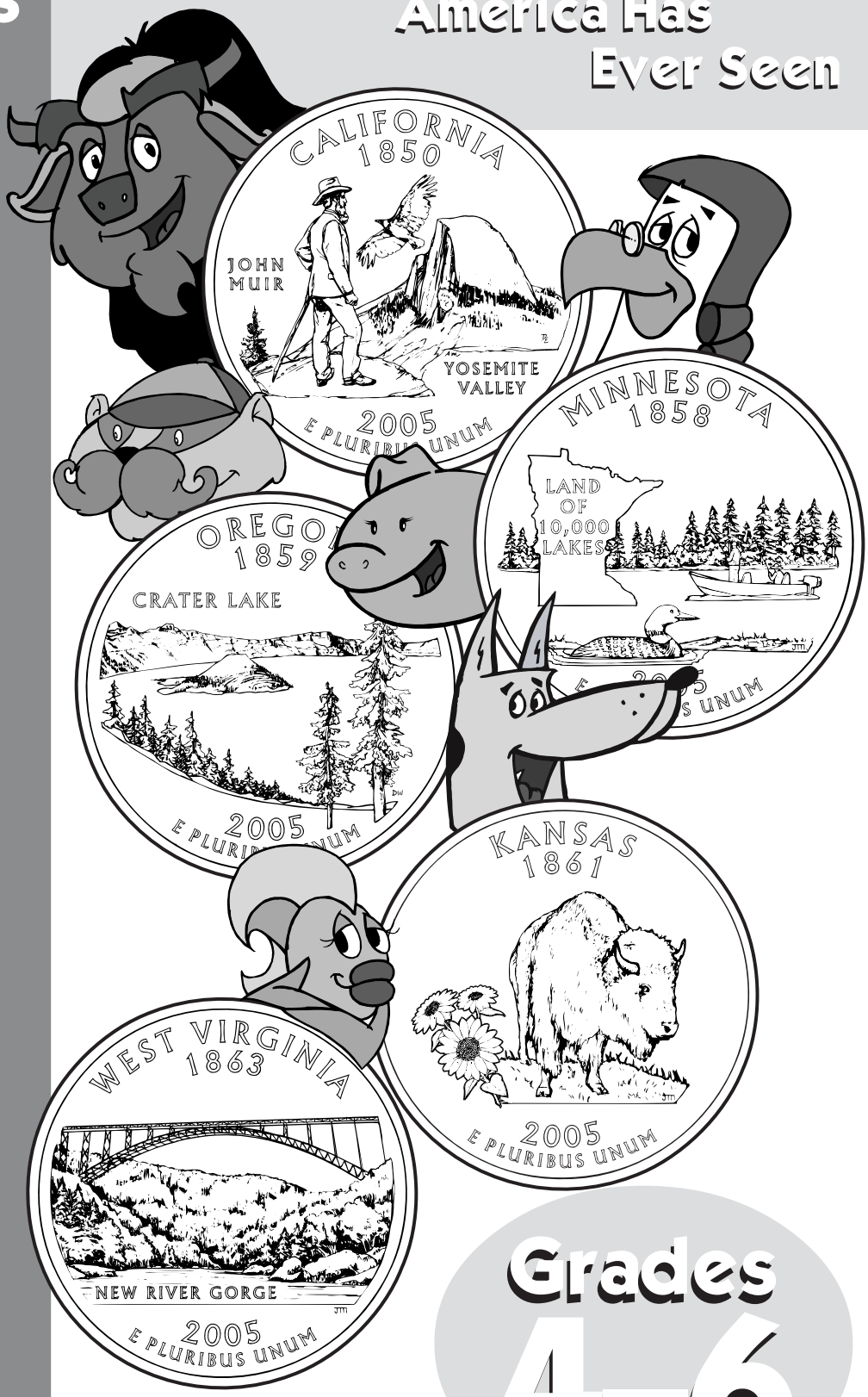
2005 Lesson Plans

The Greatest Educational Change America Has Ever Seen



This teaching guide includes:

- 6 teacher-friendly lesson plans that fit easily into your curriculum
- Reproducible student worksheets that coincide with each lesson
- Fun state facts and information on the new quarter designs
- USA map template with state outlines

Grades 4–6

The United States Mint Has Big Plans for You!

Kids and coin collecting go hand in hand! By downloading the most recent sets of 50 State Quarters® Program lesson plans, you are able to bring the excitement of America's quarter craze right into your own classroom.

Launched in 1999, the United States Mint 50 State Quarters Program is a 10-year coin initiative commemorating each of the nation's states in the order that were admitted into the Union. Approximately every ten weeks (five times a year) through 2008, a new limited-edition quarter that displays an individual state's design is released into general circulation.

As it has every year since the beginning of this program, the United States Mint is offering the public three free sets of lesson plans (for grades K–1, 2–3, and 4–6). Sets of free plans for grades 7–8 and 9–12 are also available. All are designed to bring life to the history and beauty of our country. Moreover, these plans, created and reviewed by teachers to meet your curricular goals, draw upon the specific designs of the commemorative quarter reverses to help inspire students to learn about the culture, geography, and unique heritage of each state.

Each set of lesson plans blends clear instructions with kid-friendly reproducible worksheets, background information, and answer keys to help make instruction easier for you!

Within the 2005 50 State Quarters Program lesson plans, you will also notice a strong connection to the United States Mint H.I.P. Pocket Change™ Web site. Appearing on the cover as well as within the plans themselves, the coin-loving H.I.P. Pocket Change Pals will show you ways to supplement the quarter activities with all of the fun and educational resources available on the site!

The H.I.P. Pocket Change Web site, located at www.usmint.gov/kids, is dedicated to promoting lifelong pleasure in coins and coin collecting. Through games, informational features, and interactive animated cartoons, the site introduces students to what's H.I.P. about coins—they're "History In your Pocket."

The United States Mint is proud to be taking such an active role in promoting knowledge about the individual states, their history and geography, and the rich diversity of the national heritage among America's youth. Take some time to explore all of the high quality educational resources available on the United States Mint H.I.P. Pocket Change Web site, including the materials related to the 50 State Quarters Program! We hope that you find these resources to be an extremely valuable addition to your classroom.

50 STATE QUARTERS UNITED STATES MINT

Visit us online at
www.usmint.gov/kids

h.i.p. pocket change™

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The Greatest Educational Change America Has Ever Seen

Lesson Plans for Grades 4–6

Objective	Connections	Groupings	Class Time	Page
1: Rock On! (California)				
Identifying types of rocks	• Science • Social Studies • Language Arts • Art	• Whole group • Small group • Individual work	Five 45- to 60-minute sessions	2
2: A Fish Story (Minnesota)				
Learning about and writing a tall tale	• Language Arts • Social Studies • Art • Drama	• Whole group • Pairs • Small group	Five 45- to 60-minute sessions	18
3: Explosive Ideas! (Oreg				
Exploring volcanos and earthquakes	• Scienc • Social • Langu • Art	e group groups dual work	Five 45- to 60-minute sessions	27
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Using the scientific method in investigating plant life	• Scienc • Mathematics	e group • Pairs • Individual work	Four 45- to 60-minute sessions	38
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1: Rock On!

Based on the California quarter reverse

OBJECTIVE

Students will investigate and identify common rock types. Key concepts include igneous, sedimentary, and metamorphic rocks.

MATERIALS

- Chalkboard/chalk
- "Connect the Concepts" page
- "Yosemite" page
- "John Muir" page
- "50 State Quarters® Program" page
- "California" page
- "Where in the World" page
- "Rocks Rock!" chart
- "Name That Rock" page
- Highlighters
- Tape
- Chart paper/markers
- 1 overhead projector (optional)
- "California Quarter Reverse" page
- 1 class map of the United States
- Pictures of Yosemite National Park, available on Web sites such as:
  - www.uh.edu/~doan2580/catrip.htm
  - en.wikipedia.org/wiki/John_Muir
  - www.yosemitefun.com/tarheel/images/pictures_of_yosemite.htm
  - www.yosemite.org/vryos/index.htm
- Paper bags
- Assorted igneous rocks, such as:
  - basalt
  - pumice
  - obsidian
  - granite

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Rock On!

- Assorted metamorphic rocks, such as:
  - slate
  - marble
  - schist
  - gneiss
- Assorted sedimentary rocks, such as:
  - limestone
  - sandstone
  - halite
  - conglomerate
- Hand lenses
- A copy of an age-appropriate text relating to rocks and rock formation, such as:
  - *Let's Go Rock Collecting* by Roma Gans
  - *The Pebble in My Pocket* by Meredith Hooper and Christopher Coady
  - *How to Dig a Hole to the Other Side of the World* by Faith McNulty
  - *Earthsteps: A Rock's Journey Through Time* by Diane Nelson Spickert and Marianne D. Wallace
- Bulletin board
- Sentence strips
- Markers
- Index cards
- Small plastic bags

PREPARATIONS

- Make copies of the following:
  - "Connect the Concepts" page (1 per student)
  - "Yosemite" page (1 per student in corresponding group)
  - "John Muir" page (1 per student in corresponding group)
  - "50 State Quarters® Program" page (1 per student in corresponding group)
  - "California" page (1 per student in corresponding group)
  - "Where in the World" page (1 per student)
  - "Rocks Rock!" chart (1 per student)
  - "Name That Rock" page (1 per student)

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Rock On!

