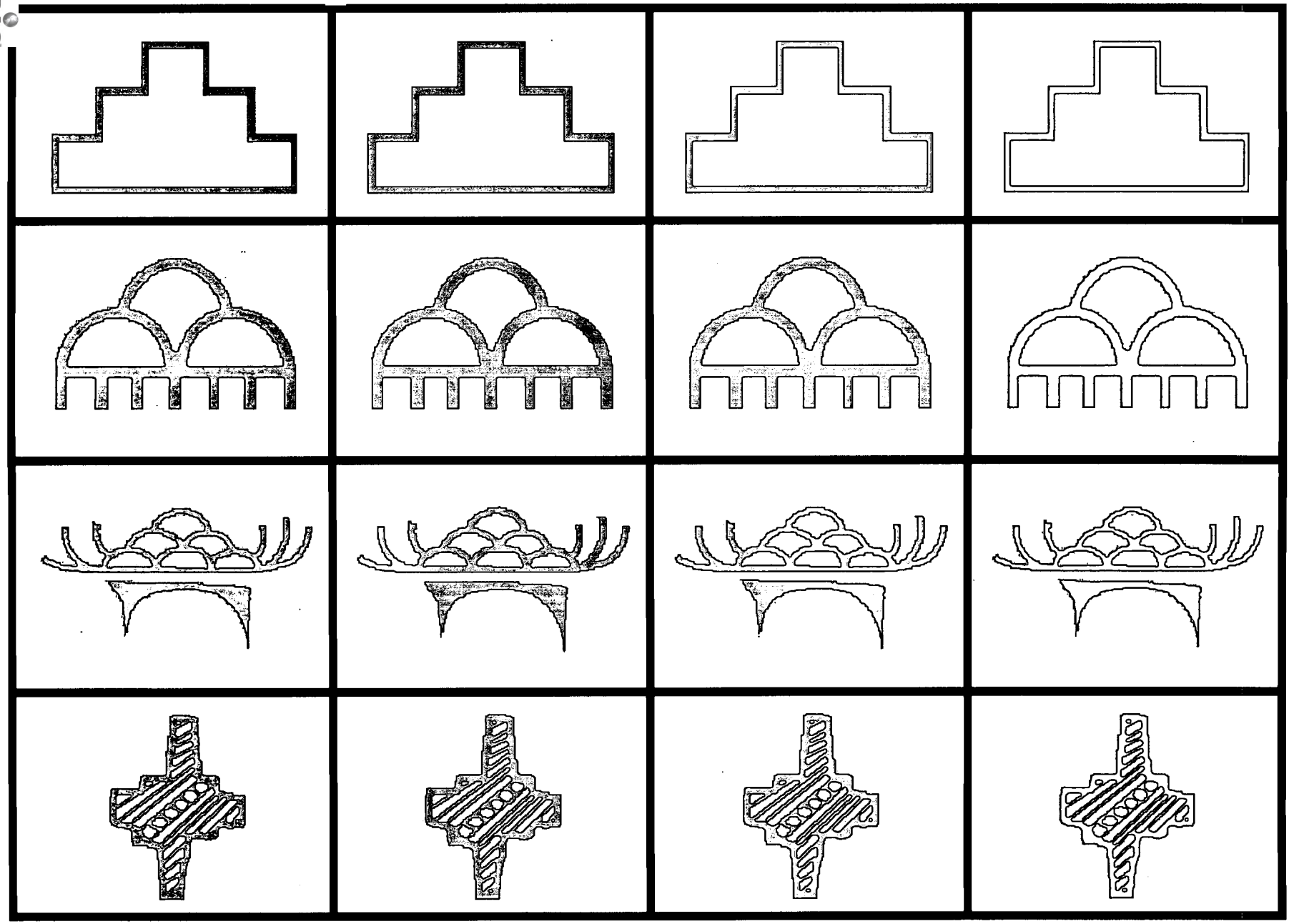
1. Did the students observe and remember where the cards were overturned?

2. Can the students write the number sentence unaided?

Extension:

1. Find the difference for numbers other than 10.

2. Could the students count their scores accurately?

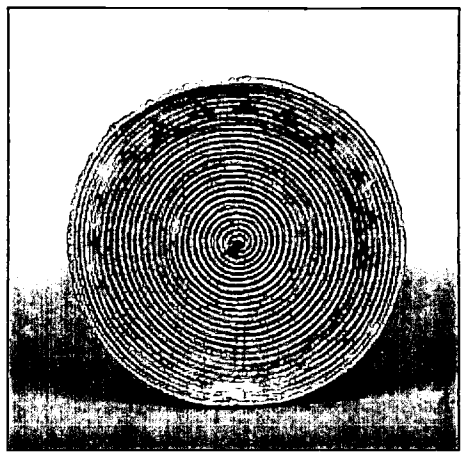


Print two copies of this sheet to play the Match and Count game.
Cut out the cards using a paper cutter at the trim lines.

In Line *(for older students)*

Activity: Students will practice addition and subtraction of decimals. Students practice lining up decimal places.

Focus Activity: Look at the Diné (Navajo) Ceremonial Basket. Point out to the students how the maker made all the stitches neatly in a line, one on top of the other. Emphasize how this is the reason that the red and black lines look so even and crisp. Discuss how the weaver carefully kept all this in mind and how that helps us, the viewer, see and appreciate the design.



Outcomes:

1. Students will review decimal places and number skills.

Materials: pencils, copy of the worksheet for each student.

Procedure:

1. Review with the students the concept of decimal places: 0.1, 0.01, 0.001, etc.

2. Compare the lining up of decimals to the basket: to make a design "work," the stitches must be in line! To make a decimal problem "work," the decimal points must be in line.

3. Hand out the worksheet and have the students rewrite the problems, lining up the decimal points.

4. Check the work at this stage.

5. Have the students do the math problems.

Assessment:

1. Did the students rewrite the problems using the decimal places correctly?

2. Did the students complete the math correctly?

*Name*_____

A. 37.04 + 319.2 =

B. 15 - 12.21 =

C. 183.2 + 31.007 =

D. 81.42 - 2.798 =

E. 224.5 + 193.81 =

F. 65.5 + 317.8 =

G. 56.3 + 938.40 =

H. 804.7 - 63.222 =

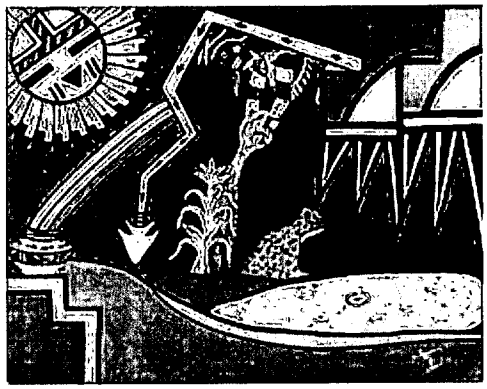
I. 123.004 - 47.005 =

J. 19.689 + 14.07 =

Match and Count

Activity: Students play a game of concentration witih cloud designs, and then add up the results

Focus Activity: Look at the "Summer Results" by Milland Lomakema (Hopi). How many cloud shapes can they identify?