- Make an overhead transparency of each of the following:
  - "California Quarter Reverse" page
  - "Where in the World?" page
  - "Rocks Rock!" chart
  - "Name That Rock" page
- Assemble pictures of Yosemite National Park (see examples under "Materials").
- Create rock bags. Include an assortment of each type of rock in each paper bag (see examples under "Materials"). The bags should be identical (1 per group).
- Locate an age-appropriate text relating to rocks and rock identification (see examples under "Materials").

GROUPINGS

- Whole group
- Small group
- Individual work

CLASS TIME

Five 45- to 60-minute sessions

CONNECTIONS

- Science
- Social Studies
- Language Arts
- Art

TERMS AND CONCEPTS

- Quarter
- Metamorphic
- California
- Reverse (back)
- Yosemite
- Classification
- Igneous
- John Muir
- Sedimentary
- 50 State Quarters® Program

BACKGROUND KNOWLEDGE

Students should have a basic knowledge of minerals and the rock cycle.

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Rock On!

STEPS

Session 1

1. Write the following terms on the board: "Yosemite Valley," "John Muir," "50 State Quarters® Program," "California."
2. As a warm-up, have students in pairs write predictions about how these four items are connected. As a class, have students share their predictions.
3. Distribute a "Connect the Concepts!" page to each student.
4. Arrange the class into four groups.
5. Assign each group one of the boxes on the "Connect the Concepts!" page. Then, distribute to each student his or her corresponding informational reading and a highlighter. For example, each student in the "California" group will receive the "California" reading.
6. Direct the groups to read their informational handouts and highlight the three or four most important points in the reading. Direct the students to record this information in the box on the "Connect the Concepts!" page.
7. Allow an appropriate amount of time for the groups to complete the activity.
8. Tape four pieces of chart paper to the board and label them "Yosemite Valley," "John Muir," "50 State Quarters Program," and "California" respectively. Direct the groups to come up and write the three or four most important points from their readings in the corresponding box. Direct the students to copy down all the information on their individual charts.
9. Lead a class discussion on the connections that can be made between the four topics. If necessary, explain that the United States Mint has released its California quarter as part of the 50 State Quarters Program. Describe the 50 State Quarters Program for background information, if necessary, using the example of your own state, if available. Then display the transparency or photocopy of the California quarter reverse. Point out that both John Muir and the Yosemite Valley are represented on this coin.
10. Ask the students if they have ever visited California or the Yosemite Valley. If so, have them describe what it looks like and pinpoint the locations on the class map.
11. Display pictures of the Yosemite National Park that showcase the mountains and rock formations. Explain that the Yosemite Valley is part of Yosemite National Park. Ask the students to find similarities in the pictures. Guide the students to realize that all of the pictures include images of mountainous and/or rocky terrain.
12. Explain to the students that they will be learning more about rocks and rock types in the coming days.

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Rock On!

Session 2

1. Review the four terms on the chart papers from the previous session. Review with the students how these four concepts are related.
2. Remind the students that today they will be investigating the different types of rocks found in Yosemite Valley and in other places around the world. Have the students meet in their groups from the previous session.
3. Distribute to each group a bag of assorted rocks and hand lenses. Direct the groups to carefully inspect each of the rocks in their bags with the hand lenses. Direct the students to look for similarities and differences among the rocks. Discuss these comparisons as a class.
4. Introduce the selected text. As a group, preview the illustrations and make predictions about what is happening in different parts of the text.
5. Read the text aloud, asking the students to pay close attention to the characteristics of the three different types of rocks.
6. Review with students the three types of rocks.
7. On a bulletin board, create three columns labeled "IGNEOUS" (column 1), "SEDIMENTARY" (column 2), and "METAMORPHIC" (column 3).
8. Review the characteristics of each type of rock as presented in the text.
9. Distribute six sentence strips, tape, and a marker to each group. Have the groups generate two words or phrases to describe what each group of rocks looks like. Model this process by writing "layered" on a sentence strip and placing it under the "SEDIMENTARY" column. Write "glassy" on another sentence strip and place it under the "IGNEOUS" column. Finally, write "grains of minerals" on a sentence strip and place it under the "METAMORPHIC" column.
10. Allow each group to explain its words and phrases to the rest of the class and add them under the appropriate columns on the bulletin board. Explain to the students that they will be further exploring these rocks and their characteristics in the next session.

Session 3

1. Review the bulletin board from the previous session.
2. Direct the students to meet in their groups from the previous session. Distribute one copy of the "Where in the World?" page to each student and a bag of assorted rocks to each group.
3. Display the "Where in the World?" overhead transparency. Direct the students to classify the rocks into the three categories listed on the overhead, using the bulletin board as a guide if necessary.
4. Allow an appropriate amount of time for group work.

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5. Show the students the correct classification of the rocks in their group bags. Direct the groups to reclassify their rocks as necessary to reflect the correct classifications.
6. Review with the students that rocks coming from inside the earth are formed by magma and are called "igneous" rocks. Those that are formed by layers of sediments like clay and sand are called "sedimentary" rocks. Metamorphic rocks are those that were once igneous or sedimentary but were changed by pressure or heat over a long period of time.
7. Direct the students to find and bring in a rock sample for the next session.

Note: For the next session, record the student descriptions of each rock type (from the bulletin board) on the "Rocks Rock!" chart. Make an overhead transparency and copies of this chart for use in the next session.

Sessions 4 and 5

1. Direct the students to get out the rocks they brought in from home.
2. Briefly review the characteristics of each type of rock from the bulletin board and the "Where in the World?" page.
3. Display an overhead transparency of the "Rocks Rock!" chart and distribute one copy of this page to each student. Explain to the students that this is a copy of the bulletin board that they created in the previous session.
4. Distribute an index card and assign a number to each student. Direct the students to write their names on one side of the index card and their assigned numbers on the other side.
5. Direct the students to use the "Rocks Rock" chart to record the correct classification of his or her rock.
6. Direct the students to write and complete the following sentence on their index cards under their names: "I think my rock is a(n) _____ rock because_____."
7. Distribute one "Name That Rock" page to each student and display an overhead transparency of the same page. Direct the students to place their index cards on the desk with the numbered side facing up. Then, have students place their rocks on top of the cards.
8. Explain to the students that they will inspect five rocks from around the classroom, recording their impressions and classifications on their handouts. Model this process for the students by inspecting one rock. Record this rock's assigned number in the corresponding column on the overhead transparency of the chart. Next, make a few verbal observations about the rock and record these in the "Characteristics" column on the overhead transparency. Remind the students that they can use the bulletin board for help with this part of the activity. Finally, identify the classification of the rock specimen aloud and circle the correct initial ("I" for igneous, "M" for metamorphic, "S" for sedimentary) in the "Classification" column on the overhead transparency.

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Rock On!

9. Explain that each rock should only have one student inspecting it at a time. Encourage students to choose rocks that are different in appearance in order to get a variety of observations.
10. Allow an appropriate amount of time for student work.
11. Direct the students to return to their desks.
12. As a class, review each rock. Have student volunteers share their classification of each rock. Allow for student discussion and clarify student questions.
13. Direct the students to grade their own "Rocks Rock" charts as you record the correct answers on the overhead transparency.
14. Place the rock specimens in small plastic bags and pin them to the appropriate column of the bulletin board.

ENRICHMENT/EXTENSIONS

- Have students create a "rock song." Challenge them to rewrite the lyrics to a popular song, being sure to include information about igneous, sedimentary, and metamorphic rocks.
- Have students draw pictures of the rocks and place them on the bulletin board next to each description.

DIFFERENTIATED LEARNING OPTION

- Allow students to use the rock identification books for additional support as they circulate throughout the room.
- Include digital pictures of each type of rock on the bulletin board so students can visually compare rocks.
- Create a note-card-sized copy of the bulletin board for students to carry with them through the activity in Sessions 4 and 5.

CONNECTION TO WWW.USMINT.GOV/KIDS

Did you know that New Hampshire chose a rock formation for the design of its quarter? Learn all about it on the New Hampshire quarter page! Be sure to include a study on what has happened to this rock formation since the debut of the coin. Students will discover that a rock slide destroyed the "Old Man of the Mountain." This could lead to a discussion or exploration of the changes in rock formations over time. (www.usmint.gov/kids/index.cfm?FileContents=/kids/coinnews/50sq/2000/nh.cfm)

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NAME_____

Connect the Concepts

Directions: Record the most important points from your group reading in the corresponding box below. As other groups share their information with the class, record it in the appropriate boxes.

• _____ • _____ • _____ • _____ • _____ • _____ **YOSEMITE VALLEY**	• _____ • _____ • _____ • _____ • _____ • _____ **CALIFORNIA**
• _____ • _____ • _____ • _____ • _____ • _____ **50 STATE QUARTERS® PROGRAM**	• _____ • _____ • _____ • _____ • _____ • _____ **JOHN MUIR**

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California

The explorers who discovered the California peninsula thought at first that it was a large island. They named it after an imaginary island in a Spanish book popular at that time. Today, the peninsula is known as lower California (or the Spanish "Baja California") and the state as upper California ("Alta California").