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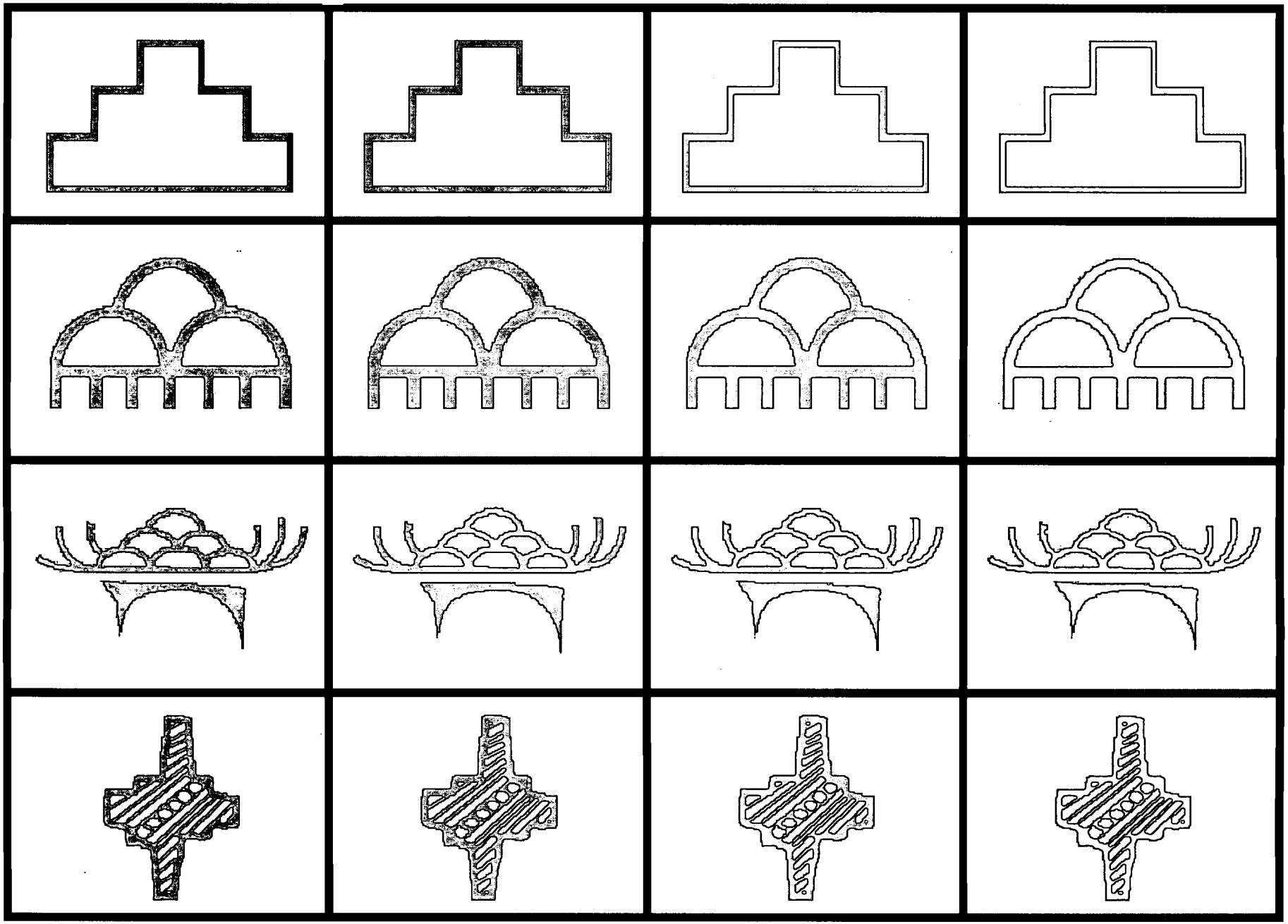

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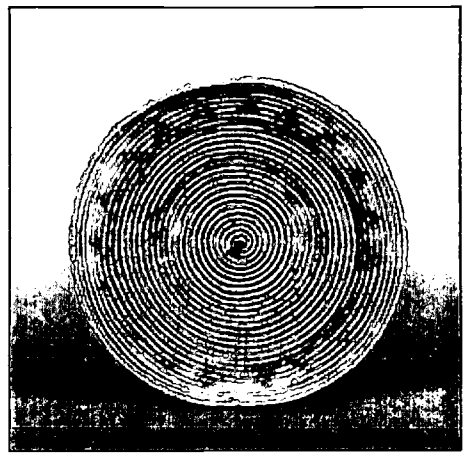
Cut out the cards using a paper cutter at the trim lines.

Nothing Missing *for older students)*



Activity: Students will practice multiplying large numbers.

Focus Activity: Look at the art print Diné (Navajo) Ceremonial Basket by an unknown Diné (Navajo) artist. Discuss with the students how *each stitch* is necessary for the basket to be complete. Note that each row of stitches depends upon the previous row.

Outcomes:

1. Students will practice multiplication of large numbers.

Materials: pencils, copy of the worksheet for each student.

Procedure:

1. Hand out a copy of the worksheet to each student.

2. Explain that there is one number missing in each row of the multiplication problems. It is their challenge to enter that number in each row.

3. Each student should work on the math independently.

4. After the students have finished, the teacher should review the answers with the class.

Assessment:

1. Did the students complete the assignment?

2. How long did it take for the students to complete the work?

3. Were there any multipliers that were difficult for most students, indicating additional review or practice would be helpful?

*Name*_____ *Date*_____

576	368
x38_	x489
1,152	3,_12
46,0_8	2_,440
1_2,800	1_7,200
22_,032	179,_52

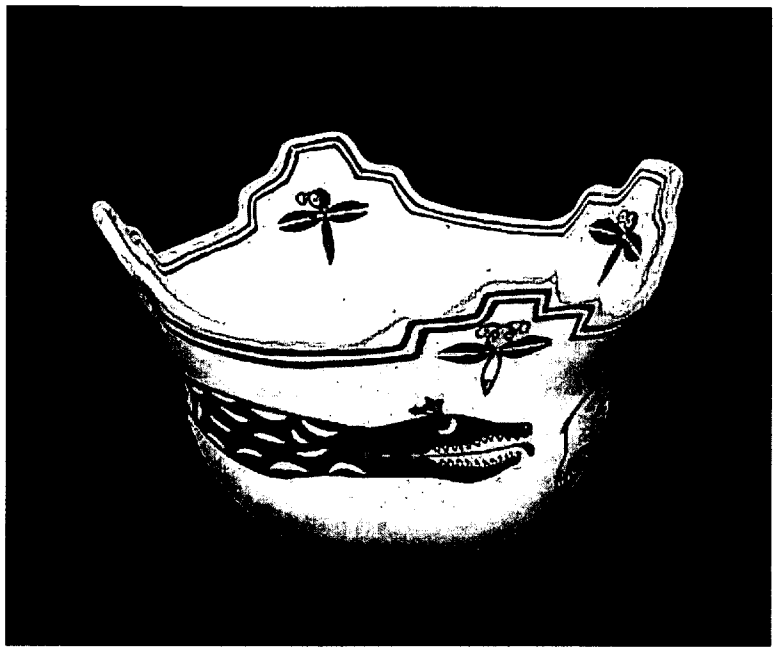
2_5	345
x273	x1_4
73_	1,_80
1_,150	10,350
49,000	34,500
6_,885	46,2_0

1,37_	_22
x683	x371
4,_13	622
109,680	43,_40
82_,600	18_,600
93_,393	230,7_2

2,877	3,872
x46_	x2_6
5,754	23,2_2
12_,620	116,160
1,1_0,800	7_4,400
1,3_9,174	913,_92

PRINTS

Terraced Bowl



Artist: Myra Eriacho

Culture: Pueblo of Zuni, New Mexico

Size: Height 6 15/16"; Depth 11 3/8"

Media: Clay, paint

Date: 1975

Catalogue Number:NA-SW-ZU-A7-30

Description:

Snake - Plumed water serpent, called *Kolowisi* in Zuni, is a traditional water symbol. It is responsible for rain and lightning. If not treated with respect, *Kolowisi* can cause floods.

Dragonflies - Dragonflies are found near water and carry messages to the Kachinas.

Steps - This shape is a cloud symbol at the rim. There are four for the cardinal directions.

Animal - This is a bear with a heart line. The heart line is an arrow from the mouth of the animal to the heart area. This shows the life spirit of the animal.

Vocabulary for discussion of Art Elements:

Line - thin, continuous

Shape - terraced, three-dimensional, half circles, moon-shapes, triangles

Color - neutral, polychrome

Space - regular, deep

Texture - surface, touch, smooth, hard, matte

Art Principles:

Concept: Balance

Cultural Context:

The bowl shows how old traditions can be changed to reflect new styles. Many older bowls are more shallow and have some handles. The Kolowisi painted on the side is from Zuni tradition, but his expression is reflective of contemporary art.

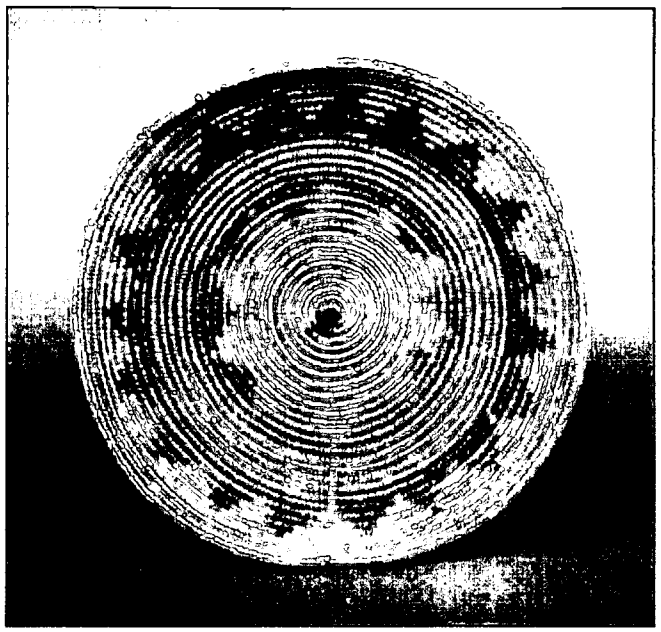
Images for Comparison:

- Zuni Water Jar (late 1800s)
- Contemporary Water Jar by Josephine, Randy and Milford Nahohai

Questions for Comparison:

- What do you see that is the same about all three pieces of pottery?
- What do you see that is different?
- When a potter designs a container, he or she thinks about the three parts of the container -- the rim, the body and the base. Look at these containers. Did all three potters decorate the three parts? Is there a different decoration for each part of all the containers?

Ceremonial Basket



Artist: Unknown

Culture: Diné (Navajo)

Size: Diameter 13 7/8", Height 2 7/8"

Media: Sumac, willow, mountain mahogany root, charcoal, juniper sap

Date: Late 1800s

Catalog Number: 269BA

Description:

Outside rim - This is daylight.

Outermost row of black triangles - This is darkness.

Red band - This is the rainbow.

Inner row of black triangles - These are mountains.

Center - This is the beginning of consciousness or birth.

Break in the line - This is the path of consciousness. Note that the basket is finished at this point on the rim. When the basket is used, this path is held to the East.

Clouds

Vocabulary for discussion of Art Elements:

Line - straight, curved, radiating, spiral

Shape - man-made, even, precise, round, curving, pointed

Color - Neutral, natural

Space - outer, interior

Texture - woven

Art Principles:

Concept - Repetition

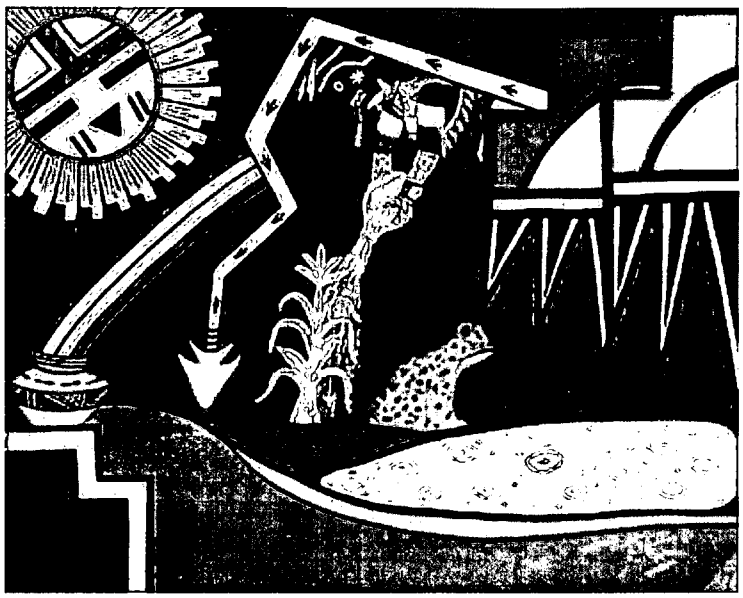
Cultural Context:

This type of basket is used for various ceremonial purposes. It is used to serve traditional food at weddings and healing ceremonies. It is used to mix yucca roots into shampoo during a girl's coming-of-age ceremony (*Kinaálda*). It is used to store a special mixture of salt during a celebration for a baby's first laugh feast. It holds a family's jewelry during prayers and ceremonies. Baskets can be given to a bride and groom at a wedding ceremony.

Cultural Response:

This basket has been handed down to many generations. Arlene Old Elk (Diné) said, "This Diné basket reminds me of a happy home where a family is proud to own a ceremonial basket. It means that the family is proud of their culture and maintains traditional ways. It makes me think of all the things the basket has witnessed."

"Summer Results"



Artist: Milland Lomakema

Culture: Hopi

Size: Height 19 13/16", Width 23 3/4"

Media: Tempera, watercolor, mat cardboard

Date: 1970

Catalogue Number: IAC-939

Description:

Face - The face is a Hopi sun symbol. It is traditionally divided into three parts. All human, animal, and plant life is supported by the powers of the sun.

Kachina - This Kachina is *Chakwaina*. *Chakwaina* wears a star on one cheek and a moon on the other.

Ponds - Ponds are sources of water.

Frogs - Frogs are symbols of water and growth.

Corn - Corn is a very important source of food for the Hopi. It is planted in flood plains and is very dependent on the right amount of rain at the right time.

Rainbow - The rainbow represents the beginning of life.

Cloud - Above the rain are terraced and rounded clouds.

Rain - Modern technology has helped the Hopi manage water, but without rain there is no water to manage. Remebering this, most sacred prayers of the Hopi continue to be for rain.

Lightning - There are bird tracks on the lightning.

Pot - The pot is decorated with terraced clouds and tadpoles.

Tadpoles - The tadpole is a reminder of the stages of life, from infancy to old age.

Cultural Context:

Milland Lomakema was born in Shungopavi at Hopi in 1941. He never went to school to learn to be an artist, but taught himself.

Early in the 1960s, Lomakema began to go to art shows around the United States to sell his work. He worked for a detective agency in Phoenix, Arizona, to earn money until he could make enough money as an artist.

In 1968, Lomakema returned to Hopi and went to work for the Hopi Police Force. While there, he met other artists. They talked together and found they had similar beliefs. They formed a group and called themselves Artist Hopid. They all worked using their art to share Hopi values and history.

Questions for discussion:

Many of the images you see in "Summer Results" came from ideas Mr. Lomakema got while looking at pieces of walls decorated by his ancestors hundreds of years ago. What could you look at from your ancestors that might give you ideas about them?

What symbols do you see in this painting that are connected to rain?

Contemporary Water Jar

Artist: Josephine Nahohai, Randy Nahohai and Milford Nahohai

Culture: Pueblo of Zuni, New Mexico

Size: Height 8 1/16"; Diameter 8 15/16"

Media: Clay, paint

Date: 1983

Catalogue Number: NA-SW-ZU-A7-44

Description:

Bird - This is a traditional Zuni theme.

Parallel Lines - Slanted parallel lines represent rain.

Steps - These are referred to as terraced and represent rain clouds.