Upper California was first owned by Spain, then Mexico after it became independent from Spain. California won its independence from Mexico in 1847 and then became part of the United States (but not yet a state). After only one year of independence, California became to target of a gold rush. The population soon began to explode. California became a state in 1850.

Without telegraph or railroads, the news about finding gold could travel across the Pacific Ocean in only three months, while it took five to seven months for news to reach the eastern United States. For this reason, many of California's first immigrants were from China.

The state's many kinds of terrain include high mountains, fertile valleys, arid deserts, and many miles of sandy coastline. California's highest point, at 14,495 feet above sea level, is Mount Whitney; its lowest is Death Valley, at 282 feet below sea level—and the two points are only about 50 miles apart! The state's frequent earthquakes show that the powerful forces that shaped this wonderful land are still at work.

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Yosemite Valley

The Yosemite Valley, named after the Yosemite Indians who used to live there, is now part of Yosemite National Park. The scenery of this 747,956-acre park in the Sierra Nevada mountains is simply spectacular. Set aside as a national park in 1890, the park has a grand collection of natural features such as Tuolumne Meadows. This large, beautiful meadow is surrounded by mountain peaks.

Yosemite Valley has many high cliffs and some of the highest waterfalls in the world. Hetch Hetchy Valley is considered a twin of Yosemite Valley, but was made into a reservoir despite efforts to keep it in its natural state.

The Mariposa Grove contains hundreds of giant sequoias (redwood trees). These trees are the world's largest living things, thousands of years old. Glacier Point has an amazing view of Yosemite Valley and the high country during summer and fall.

The park is also home to dozens of kinds of amphibians, reptiles, fish, mammals, and birds, including many endangered species like the California bighorn sheep and the southern bald eagle. Visitors are always welcome without needing to make reservations first—the park is always open.

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John Muir

John Muir has inspired many people around the world with his writings on the beauty of wilderness and the need to keep it safe for future generations.

This writer and nature lover was born in Scotland in 1838. He moved to Wisconsin with his family when he was 11 years old. He worked on his family's farm throughout his youth and also did some inventing.

When Muir was 30, he traveled to California, where he settled and explored the high country of the Sierra Nevada mountains. Later in his life, he traveled all over the world and encouraged people in different countries to take care of their own wilderness areas.

The California Historical Society voted Muir the greatest Californian in the state's history. He helped to found the Sierra Club in 1892 and served as its president for the rest of his life. Every year, April 21 (his birthday) is John Muir Day in California. Several places in the United States and Scotland are named after him, and Yosemite is now a National Park largely because John Muir worked to make it one.

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50 State Quarters® Program

You may be used to seeing different designs on the back of the quarter dollar coin. But did you know that, before the 50 State Quarters® Program began, the coin had not changed since 1932? Except for the bicentennial design in 1975 and '76, the same eagle design was used for more than 65 years!

The first designs from the 50 State Quarters Program began showing up on the reverse (back) of this coin in 1999. Over the following 10 years, each of the nation's fifty states is being honored with its own design. The order in which the states joined the Union is the same order in which the fifty designs are being released. The familiar portrait of George Washington always remains on the obverse (front).

Through this program, the United States Mint introduces the American people to the special history, geography, and heritage of each of the states. A new quarter is released into general circulation about every 10 weeks, for a total of five new quarter designs each year. Each of these designs is minted for a period of 10 weeks, never to be minted again after that.

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Where in the World?

Directions: See if you can classify your rocks into these categories.

CATEGORY #1

These rocks appear to have come from deep within the Earth, where it is very hot. These rocks may have gotten to the surface through a volcano. These rocks can look glassy and usually do not have large mineral or crystal chunks.

CATEGORY #2

These rocks formed on the top of the Earth by layers of clay, sand, and silt. These layers may be parallel, straight, crooked, or clumped. Some of these rocks will have small grains of minerals like quartz. Many of these rocks are used as building materials.

CATEGORY #3

These rocks used to be in one of the above categories, but have been changed by pressure and/or heat over time. You will be able to see in them mineral grains that were flattened by high heat and pressure. These grains may be in alternating or irregular patterns.

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NAME_____

Rocks Rock!

IGNEOUS	SEDIMENTARY	METAMORPHIC	UNKNOWN

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NAME_____

Name That Rock

ROCK #	CHARACTERISTICS	CLASSIFICATION
		I S M
		I S M
		I S M
		I S M
		I S M
		I S M
		I S M
		I S M

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California Quarter Reverse

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2: A Fish Story

Based on the Minnesota quarter reverse

OBJECTIVE

Students will closely examine and analyze an American tall tale. Students will learn the key features of a tall tale and will compose a tall tale of their own.

MATERIALS

- 1 overhead projector (optional)
- "Minnesota Quarter Reverse" page
- 1 class map of the United States
- 1 copy of an age-appropriate text that tells the story of any tall tale (except for Paul Bunyan) such as:
  - *American Tall Tales* by Mary Pope Osborne
  - *Cut from the Same Cloth: Women of Myth, Legend and Tall Tale* by Robert D. SanSouci
  - *Here Comes McBroom: Three More Tall Tales* by Sid Fleischman
- "Tall Tale Analysis" graphic organizer
- Overhead markers
- "Create A Tale" sheet
- "Tall Tale Rubric"
- Large sheets of white construction paper
- 1 copy of an age-appropriate text that tells the story of Paul Bunyan and the creation of Minnesota's 10,000 lakes, such as:
  - *Paul Bunyan* by Bill Balcziak
  - *Paul Bunyan* by Sandra Becker
  - *Paul Bunyan* by Esther Shephard
  - *Paul Bunyan and his Blue Ox* by Patricia A. Jensen
  - *Story of Paul Bunyan* by Barbara Emberley

PREPARATIONS

- Make copies of the following:
  - "Tall Tale Analysis" graphic organizer (1 per student).
  - "Create A Tale" sheet (1 per student).
  - "Tall Tale Rubric" (1 per student).

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A Fish Story

- Make an overhead transparency (or photocopy) of the following:
  - "Minnesota Quarter Reverse" page
  - "Tall Tale Analysis" graphic organizer
- Locate an age-appropriate text that tells the story of Paul Bunyan and the creation of Minnesota's 10,000 lakes (See examples under "Materials").
- Cut the construction paper into the shape of a large coin (2 coins per group).

GROUPINGS

- Whole group
- Pairs
- Small groups

CLASS TIME

Five 45- to 60-minute sessions

CONNECTIONS

- Language Arts
- Social Studies
- Art
- Drama

TERMS AND CONCEPTS

- Quarter
- Character
- Resolution
- Reverse (back)
- Setting
- Tall tale
- Hyperbole

BACKGROUND KNOWLEDGE

Students should have a basic knowledge of:

- U.S. geography
- The writing process
- Fictional writing

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A Fish Story

STEPS

Session 1

1. Ask the students if they've ever heard of a tall tale and, if so, what one might be. Accept all student responses. If necessary, explain that a tall tale is a story with exaggerated characteristics and accomplishments.
2. Explain that tall tales are stories that were created as a form of entertainment long before television ever existed. Sometimes these stories changed over time as they were told from person to person, becoming more and more exaggerated. Usually the stories were told in a way that was easy for people to retell.
3. Ask if the students can think of any tall tales that they may know. Students may remember the stories of Johnny Appleseed, or Pecos Bill.
4. Introduce the selected text. As a group, preview the text and illustrations to generate observations about what might be occurring at different points in the text.
4. Read the selected text to the class and attend to any unfamiliar vocabulary.
5. Display an overhead transparency or photocopy of the "Tall Tale Analysis" graphic organizer and distribute a copy to each student. Explain the three sections and the appropriate thinking by reflecting on the story the students have just heard. Complete each section as a class.
   - **Character:** Explain that the characters in tall tales have features and traits that are extremely exaggerated. The feats that they perform are also greatly exaggerated. Characters in tall tales usually can be described as strong, courageous, honorable, etc. How would you describe the main character? What characteristics are most exaggerated about him or her?
   - **Setting:** What was the setting of this story? Would the story have made sense if this story took place in another location?
   - **Hyperbole:** Hyperbole is the exaggeration used in the tall tale in order to make the story impossible and humorous. What kind of exaggeration was used in this tall tale?

6. Divide the students into pairs and distribute a copy of the graphic organizer to each pair. Direct the students to work together to complete this sheet.

Sessions 2 through 4

1. As a class, revisit the "Tall Tale Analysis" chart from the previous session and discuss.
2. Describe the 50 State Quarters® Program for background information, if necessary, using the example of your own state, if available. Then display the transparency or photocopy of the Minnesota quarter reverse. Locate Minnesota on a classroom map. Note its position in relation to your school's location.

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3. With the students, examine the coin design. Have the students point out the elements of this design, including the outline of the state of Minnesota, the pine trees, the water, the bird (loon), and the individuals fishing, as well as the words "Land of 10,000 Lakes."
4. As a class, discuss what the students can infer about the state of Minnesota by looking at this coin. They should be able to note that the state has many lakes and that people there participate in outdoor activities, including fishing.
5. Explain that, in groups of three, the students will write tall tales of their own. For each tall tale, they will need to develop a central character that is somehow responsible for creating Minnesota's 10,000 lakes.
6. Distribute a "Create a Tale" sheet to each student. As a class, review the assignment as described on this sheet.
7. Distribute a "Tall Tale Rubric" to each student and review this rubric with the entire class.
8. Allow enough time for the groups to draft, edit, and write their tall tales.
9. Distribute two pieces of large white construction paper cut in the shape of a large coin to each group. Each group will use these coins to draw the hero of its tall tale. On the back of this coin, the students will write the questions from their "Create a Tale" sheets, including all the answers.
10. Finally, each group will use the classroom resources to create costumes and props in order to make a dramatic presentation of its tall tale. The groups should practice their productions before presenting them to the class.