Circles - rectangles, triangles - Zuni pottery design is often geometric.

Clouds

Vocabulary for discussion of Art Elements:

Line - parallel, curved, precise, regular, vertical, horizontal

Shape - three-dimensional, curved

Color - polychrome, neutral, glaze

Space - Positive, negative, neck, body, base

Texture - Woven

Art Principle:

Concept - Repetition
Discuss the repetition of line and shape, especially the parallel lines that represent rain.

Cultural Context:

Often when rain clouds come into the Zuni valley they are so heavy with water they skim over the top of the mountains and roll into the valley like a tumbling, soft, giant water-filled bird. Milford Nahohai, the Zuni artist who painted this water jar, believes that a Zuni artist many generations ago saw the same rolling cloud formations he sees today and created the first rainbird. The rainbird, the terraced (stepped) clouds and the slanted parallel lines that represent rain are designs that Randy and Milford Nahohai, along with other contemporary Zuni artists, learned from their ancestors and today use to create their own designs.

Zuni artists have learned designs and craftsmanship from their ancestors. In the 1880s, when this water jar was made, 85% of Zuni workers used this knowledge to make jewelry, ceramics and other artwork to support their families. This water jar was made by the Nahohai family working together. Josephine Nahohai made the water jar. Her son Randy Nahohai drew the design on it. Then her son Milford Nahohai painted the design.

Milford Nahohai is proud that Zuni is a progressive community, working together to market their work.

Artist's Response:

Milford Nahohai explained that you need to be in the right frame of mind and think only good thoughts when you're doing your pottery. If you don't, the ceramic will turn out bad or break in the firing.

Images for Comparison:

Zuni Water Jar (late 1800s)

Terraced Bowl

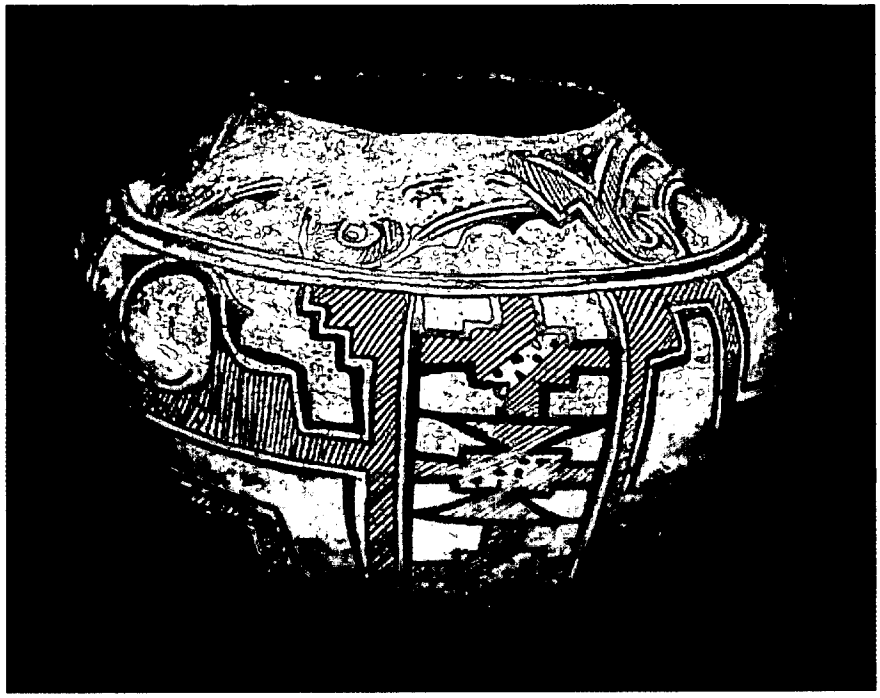
Questions for Comparison:

What do you see that is the same about all three pieces of pottery?

What is different?

When a potter designs a container, he or she thinks about the three parts of the container: the rim, the body and the base. Look at these containers. Did all three potters decorate the three parts? Is there a different decoration for each part of all the containers?

Zuni Water Jar



Artist: Unknown

Culture: Pueblo of Zuni

Size: Height 10 13/16"; Diameter 7 7/16"

Media: Clay, paint

Date: Late 1800s

Catalog Number: 411P

Description:

Parallel lines - Parallel lines represent rain.

Circle - Notice the slight coil line. This is a ceremonial drumstick.

Terraced Cross - This shape is a cloud all alone after a storm. In this pot, three have been joined.
The area where the design has worn away suggests that this is where a dipper was kept. The dipper handle could have rubbed against the surface of the jar.

Clouds

Art Elements:

Line - Thick, thin, straight, curved, parallel

Shape - enclosed, positive, negative, round, curved

Color - polychrome, contrast

Space - rim, bottom , body, inside, three-dimensional

Texture - actual, smooth, hard, simulated, rough

Art Principles:

Concept -Repetition
Ask: "What do you see repeated?"

Cultural Context:

During the first half of the 20th century, people at Zuni made fewer ceramics than they had in the past because there were other things they could buy in the store for everyday use.

Today, Zuni families enjoy the beauty of traditional ceramics on display in their homes. They may appreciate a ceramic piece because of their cultural tradition or family memories.

This jar, made in the late 1800s, was used for storing water. The worn spot at the neck was probably produced by the handle of the dipper kept in the jar.

Today, more potters at Zuni are active making special ceramics for people to enjoy. These potters are interested in the designs their ancestors made. With the help of older Zuni potters, books showing old pottery, the support of museums and the ability to see ceramics like this one made in the late 1800s, Zuni potters are learning the old styles.

Today's potters do not just copy traditional designs. A Zuni potter, Randy Nahohai, states, "Every time I mix around the designs so they are all original, my own interpretations of what the old designs mean."

Images for Comparison:

Terraced Bowl

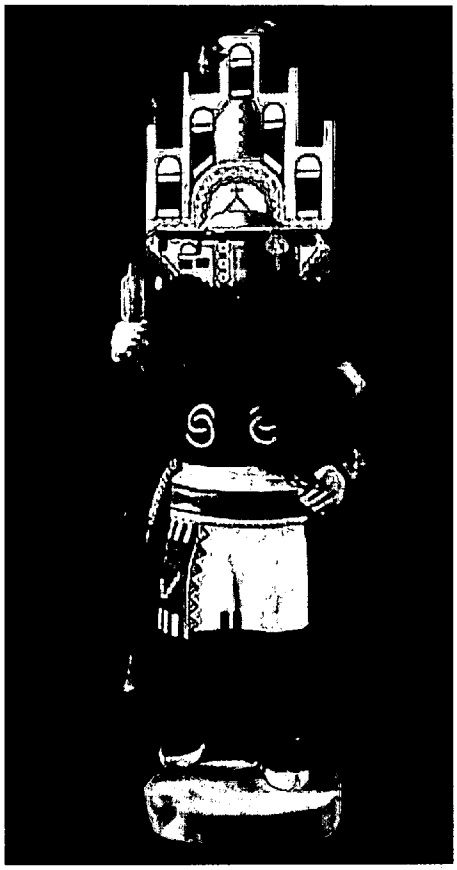
Contemporary Water Jar

Questions for Comparison:

What do you see that is the same about all three pieces of pottery?

What is different?

Hemis Kachina Doll



Artist: Tino Youvella

Culture: Hopi

Size: Height 19"

Media: Cottonwood root, paint, feathers, cotton, leather

Date: 1983

Catalog Number: RK-9

Description:

Headdress - The headdress is called a *kopetsoki* in Hopi. The *kopetsoki* has both terraced and rounded clouds with a blue, yellow and red rainbow.

Rainbow - A blue, yellow and red rainbow is on the *kopetsoki* directly over the head of the *Hemis* Kachina.

Feathers - The feathers located on top of the *kopetsoki* represent clouds.