Session 5

1. Direct the groups to take turns presenting their characters and then their tall tales to the class.
2. Hang the students' illustrations in the classroom so that students can see both sides.
3. Introduce the selected text about Paul Bunyan. As a group, preview the text and illustrations to generate observations about what might be occurring at different points in the book.
3. Read the selected text aloud.

ENRICHMENT/EXTENSION

Have students read additional examples of tall tales and direct them to analyze the features of the story using a new "Tall Tale Analysis" sheet. Have students compare characters using a Venn diagram.

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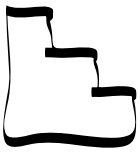
A Fish Story



DIFFERENTIATED LEARNING OPTION

Videotape the skits for students to use in completing the "Tall Tale Analysis" sheet.

CONNECTION TO WWW.USMINT.GOV/KIDS

Minnesota chose a lake to be on the reverse of its quarter because the lake is an important symbol of the state. Many states choose important landmarks to be on their quarter. You can learn more about states by visiting the United States Mint H.I.P. Pocket Change ™ Web site. Visit the "State Symbol" Teacher Feature. (www.usmint.gov/kids/index.cfm?fileContents=teachers/features/2002/11.cfm)

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NAME_____

Tall Tale Analysis

CHARACTER	SETTING	HYPERBOLE

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NAME_____

Create A Tale

Directions: Use the steps below to create your presentation. Be prepared to present your work on _____.

1. Use the questions in the chart below to brainstorm your group's tall tale.
   - Complete the chart, answering the questions to create a character and a setting.
   - Imagine how you might exaggerate this character's attributes.
   - Think of how these attributes will lead this character to create Minnesota's 10,000 lakes. Remember, your purpose is to *explain* the existence of Minnesota's 10,000 lakes.

Character Questions	**Student Ideas**
What is your character's name?	
What is special about your character (physical features)?	
What is his or her job?	
Where will this story take place?	
Are there any other characters in your story?	
What problem did your character solve that led to the formation of Minnesota's 10,000 lakes?	
How was the character able to solve this problem?	

2. As a group, draft and edit your tall tales using the writing process.
3. On your construction paper, draw a large illustration of the hero of your tall tale. On the back of this illustration, copy the chart above and include your answers.
4. Use classroom resources to create costumes and props in order to act out your tall tale.
5. Practice this production with your group before you present it to the class.
6. Present your illustration and character description to the class and then present the dramatic enactment of your tall tale.

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NAME_____

Tall Tale Rubric

Directions: Use the rubric below as a guide when you create your tall tale and presentation.

Parameter	4	3	2	1	Score
Requirements	All of the written requirements were met.	Almost all the written requirements were met.	Most of the written requirements were met, but several were not.	Many requirements were not met.	
Teamwork	Group members consistently work well together.	Group members usually work well together.	Group members occasionally work well together.	Group members rarely work well together.	
Characters	The main character is named and appropriately described in the tall tale.	The main character is named and described.	The main character is named, but not described in a way that related to the story's goals.	It is difficult to tell who the main character is or how he/she is the hero of a tall tale.	
Setting	Many descriptive words are used to tell when and where the story took place.	Some descriptive words are used to tell when and where the story took place.	Few descriptive words are used to tell when and where the story took place.	The setting of the story is not described.	
Problem and Resolution	It is very easy for the reader to understand the problem the main character faces, and the resolution makes sense.	It is fairly easy for the reader to understand the problem the main character faces, and the resolution makes sense.	It is fairly easy for the reader to understand the problem the main character faces, and the resolution makes little sense.	The tall tale's problem is unclear, and the resolution makes little sense or is not based on the character's traits.	
Illustration	The character illustration is detailed, attractive, and creative. All the required information is included on the back of the illustration.	The character illustration is somewhat detailed, attractive, and creative. Most of the required information is included on the back of the illustration.	The character illustration relates to the tall tale. Some of the required information is missing from the back of the illustration.	The character illustration does not relate to the tall tale. None of the required information is included on the back of the illustration.	
Presentation	Group members speak clearly and at an appropriate volume. Props and costumes are used.	Group members speak fairly clearly, but may be difficult to hear at times. Props and costumes are used.	Group members speak somewhat unclearly and are difficult to hear at times. Props and costumes are made, but are not used.	Group members do not speak clearly and are difficult to hear. Props or costumes are not made or used.	
TOTAL					

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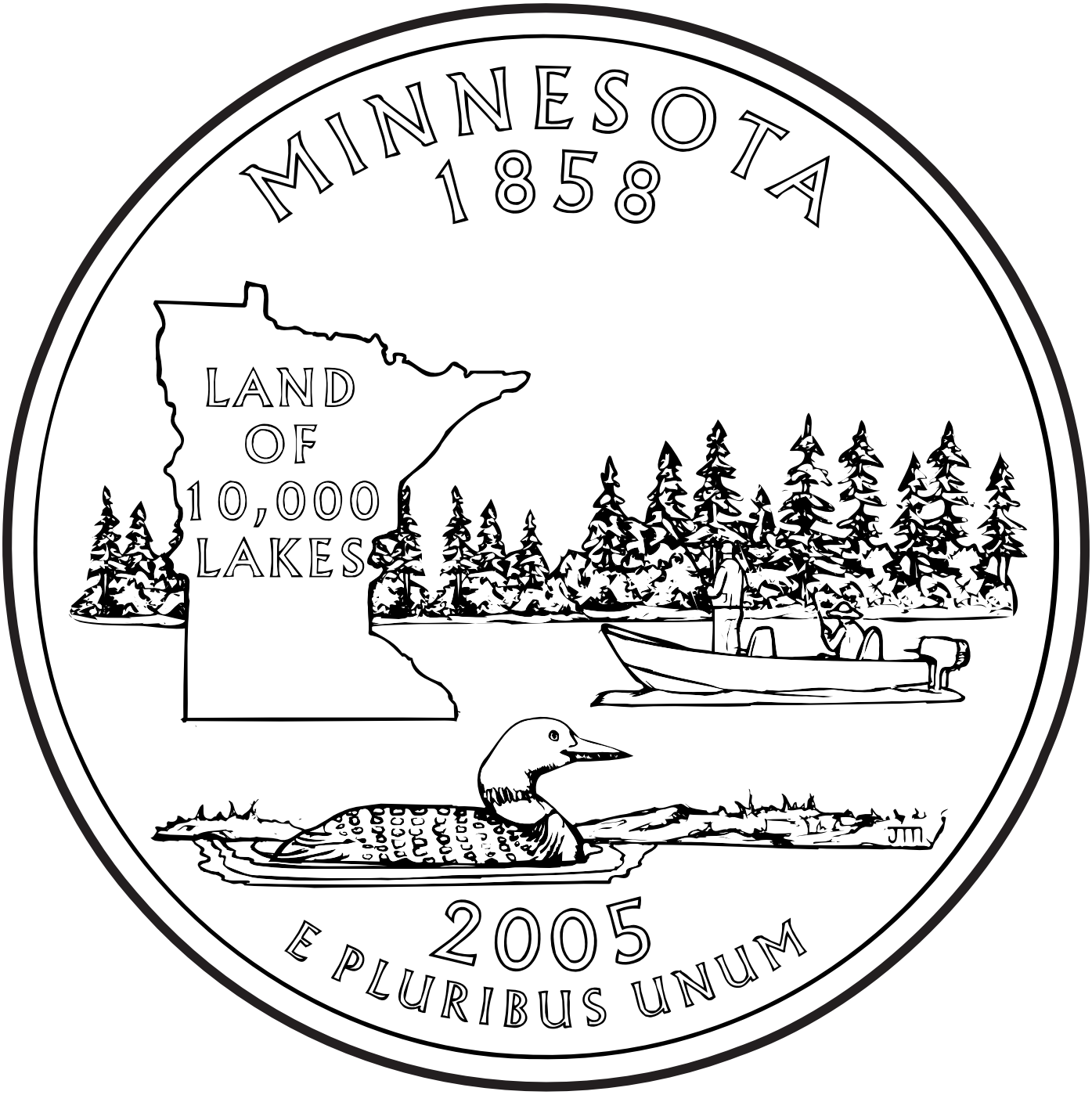
Minnesota Quarter Reverse



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3: Explosive Ideas!

Based on the Oregon quarter reverse

OBJECTIVE

Students will describe and demonstrate ways the Earth's layers interact to cause changes in the Earth's surface. They will explore volcanoes and earthquakes and their effects. They will present an argument using research.