Sash - The cotton sash the *Hemis* Kachina wears around his waist has red and white strips representing rain. On the sash is a black terraced (stepped) cloud outlined in white.

Kilt - A kilt is worn in ceremonial dances. Cloud designs are seen on this embroidered kilt.

White circles - The white circles on the Kachina doll's chest are the Hopi sign of friendship.

Vocabulary for discussion of Art Principles:

Line - straight, vertical, horizontal, curved, broken, dashed

Shape - rounded, arched, rectangular

Color - primary

Space - positive, negative

Texture - smooth, fluffy, shiny, hard, soft

Description of Art Principles:

Concept -Repetition
Ask:
"What symbols are repeated?"
"Are the repeated shapes exactly the same in each case?"

Cultural Context:

The *tihu* (pronounced *tee hoo*) is an important part of the Hopi religion. It is a reminder of religious beliefs and practices. This *tihu* is a reminder of the *Hemis* Kachina. Each year, the *Hemis* Kachinas are seen for the first time at sunrise on the morning that begins the celebration of the year's first harvest. It is an exciting time at Hopi. Early in the morning prayers are said, and everyone listens eagerly to hear the Kachinas music coming closer.

The last ceremony of the year is the *Niman* or "Going Home" ceremony. At this ceremony, the *Hemis* Kachina brings gifts to the children of the village. They bring cattails and cornstalks as symbols of rain. They bring bull roarers (a musical instrument) and bows and arrows for the boys, and *tihus* and baskets for the girls.

Special Note:

The Hopi Kachina religion is deserving of the respect that is given to any religion. When discussing artwork that has a connection to religious beliefs, practices or ceremonies, guidelines are always followed: it is never appropriate to discuss or mime any aspect of a religion that would be offensive to the believers.

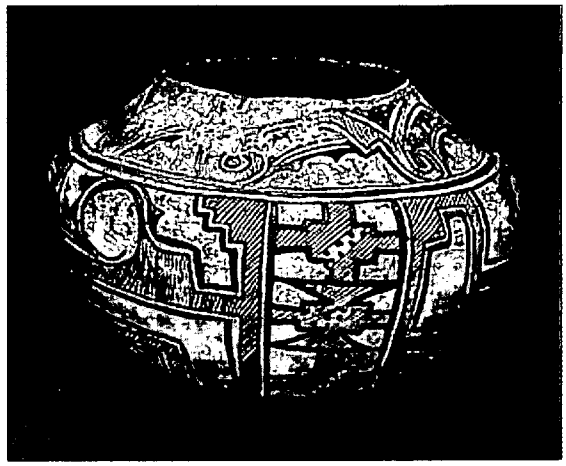
The Hopi Kachina religion is based on a cannon of sacred beliefs, and those beliefs center on the concept of spirit, called "Kachinas", who visit the people bringing blessings, rain and other good things. Thus the use of the terms "mask", "represent", "impersonate" or "impersonator" is **completely inappropriate** in a discussion of Hopi beliefs.

Tihu has no translation into English, so the closest term used is kachina doll. A *tihu* is not a toy. In the past, young Hopi girls played with *tihu* or kept them nearby while doing chores. *Tihu* are not sacred objects but are treated with respect. It is not appropriate to make a *tihu* as an art project.

The headpieces worn by some Kachinas are called *kopetsoki* meaning "sits on top". This is a religious item and should not be made or used in an art project.

Kachina dolls, items that the Kachinas themselves wear, and even drawings of the Kachinas may be made *only* by Hopi men who have been initiated. Even Hopi children are told not to draw the Kachinas or color a picture of a Kachina until they have the religious right to do so.

Over the Mountain



Activity: Students try to blow a dry cotton ball and a wet cotton ball over a stack of books.

Focus Activity: Look at the art print of the Water Jar made in Zuni in the late 1800s. Review with the students the design of the clouds: look for the three terraced crosses in the center of the body of the jar. Remind the students that the thin, parallel lines represent rain in the clouds. Then look at "Summer Results" by Hopi artist Milland Lomakema. See the clouds in the upper right-hand area, and notice that the rain is falling from the clouds.

Outcomes:

1) Students will recognize that clouds are made up of moisture/water.

2) Students will understand that water has weight.

3) Students will understand that in order for clouds to go over a mountain, the clouds must release water.

Vocabulary: weight, release

Materials: Eyedroppers, cotton balls, water, stack of books

Procedure:

1) On a cleared surface, place a small stack of books. Put a dry cotton ball on the table and blow the cotton ball on top of -- or over -- the books.

2) Have students predict how many drops of water it will take to make the cotton ball too heavy to blow up onto, or over, the books.

3) Try putting four drops of water on the cotton ball.

4) If the student is successful, try another four drops. Repeat this process until the cotton ball is too heavy to move.

- **Assessment:**
  - Did the students realize that the water was the element giving weight to the cotton ball.
  - Do the students realize the connection between the weight of the water in the cotton ball and the weight of rain in clouds?
  - Do the students now understand why clouds drop their moisture (rain) on one side of a mountain and not on the other side?

Extension:

- Help students to understand that clouds drop their moisture on the California side of the Rocky Mountains, not on the Arizona side. This is why California is greener and Arizona is mostly desert.

Cloud Match

Activity: Students play a matching game to learn about different clouds.

Focus Activity: Look at all the art prints (see prints section), and focus on the clouds. Look at the Cloud Chart. Discuss with the children why the cumulonimbus cloud is the most similar to the clouds seen in all the art prints.

Outcomes:

- 1) Children will gain a familiarity with the kinds of clouds, the characteristics of the various types and the altitudes where the clouds are formed.

Materials: photocopy of the cloud card pieces (group 1, group 2, group 3), for each child, scissors, glue (optional)

Procedure:

1) Have children review the types of clouds, altitudes and descriptions. A summary is found on the back of the Cloud Chart.

2) Have children cut out all the cloud card shapes.

3) Explain that all the pieces fit together in pairs: one part has the name of the cloud, the other has the description. Each pair is unique.

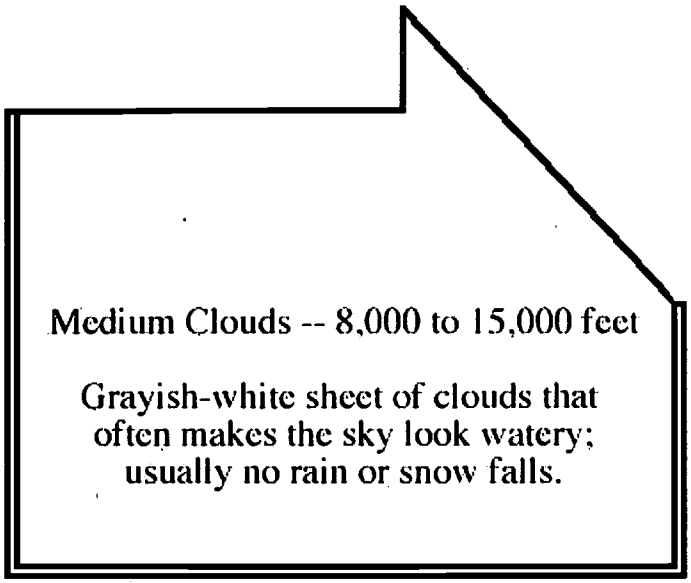
4) Have the students fit the pieces together. They may then glue the pairs to another piece of paper, or you may have them repeat the exercise several times before gluing the pieces permanently in place.