MATERIALS

- 1 overhead projector (optional)
- "Oregon Quarter Reverse" page
- 1 class map of the United States
- "Our Changing Earth" pages
- 1 copy of any variation on the Klamath Indian legend about Crater Lake, such as those available at:
  - www.nps.gov/crla/hrs/hrsae.htm
  - craterlake.wr.usgs.gov/history.html
  - www.outdoors.net/magazines/outdoors/camping/nationalparks/craterlake/clnp-his.asp
- 1 hard-boiled egg
- 1 copy of an age-appropriate text that relates to the structure of the planet Earth, such as:
  - *Magic School Bus: Inside the Earth* by Joanna Cole
  - *What's Under the Bed?* by Mick Manning
  - *How to Dig a Hole to the Other Side of the World* by Faith McNulty
  - *Structure: Exploring Earth's Interior* by Roy A. Gallant
- 1 copy of information about Continental Drift (Pangaea), such as those available at:
  - pubs.usgs.gov/publications/text/historical.html
  - pubs.usgs.gov/publications/text/dynamic.html
  - cddis.gsfc.nasa.gov/926/slrtecto.html
- "Tectonic Puzzle" page
- Scissors
- Small plastic bags
- Appropriate research materials and/or Web sites relating to volcanoes
- Appropriate research materials and/or Web sites relating to earthquakes
- "Presentation Rubric"
- 2.5" x 4" pieces of drawing paper
- Colored pencils

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Explosive Ideas!

PREPARATIONS

- Make copies of the following:
  - "Oregon Quarter Reverse page (1 per student)
  - "Our Changing Earth" pages (1 set per student)
  - Any variation on the Klamath Indian legend about Crater Lake (1 per student)
  - "Tectonic Puzzle" sheet (1 per small group)
  - "Presentation Rubric" (1 per student)
- Make an overhead transparency (or photocopy) of the "Oregon Quarter Reverse" page.
- Cut and assemble the "Our Changing Earth" pages into booklets (1 per student).
- Make 1 hard-boiled egg.
- Reserve computer lab time for research (optional).
- Locate an age-appropriate text that relates to the structure of the planet Earth (see examples under "Materials").
- Cut the "Tectonic Puzzle" pages along the dotted lines and places all the pieces from each sheet in a small plastic bag before Session 3.
- Gather appropriate research materials and/or Web sites relating to volcanoes (see examples under "Materials").
- Gather appropriate research materials and/or Web sites relating to earthquakes volcanoes (see examples under "Materials").
- Cut 2.5" x 4" pieces of drawing paper (about 10 per student).

GROUPINGS

- Whole group
- Small Groups
- Individual work

CLASS TIME

Five 45- to 60-minute sessions

CONNECTIONS

- Science
- Social Studies
- Language Arts
- Art

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Explosive Ideas!

TERMS AND CONCEPTS

- Quarter
- Structure
- Crust
- Hypothesis
- Reverse (back)
- Earth
- Tectonic plates
- Crater
- Core
- Earthquakes
- Legend
- Mantle
- Volcanoes

BACKGROUND KNOWLEDGE

Students should have a basic knowledge of:

- The Earth
- Note taking
- Research skills
- Cooperative learning

STEPS

Session 1

1. Describe the 50 State Quarters® Program for background information, if necessary, using the example of your own state, if available. Then display the transparency or photocopy of the Oregon quarter reverse. Locate Oregon on a classroom map. Note its position in relation to your school's location.
2. With the students, examine the coin design. Have the students identify the images and writing in this design, including the words "Crater Lake," the water, the trees, and the land.
3. Distribute an "Our Changing Earth" booklet to each student. Direct each student to write his or her name on the booklet's cover.
4. Discuss the meaning of the word "crater." If necessary, explain that a crater is an indentation in the Earth in the shape of a bowl. Instruct the students to write a definition for this word in their booklet.
5. Give the students some examples and then direct them to independently brainstorm a few ways in which nature can change the Earth (such as erosion, earthquake, fire, etc.). The students should list these thoughts in their booklets and then share their ideas as a class. The students should add peer responses to their lists in their booklets.
6. Guide the students to brainstorm ways in which a crater could be formed. Ask the students to hypothesize about how this lake came into existence. Direct each student to write his or her thoughts about the lake's formation in his or her "Our Changing Earth" booklet.
7. As a class, discuss the fact that our planet changes all the time; sometimes because of natural events and other times because of the actions of the Earth's inhabitants.

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8. Explain that, the American Indians who lived in the area surrounding the lake created legends to explain how the lake was formed.
9. Place the students in small groups and distribute a copy of the Klamath Indian legend about the creation of Crater Lake to each student.
10. Direct the students to read this legend independently. Explain that the groups will discuss what type of natural phenomenon this story could possibly be describing. Direct the students to enter their thoughts in their booklets.
11. Explain that, over the next few days, the students will be exploring the natural phenomena that caused the creation of this lake.

Session 2

1. Revisit the image of the Oregon quarter and ask the students to recall what they discussed relating to the coin's design. The students should recall that the coin features a lake that was created by a natural change in the Earth. Explain that, today, the students will begin their exploration of our changing planet.
2. Show the students a hard boiled egg and ask them to hypothesize about a connection between this egg and the planet Earth. Record student comments on the chalkboard or on chart paper.
3. Introduce the students to the selected text about the Earth's structure. As a group, preview the text and illustrations to generate observations about what is occurring at different points in the text.
4. Read the selected text to the class and attend to any unfamiliar vocabulary. Stop reading periodically to draw the students' attention to information about the Earth's layers and tectonic plates. As the students are listening to the text, direct them to take notes in the appropriate section of their booklets.
5. As a class, discuss what the students can recall and, in their booklets, record pertinent information about the composition of each of the Earth's layers. Guide the students to understand the following information about the Earth's layers:
   - **Core**: Solid in the center, but surrounded by liquid.
   - **Mantle**: Solid, but gel-like. Takes up the most space of any layer. Heat and pressure inside the earth can cause this layer to move. Nearly liquid areas of the mantle are known as magma.
   - **Crust**: The very thin outermost layer of the Earth. The rocks in this layer are cool and brittle (easily broken).
6. As a class, discuss what the students learned about the Earth from this text. Again, ask the students to hypothesize about a connection between the egg and the planet Earth. Peel and separate the layers of the egg. Guide the students to draw connections to the Earth's layers; the crust, the mantle, and the core.

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7. Direct each student to draw and label a diagram of the Earth's three main layers in his or her "Our Changing Earth" booklet.

Sessions 3 and 4

1. Divide the students into pairs or small groups and distribute a bag containing the "Tectonic Puzzle" to each group, making sure there is an even number of groups. In their groups, have the students put these pieces together.
2. Ask the students what they see when they have completed the puzzle. The students should recognize that the puzzle is a map of the world.
3. Direct the students to notice the specific way in which their puzzle pieces were cut, allowing them to compare the pieces with other groups. Have them share their findings. Accept a variety of responses.
4. Explain that, when the mantle started shifting around under the Earth's crust, it pulled chunks of the crust with it. These pieces of the crust and mantle are called plates. Explain that movements in the Earth's mantle greatly affect the surface of our planet, most notably through the production of earthquakes and volcanoes.
5. Show students the Web sites relating to Pangaea. Discuss the sites and attend to any questions.
6. Assign each small group one topic-either "earthquakes" or "volcanoes." Make sure that each topic has the same number of groups. Explain that, in the "Our Changing Earth" booklet, there are questions about these topics. In the students' small groups, they will research the answers to the questions for their assigned topics. The groups may decide how they will divide the research among the team members.
7. Explain that, after the students answer all of these questions, they will meet with a group that was assigned the other topic. Then, the students will share the information that they found. Based on the research that these groups did, they will need to decide whether they believe that Crater Lake was formed as a result of a volcano or an earthquake.
8. Provide each group with research materials appropriate for its topic or allow the students to visit the school library or computer lab in order to conduct their investigations.
9. Allow the students an appropriate amount of time to conduct their research and to discuss their findings with their topic groups.
10. Pair the groups with their topic counterparts (volcano groups with earthquake groups). Instruct these larger groups to share their findings and to discuss which natural occurrence they believe caused the creation of Crater Lake.
11. Distribute a "Presentation Rubric" to each group and review this rubric as a class.
12. Allow the students time to create a visual and oral presentation about the natural event that they believe caused this lake's creation. In this presentation, the students should also

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explain why this event resulted in the lake's creation. The students should also give examples and information about why the other natural occurrence could not have caused Crater Lake.

Session 5

1. Allow students to present their research to the class.
2. After all the presentations are complete, explain that Crater Lake was caused as a result of a volcanic eruption at the former site of Mt. Mazama.
3. Reread the Klamath Indian legend to the students and ask them to listen again for clues that the Klamath Indians witnessed a volcanic eruption.
4. Explain that this eruption was so great that it caused the top of the mountain to collapse, creating a large crater. When the eruption was over, the lava cooled off and hardened. In the years that followed, rain and snow filled this big crate with water, creating a lake.

ENRICHMENT/EXTENSIONS

- Direct students to create a flip book that shows the progress of the volcano's eruption that eventually led to the creation of Crater Lake as we see it today on Oregon's quarter.
- Conduct a class experiment to help the students visualize a real volcanic eruption: Create a model volcano and cause a chemical reaction to simulate lava (suggested ingredients include water, red food coloring, liquid detergent, baking soda, and vinegar).

DIFFERENTIATED LEARNING OPTIONS

- Minimize or add to the questions that groups must research.
- Allow students to word process or dictate the entries in their booklets.

CONNECTION TO WWW.USMINT.GOV/KIDS

Another way our Earth has changed over the years has been through the effects of glaciers. Help your students learn more about glaciers and how they created our country's Great Lakes by testing out the lesson plan "How to Make a Lake." (www.usmint.gov/kids/components/50sqLessonPlans/rtf/200423-1.pdf)

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Our Changing Earth

_____
Name

What is a crater? _____

How do you think Crater Lake was formed? _____

List some ways that the Earth can change. _____

What natural event do you think the Klamath Indians spoke of in their legend about Crater Lake? _____

_____

Notes from the reading: _____

_____

_____

Describe each of the Earth's layers:

Core: _____

_____

Mantle: _____

_____

Crust: _____

_____

In this box, draw and label the Earth's three main layers.

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Volcanoes

What are plate boundaries? _____

What happens when two plate boundaries collide? What is this called? _____

_____

What is a volcano's vent? _____

What is magma? How is it different from lava? _____

Draw a picture of two volcano shapes in the boxes.
Write thename of each shape below the boxes.

Describe what happens when a volcano erupts.

_____

_____

What is a caldera? _____

_____

_____ _____

Additional notes: _____

_____

Earthquakes

What is a fault (or fault line)? _____

Name and describe three types of faults. _____

_____

_____

What is the epicenter of an earthquake? _____

What is the focus of an earthquake? _____

Describe what happens to the Earth during an earthquake. _____

_____

What can happen as a result of an earthquake? _____

_____

Additional notes: _____

_____

_____

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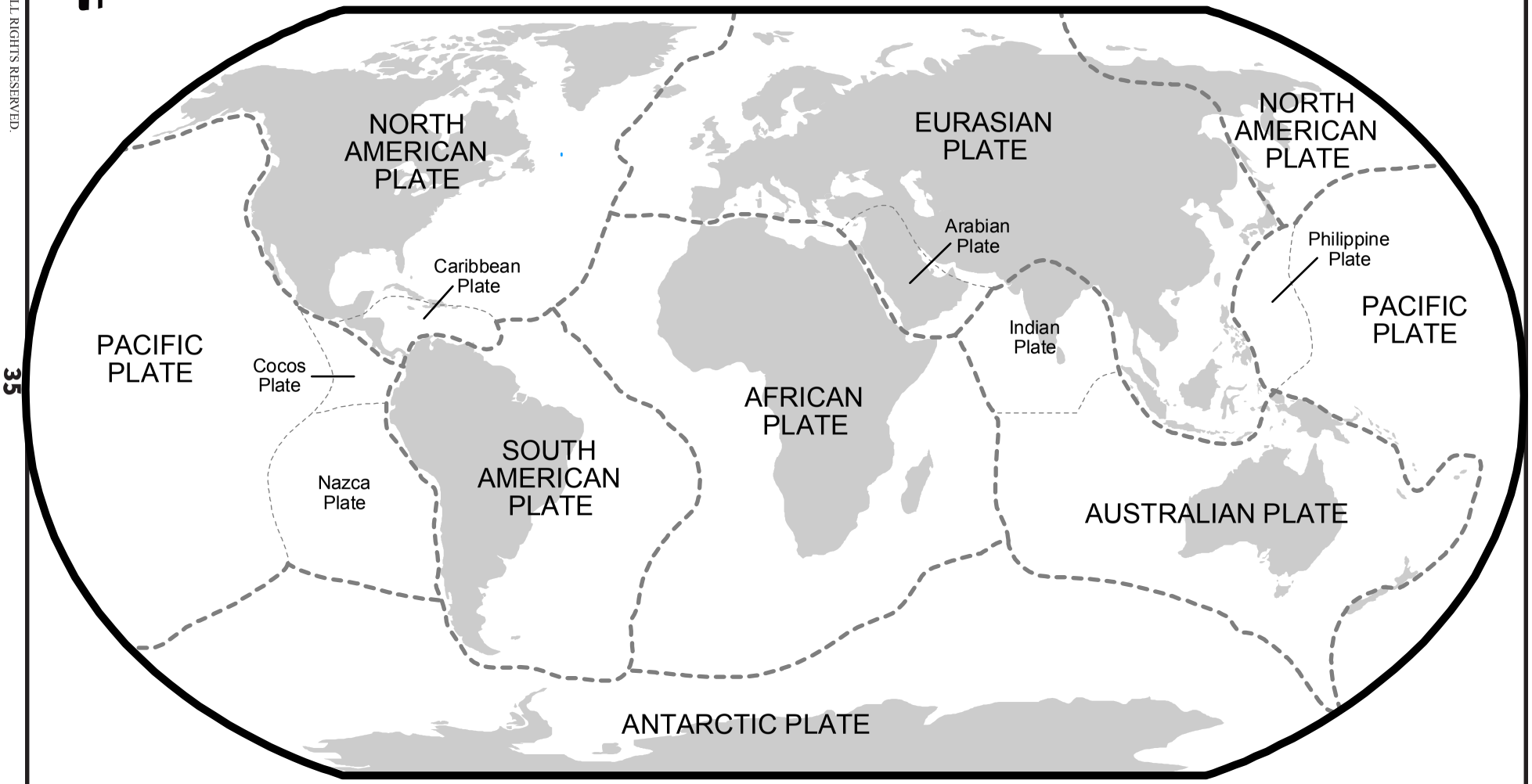
Tectonic Puzzle



Key

- - - - - - - - - - Major plates (cut along these lines)

- - - - - - - - - - Minor plates

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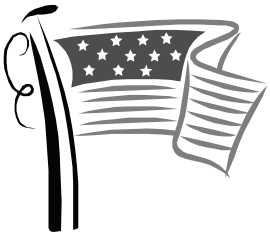

NAMES _____ DATE _____

Presentation Rubric

Directions: Compare each member's research and determine which natural event you believe caused the creation of Crater Lake. Support this belief with creative and factual arguments, which you will present to the class. You will be graded according to this rubric:

Parameter	4	3	2	1	Score
Strength of argument	Argument is completely supported by student research and is convincing.	Argument is mostly supported by student research and is somewhat convincing.	Argument is loosely supported by student research and is slightly convincing.	Argument is not supported by student research and is not convincing.	
Completeness and accuracy	Students have demonstrated an excellent and accurate understanding of the topic that they are presenting and include explanations and elaboration. Students include support for their argument for why they believe that this event resulted in the formation of Crater Lake. Students included support for why they did not select the other natural event.	Students have demonstrated a good and mostly accurate understanding of the topic that they are presenting, but fail to elaborate. Students include some support for their argument. Students briefly mentioned why they did not select the other natural event.	Students have demonstrated a fair and somewhat accurate understanding of the topic that they are presenting, but are able to answer only rudimentary questions. Students include minimal support for their argument. Students made no mention of why they did not select the other natural event.	Students have demonstrated a poor and inaccurate understanding of the topic that they are presenting, and cannot answer questions about subject. Students include no support for their argument.	
Organization	Students present the information in a logical, interesting sequence that the audience can follow.	Students present the information in a logical sequence that the audience can follow.	Audience has difficulty following the presentation because it is not in a logical order.	Audience cannot follow presentation because there is no visible order to the presentation.	
Originality of presentation	Students present their information in a creative way that helps express the ideas clearly to all students.	Presentation shows some original thought that helps express the ideas to all students.	Presentation shows little creative thought and does not help clarify the ideas being shared.	Presentation has no creative components to help students understand the information.	
Delivery	Students use clear voices and correct, precise pronunciation of terms, so that audience could hear well.	Students' voices are clear. Students pronounce most words correctly and are heard clearly.	Students pronounce terms incorrectly; audience has difficulty hearing presentation.	Presenters speak softly and indistinctly and mispronounce terms.	
Cooperative learning	Each member worked well independently, shared all findings with the group; each took part in the presentation's development and production.	Each Member worked well independently, shared some findings; most took part in development and production.	Some members worked well alone, shared some findings; only two members helped to develop and produce the report.	Few members worked well alone, shared few findings; only one member developed and produced the report.	
TOTAL					

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Oregon Quarter Reverse

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4: Can You See the Light?

Based on the Kansas quarter reverse

OBJECTIVE

Students will plan and conduct an investigation by collecting, recording, and reporting data. Students will use the scientific method to conduct their investigations. Students will explore basic life processes. Students will explain phototropism and heliotropism.

MATERIALS

- Potted sunflowers (short varieties)
- "Sunflower Lab" worksheet
- 1 cardboard box
- Scissors
- 1 overhead projector (optional)
- "Kansas Quarter Reverse" page
- 1 class map of the United States
- Grow lights
- Masking tape
- Yardsticks
- Markers
- Protractors
- Clock
- Chalkboard/chalk

PREPARATIONS

- Make copies of the following:
  - "Sunflower Lab" worksheet (1 per student)
  - "Kansas Quarter Reverse" page (1 per student)
- Make an overhead transparency (or photocopy) of the "Kansas Quarter Reverse" page.
- Cut a hole in one side of the cardboard box approximately level with the top of the plant.

GROUPINGS

- Whole group
- Pairs
- Individual work

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Can You See the Light?