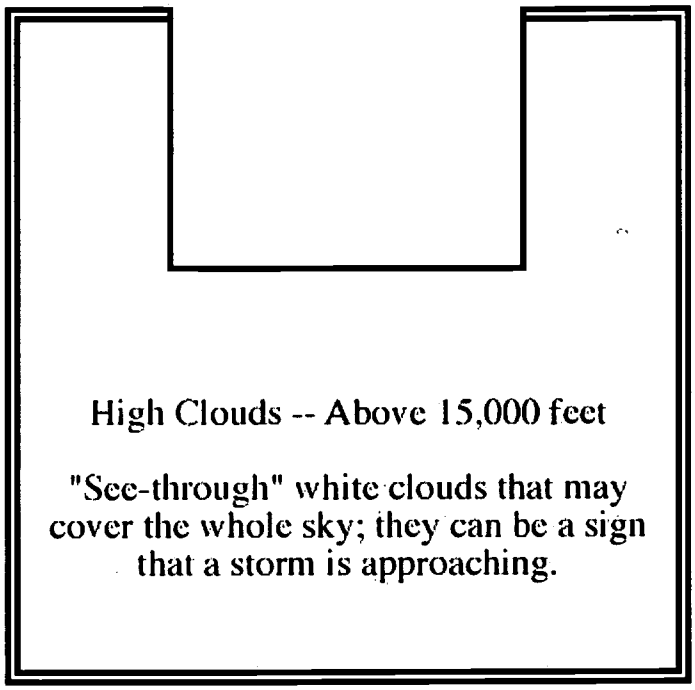
Assessment:

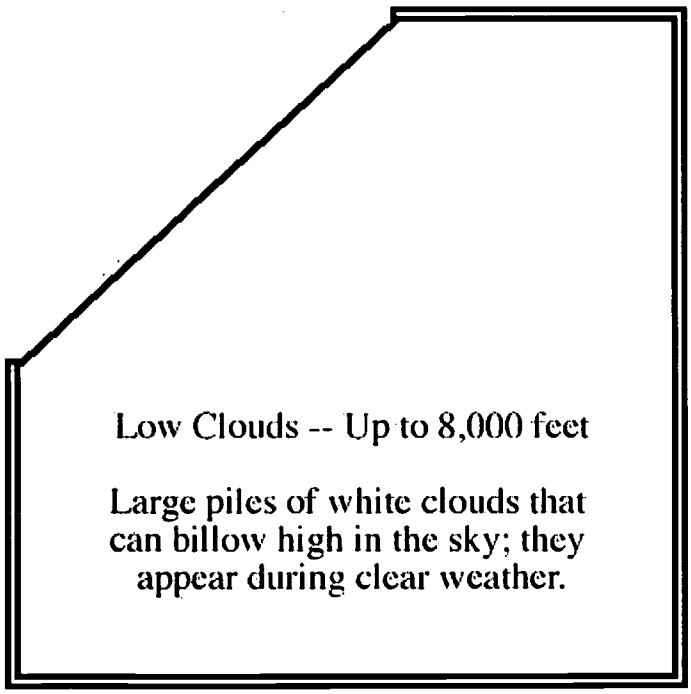
Were the children able to match the shapes? Did the students use the information to help them match the pairs?

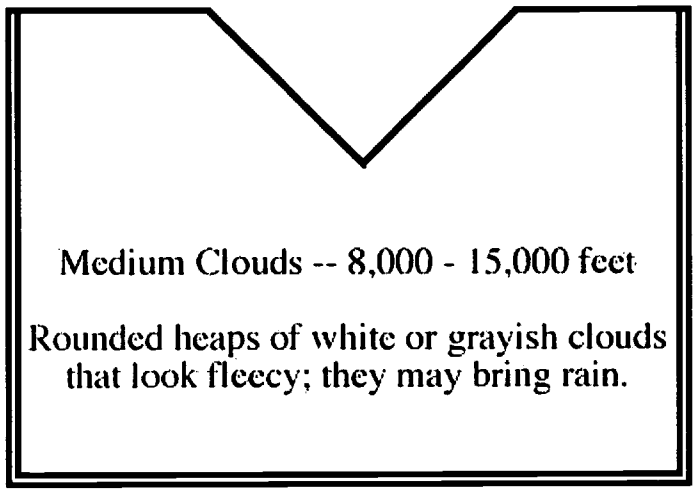
Extension:

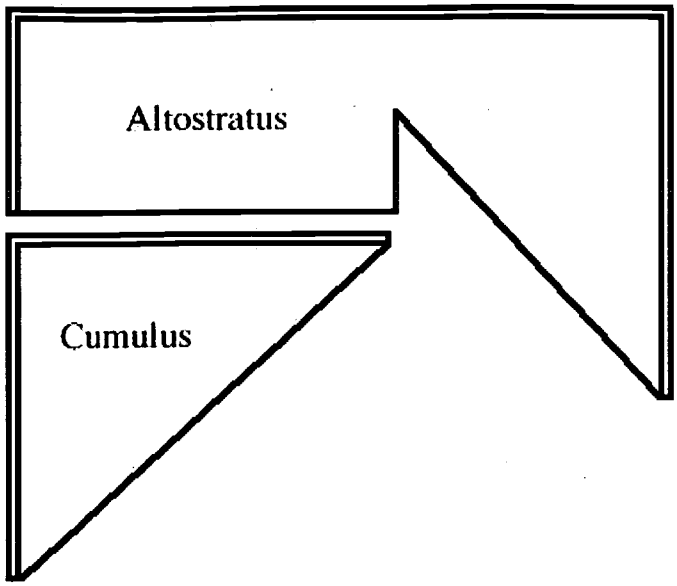
Students could add a drawing of the cloud type to the card pieces or to the paper they use for gluing.

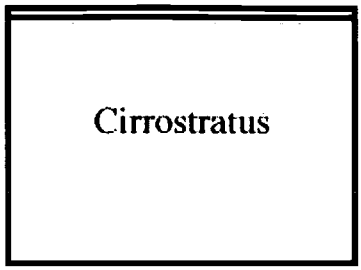

Medium Clouds -- 8,000 to 15,000 feet
Grayish-white sheet of clouds that often makes the sky look watery; usually no rain or snow falls.


High Clouds -- Above 15,000 feet
"See-through" white clouds that may cover the whole sky; they can be a sign that a storm is approaching.

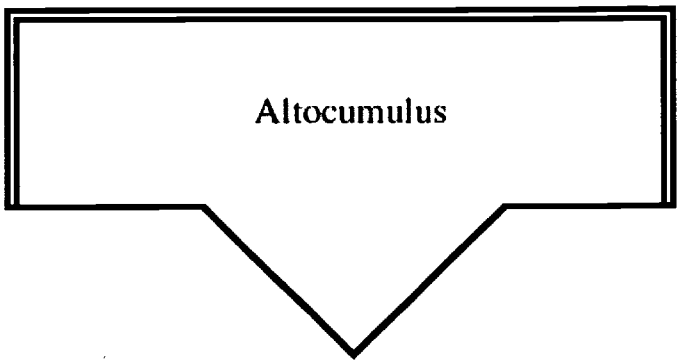

Low Clouds -- Up to 8,000 feet
Large piles of white clouds that can billow high in the sky; they appear during clear weather.

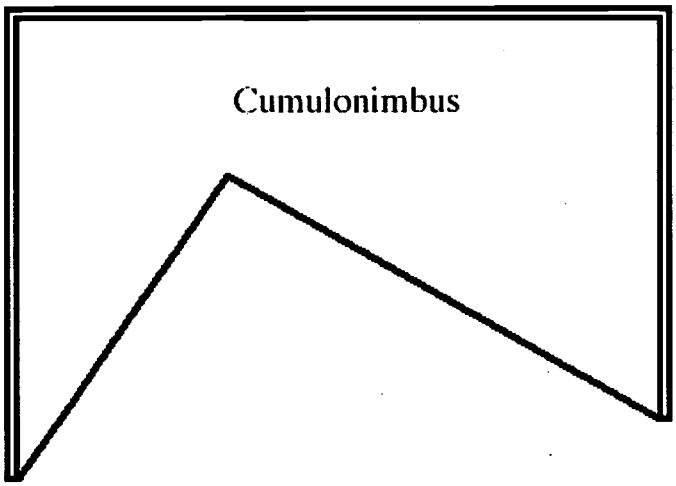

Medium Clouds -- 8,000 - 15,000 feet
Rounded heaps of white or grayish clouds that look fleecy; they may bring rain.

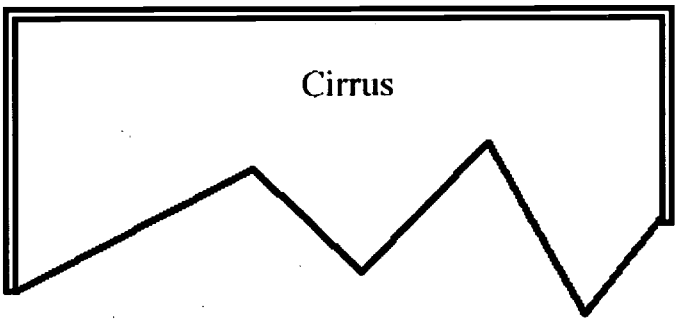

Altostratus

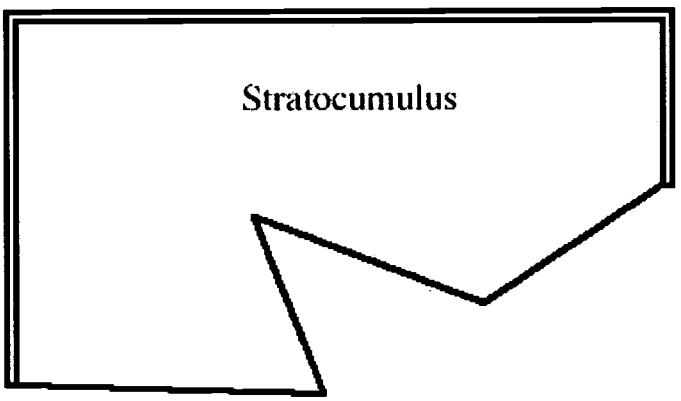

Cirrostratus

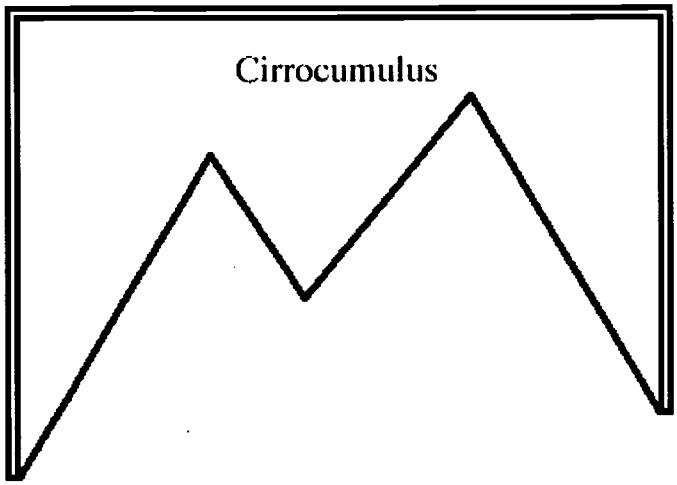
Cumulus

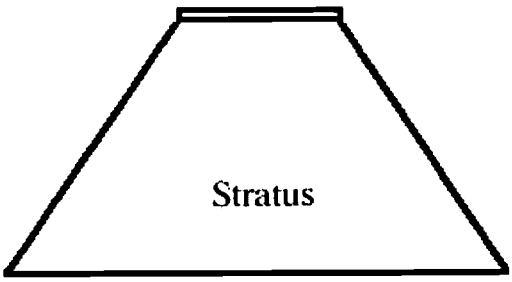

Altocumulus

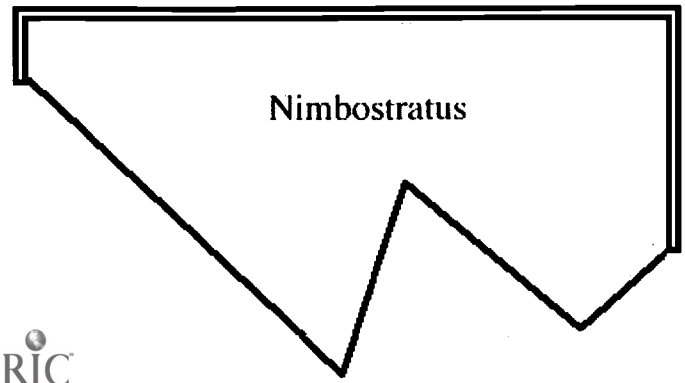

Cumulonimbus

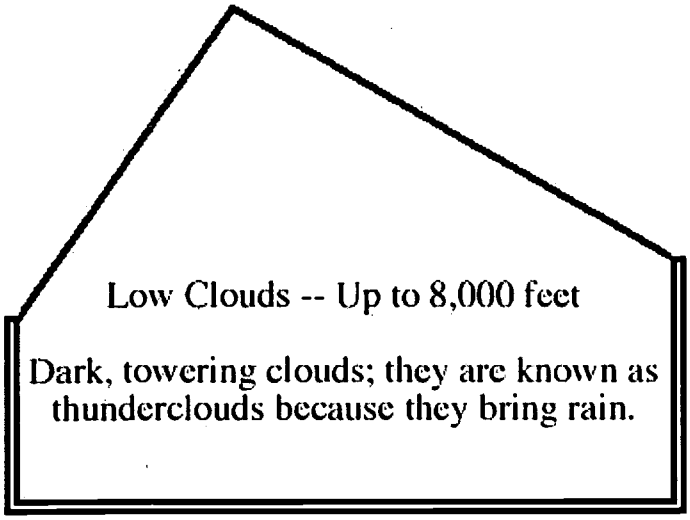

Cirrus


Stratocumulus


Cirrocumulus

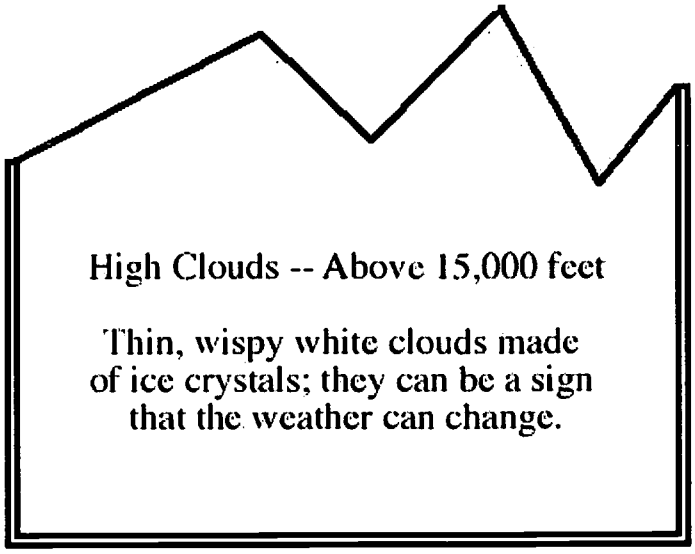

Stratus


Nimbostratus



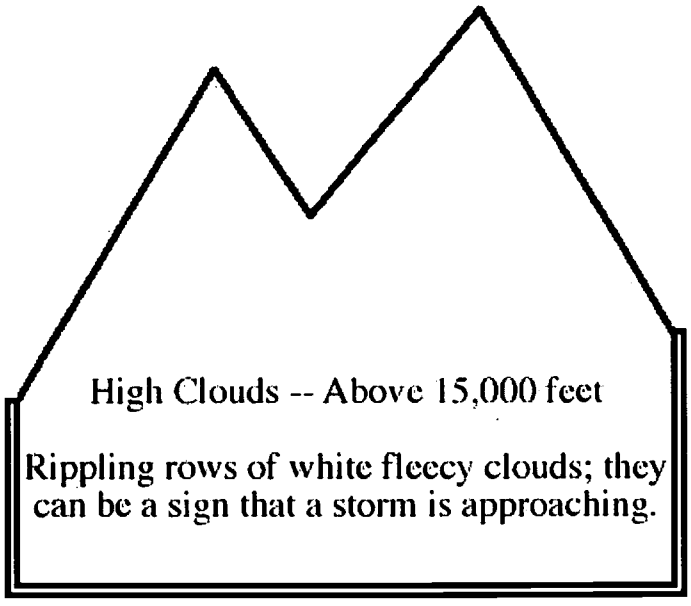
Low Clouds -- Up to 8,000 feet

Dark, towering clouds; they are known as thunderclouds because they bring rain.