CLASS TIME

Four 45- to 60-minute sessions

CONNECTIONS

- Science
- Mathematics

TERMS AND CONCEPTS

- Quarter
- Hypothesis
- Heliotrope
- Reverse (back)
- Observation
- Phototrope
- Conclusion
- Scientific Method
- Control

BACKGROUND KNOWLEDGE

Students should have a basic knowledge of:

- Plant growth
- Photosynthesis
- Scientific method
- Measurement with a protractor

STEPS

Session 1

Note: This session will take place a few days before the lab itself begins.

1. Display a small potted sunflower in bloom for the students. Explain to the students that, in a few days, they will be experimenting with sunflowers to learn more about how they interact with the sun.
2. Lead a class discussion on the relationship between plants and the sun. Ask students to consider the ways in which plants use and depend on the sun for food and growth.
3. Distribute one "Sunflower Lab" handout to each student.
4. Display the cardboard box and point out the hole. Explain that the opening in the side of the cardboard box was placed level with the top of the plant.
5. Explain that the box will be placed over the sunflower so that the opening is level with the top of the plant and that the sun will shine through the hole.
6. Have the students read and discuss with a partner question 1 on their Lab handouts, then record their predictions. Remind the students that they need to include an illustration with their predictions.

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Can You See the Light?

Session 2

1. As a class, review the student predictions and illustrations from their lab sheets. Discuss what might make the plant look different after being covered with the cardboard box.
2. Lift the box off the sunflower. Direct the students to complete question 2 (illustrate the sunflower and summarize the changes they observe) on their lab sheets. Student responses should reflect that the sunflower bent toward the hole in the cardboard box.
3. Have the students discuss why the plant is leaning toward the hole. The students should realize that the plant bent toward the opening in the cardboard box because that was the only source of sunlight. Explain that plants that grow or bend in response to light are called "phototropes." Direct the students to complete questions 3 and 4 on their lab sheets.
4. Have the students predict why a plant might bend toward the sunlight by completing question 5 on their lab sheets. Explain that a plant that bends toward the sun will be able to photosynthesize more efficiently than one that does not. If necessary, remind the students that photosynthesis is the process by which plants use sunlight as energy in creating food for themselves out of carbon dioxide and water. Direct the students to complete question 6 on their lab sheets.
5. Describe the 50 State Quarters® Program for background information, if necessary, using the example of your own state, if available. Then display the transparency or photocopy of the Kansas quarter reverse. Locate Kansas on a classroom map. Note its position in relation to your school's location.
6. Identify the sunflower on the Kansas quarter. Explain that Kansas selected the sunflower to be on its coin not only because it is the state flower, but also because it has some very interesting characteristics. Explain that sunflowers are not only phototropes, they are also heliotropes. Heliotropes are plants that can turn themselves to stay exposed to the sun throughout the day. Direct the students to record this definition on question 7 on their lab sheets.
7. Lead a class discussion on whether heliotropism is a positive or negative attribute for a plant. The students should realize that heliotropism is a positive attribute because it affords the plant more sunlight for photosynthesis (making food). Have the students answer question 8 on their lab sheets.
8. Explain to the students that they will be conducting an experiment during the next session to determine how far a sunflower will turn during one day.

Sessions 3 and 4

Note: In these sessions, students will need to take measurements at set time intervals. The time intervals need to be at least 20 minutes but no more than an hour apart.

1. Direct the students to complete the warm-up activity under the "Experiment" section of their lab sheets. Have the students discuss how heliotropism affects a plant's ability to photosynthesize. Answer student questions.

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Can You See the Light?

2. Remind the students that they will be conducting an experiment using a sunflower. In order to conduct the experiment, the students will simulate the sun with a grow light. Explain to the students that this lab aims to answer the question, "How far (in degrees) will a sunflower turn itself to face sunlight?" Have the students record this question on their lab sheets.
3. Direct the students to write a hypothesis on the outcome of the experiment on their lab sheets.
4. Organize the class into groups of three or four. Direct the groups to discuss their individual hypotheses. As the groups discuss, distribute a grow light, a potted sunflower, masking tape, two yardsticks, a marker, and a protractor to each group.
5. Model the measurement process for the students. With a marker, place a dot in the center of the face of the sunflower. Then, hold the yardstick in front of the flower (parallel to the floor) and center it with the dot on the face of the flower. Lower the yardstick to the floor. Place one piece of tape at either end of the yardstick. Remove the yardstick and use masking tape to connect the two pieces of tape (which will form a straight line). Explain that this line will be the base line for all of the angle comparisons.
6. Continue modeling the measurement process by ahving the students pretend that time interval 1 has passed and it is time to measure again (be sure to move the sunflower slightly in order to create an angle for measurement). Repeat step 5 but, when lowering the yardstick this time, be sure that it touches one end of the base line. Then, place a piece of tape at either end of the yardstick. When you connect the two pieces of tape, the second line will create an angle for you to measure. Using the protractor, measure the angle between the base line and the newest line.
7. Remind the students that, when measuring, they should use the base line for measurement in each time interval.
8. Direct the students to closely follow the procedure on their lab sheet. Allow an appropriate amount of time for group work.
9. Reconvene as a class and have the groups share their conclusions. Record group data on the board and discuss factors contributing to discrepancies between group data.

ENRICHMENT/EXTENSIONS

As an individual project, direct students to represent all groups' experiment data graphically and write an expository paper on why group results may have varied.

DIFFERENTIATED LEARNING OPTIONS

- Take (digital) pictures of one group's progress and save a record of their measurements. Students can use the data to create their own hypothesis and conclusion.

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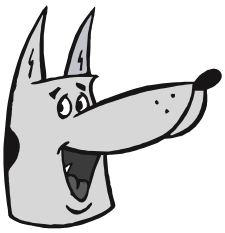
Can You See the Light?

- Instead of using protractors for measurement, have students draw the movement of the sunflower over the course of the experiment.



CONNECTION TO WWW.USMINT.GOV/KIDS

Did you know that former president Dwight Eisenhower hailed from Kansas? Learn more about him and the dollar coin minted in his honor. (www.usmint.gov/kids/index.cfm?fileContents=coinNews/cotm/2000/07.cfm)

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NAME_____

Sunflower Lab

Session 1: The Background

Directions: Over the next few days, you will complete a sunflower lab. Record all the necessary information below.

1. What will the sunflower under the cardboard box look like? Draw it in box 1.

Prediction: _____

_____

2. What does the sunflower actually look like? Draw it in box 2.

Results: _____

_____

3. Define "phototrope." _____

_____

4. True or False: The illustration in question 2 is an example of a phototrope.

5. Predict *why* a plant grows or bends toward sunlight.

_____

_____

6. Photosynthesis is the process by which plants use sunlight as energy to turn carbon dioxide (from the air) and water into carbohydrates (food). Draw a picture that shows this process in box 3.

1

2

3

7. Define "heliotrope." _____

_____

8. Is heliotropism a positive attribute for a plant? Why or why not?

_____

_____

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Sunflower Lab

Session 2: The Experiment (1)

HYPOTHESIS

_____

_____

PROCEDURE

1. Place the sunflower on the edge of a desk with the flower facing you.
2. Using a marker, place a dot at the center of the face of the sunflower.
3. Holding a yardstick parallel to the floor with the flat sides facing the floor and the ceiling, center one end of the yardstick on the dot on the sunflower so the yardstick is perpendicular to the flower.
4. Lower the yardstick slowly to the floor.
5. Place two small pieces of tape on the floor at either end of the yardstick.
6. Lift the yardstick up. Use masking tape to connect the two small pieces of tape, forming a straight line. Label this line "Base Line."
7. Place the grow light on the left side of the plant about 12 inches away and turn it on.
8. Illustrate the experiment in box 1 in the "Observations" section of this packet.
9. At the first time interval, repeat steps 3 through 6, but label the new line on the floor "Interval 1."
10. Using the protractor, measure the angle between the base line and the "interval 1" line. Record this information in number 2 under "Observations."
11. Illustrate the experiment in box 2.
12. Repeat observations, measurements, and illustrations at each time interval. Remember: Always use the base line and the most recent time interval line for your measurement.
13. Complete the "Conclusions" section of this packet.

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Sunflower Lab

Session 2: The Experiment (2)

OBSERVATIONS

1. Beginning: _____

_____

1

2

2. Time interval 1: _____

_____

3

3. Time interval 2: _____

_____

4

4. Time interval 3: _____

_____

5

5. Time interval 4: _____

_____

CONCLUSIONS

- The face of the sunflower moved _____ degrees toward the light.
- The sunflower's movement averaged _____ degrees per time interval. (Hint: Add the angles together and divide by 4.)
- If the plant continued to move at this rate, about how long would it take for the plant to face the light? (Explain your theory!)