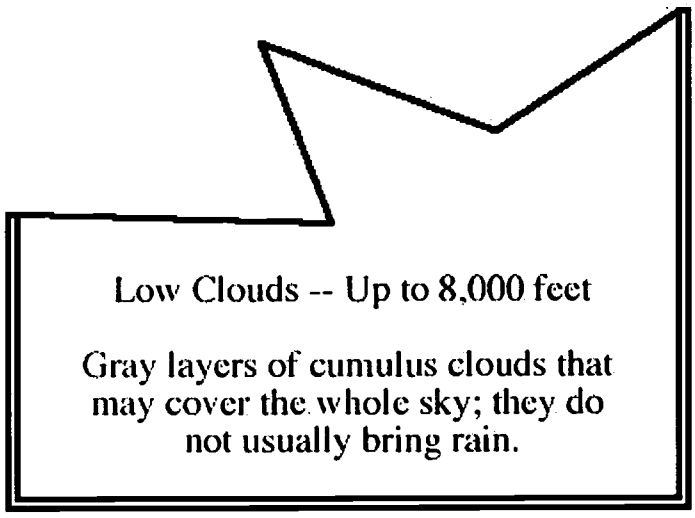
High Clouds -- Above 15,000 feet

Thin, wispy white clouds made of ice crystals; they can be a sign that the weather can change.



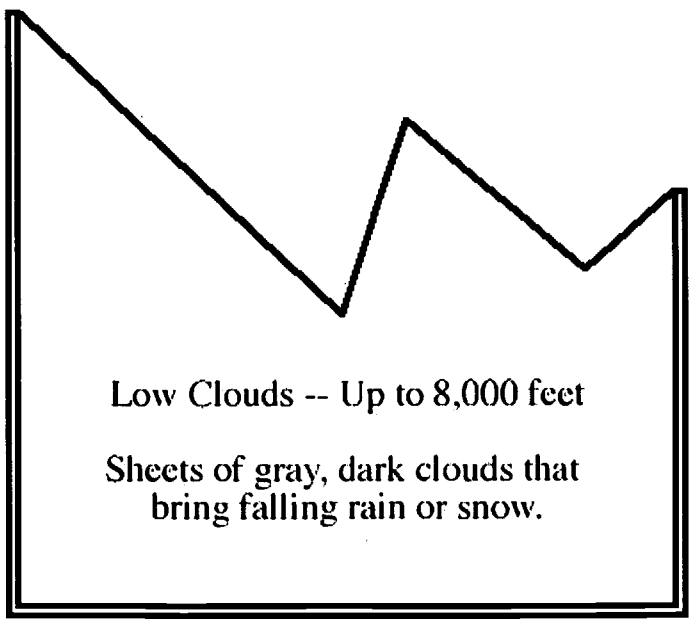
High Clouds -- Above 15,000 feet

Rippling rows of white fleecy clouds; they can be a sign that a storm is approaching.



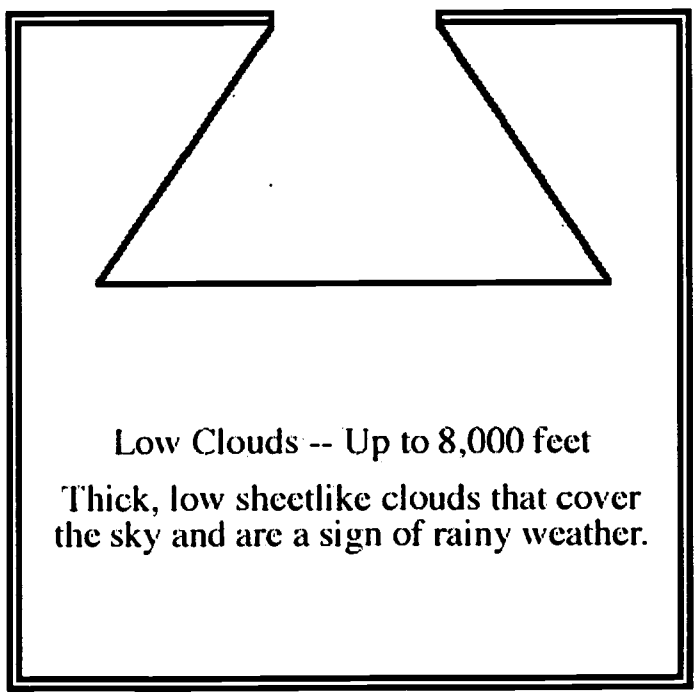
Low Clouds -- Up to 8,000 feet

Gray layers of cumulus clouds that may cover the whole sky; they do not usually bring rain.



Low Clouds -- Up to 8,000 feet

Sheets of gray, dark clouds that bring falling rain or snow.



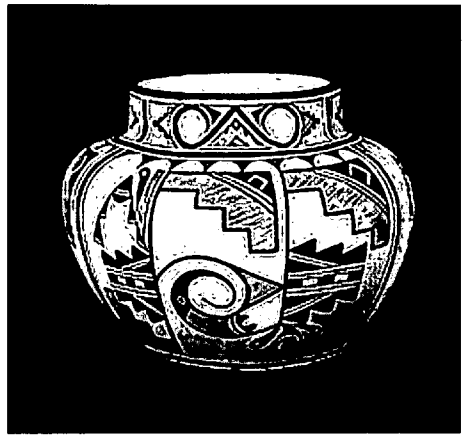
Low Clouds -- Up to 8,000 feet

Thick, low sheetlike clouds that cover the sky and are a sign of rainy weather.

Clouds Inside and Out

Activity: Students realize that clouds are moisture by creating clouds of their own.

Focus Activity: Look at the print showing the Contemporary Water Jar by Zuni artists Josephine Nahohai, Randy Nahohai and Milford Nahohai. Notice that the thin, parallel lines inside the terraced cloud shape refers to rain. The artists are reaffirming what scientists say: clouds are made up of particles of water that, under the right conditions, fall to the earth as rain or snow.



Outcomes:

1) Students will understand the link between moisture and cloud formation.

2) Students will make clouds.

Materials: mirror, sprayer, electric kettle, water

Procedure:

1) Tell the students that the first cloud they will "create" in the classroom will be the steam from water boiling in the kettle. The cloud/steam will be visible. It can also be captured on a mirror. Discuss how the same thing happens to the mirror in the bathroom if they take a shower!

2) By using the finest particle setting on the sprayer, students can create a cloud that is just barely visible. Shoot the fine spray into the air, and see if they can see it fall. Remind students that water has weight (as they discover in the "Over the Mountain" activity in this section). This cloud can also be captured on a mirror.

3) Finally, have students release the cloud inside them by breathing on a mirror. Remind them that water is essential to all life, and that our bodies are made up mostly of water. Remind them that they may have seen pictures of people and animals in cold weather when breath is visible.

Assessment:

- Do students understand that clouds are made up of very small particles of water?

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