_____

_____

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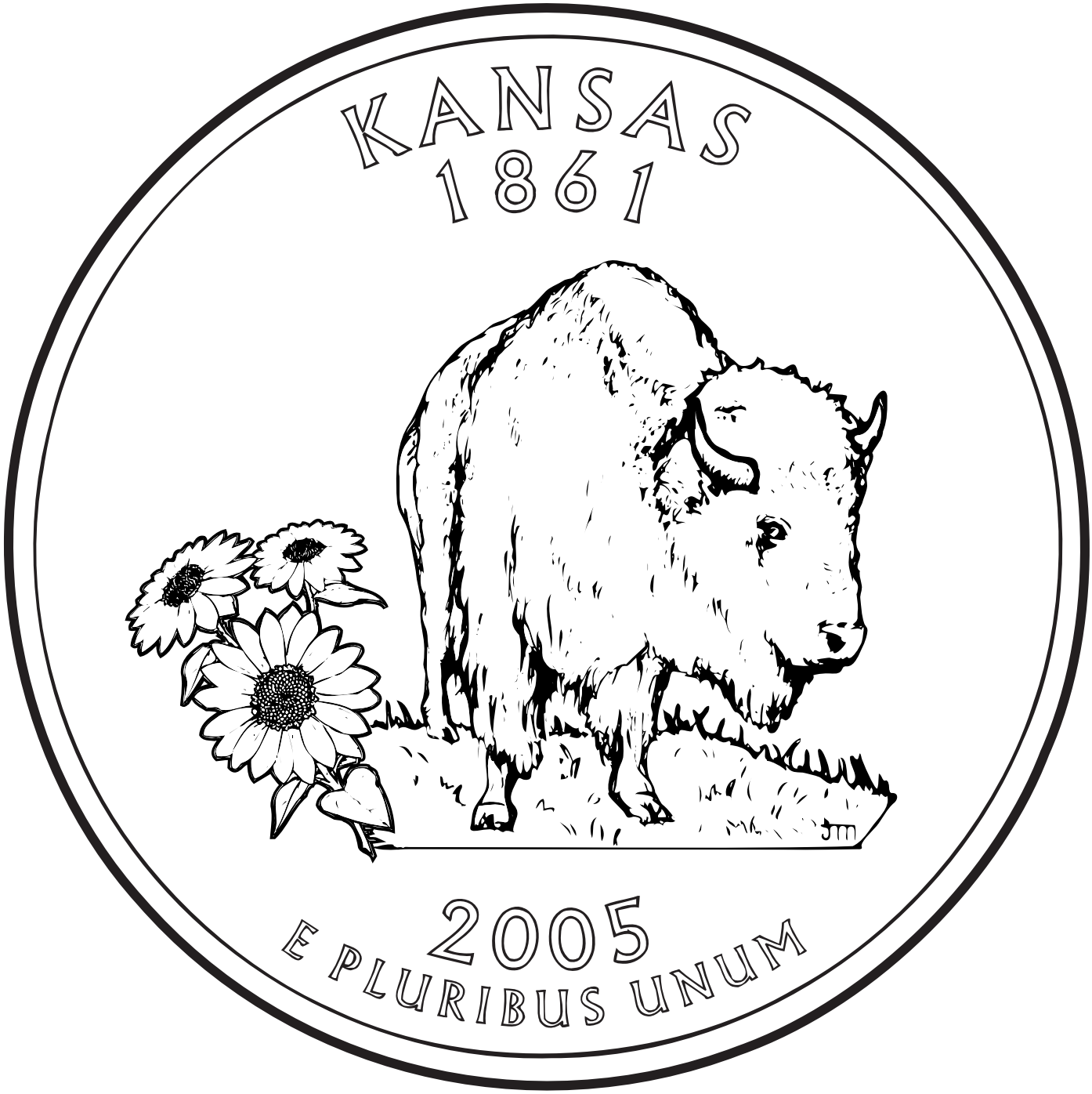
Kansas Quarter Reverse



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5: Bridging the Gap

Based on the West Virginia quarter reverse

OBJECTIVE

Students will explore the role that bridges play in our society. They will conduct an investigation to examine the various shapes and functions of bridges. They will determine which type of bridge would best suit a given scenario, and will give evidence to support this decision.

MATERIALS

- 1 overhead projector (optional)
- "What's the Problem?" page
- "'Missing Bridge' Quarter" page
- 1 class map of the United States
- Chart paper
- Markers
- Images of bridges such as those found at:
  - www.nmt.edu/~armiller/bridgefu.htm
  - www.peterlanger.com/Specialty/Details/Bridges/
  - www.bridgesite.com/bridgephoto.htm
- 1 copy of an age-appropriate text that relates to bridges, such as:
  - *Bridges* by Etta Kaner
  - *Bridges Are to Cross* by Philemon Sturges
  - *Bridges* by Susan Canizares
  - *Bridges* by Lynn M. Stone
  - *Bridges: Amazing Structures to Design, Build and Test* by Carol Johmann
- "Building Bridges" lab sheet
- Several books of identical thickness
- 4" x 6" index cards
- U.S. quarters
- Rulers
- Scissors
- Additional hardcover books
- String
- 2 chairs with backs
- 2 nine-foot pieces of rope
- Strong tape

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Bridging the Gap

- Heavy string
- 3' x 1.5' piece of cardboard
- "Bridge Basics" note-taking sheet
- 1 VCR and TV
- 1 copy of an age-appropriate video that provides basic information about bridges, such as:
  - *How Do They Build Bridges?* Anchor Bay Entertainment, 1996. Approximately 30 minutes.
  - *Building Big—Bridges.* WGBH Boston Video, 2000. Approximately 60 minutes.
  - *Awesome Bridges.* Simitar Video, 1994. Approximately 12 minutes
  - *Structures (Bill Nye the Science Guy).* Disney Educational Productions, 1995. Approximately 52 minutes.
- A reserved computer lab with Internet access
- Writing paper
- "West Virginia Quarter Reverse" page

PREPARATIONS

- Make copies of the following:
  - "Building Bridges" lab sheet (1 per student)
  - "Bridge Basics" note-taking sheet (1 per student)
  - "'Missing Bridge' Quarter" page (1 per student)
- Make an overhead transparency (or photocopy) of each of the following:
  - "What's the Problem?" page
  - "Missing Bridge" West Virginia quarter page
  - "West Virginia Quarter Reverse" page
- Locate 1 copy of an age-appropriate text that relates to bridges (see examples under "Materials").
- Locate images of bridges (see example sources under "Materials").
- Assemble material trays for Session 2.
- Assemble quarters into groups (16 quarters per group).
- Assemble materials needed for Investigation #3
- Arrange to use a VCR and TV.
- Locate 1 copy of an age-appropriate video that provides basic information about bridges (see examples under "Materials").
- Arrange to use the school computer lab for one class period.
- Bookmark appropriate Internet sites.

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Bridging the Gap

GROUPINGS

- Whole group
- Pairs
- Individual work

CLASS TIME

Five 45- to 60-minute sessions

CONNECTIONS

- Science
- Social Studies
- Language Arts
- Mathematics

TERMS AND CONCEPTS

- Quarter
- Reverse (back)

BACKGROUND KNOWLEDGE

Students should have a basic knowledge of:

- Conducting science investigations in which inferences are made based on observations
- Cooperative learning
- Note taking

STEPS

Session 1

1. Display the "What's the Problem?" overhead transparency and ask the students to discuss what they notice about this image. The students should point out the division of the communities by the ravine between them. Ask the students what might help bring these communities together. The students should respond that a bridge would make it easier to travel between the homes and the store.
2. Ask the students to pretend that they are responsible for constructing a bridge to connect the communities. Invite them to consider the following questions: How would a bridge help this community? Who would use the bridge? Would the bridge be crossed by foot

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or by motor vehicle? What kind of material would be the best to use in building this bridge?

3. Explain that, over the next few days, the students will be looking at different types of bridges and their functions and will decide which type of bridge would be most suitable for this type of crossing.
4. Ask the students why we build bridges. Create a K-W-L chart and record student responses in the **K** column of this chart to mark what the students **K**now about bridges.
5. Explain that the purpose of any structure is either to create a shape or create support. Based on that information, which one is the primary purpose of a bridge? The students should realize that a bridge is built as a means of supporting the individuals or machines that need to cross it. Add this information to the **K** column as well.
6. Ask the students to contribute any other information that they may know about bridges. Add this information to the **K** column also.
7. Remind the students that they will be looking at what type of bridge would be best for this situation. Ask the students to generate questions they need to ask to find out which type of bridge would be best. Guide the students' questions so that they focus on how a bridge is built and why certain bridge structures are better than others. Show the students images of different types of bridges and famous bridges to help them generate their questions. Add student responses to the **W** column of the K-W-L chart.
8. Introduce students to the related text about bridges.
9. Read the selected text to the class and attend to any unfamiliar vocabulary.
10. Explain to the students that they will be looking at three types of bridges. They will be testing two types of bridges in investigations, and watching a demonstration of a third kind.

Session 2

1. Describe the 50 State Quarters® Program for background information, if necessary, using the example of your own state, if available. Then display the transparency or photocopy of the West Virginia quarter reverse without the image of the bridge included. Locate West Virginia on a classroom map. Note its position in relation to your school's location.
2. With the students, examine the coin design. Have the students point out the elements of this design, including the river, the vegetation around the river, and the words "New River Gorge."
3. Ask the students to define the word "gorge" based on this coin's design. The students should realize that a gorge is a deep passage (in this case the passage holds a river) with steep, rocky sides.
4. Ask the students what they can tell you about West Virginia based on the design of this coin. Answers should include that the state has very dense green vegetation, rolling rivers, and steep mountains.

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5. Explain that the quarter design is actually missing an image of a bridge. The bridge that actually crosses the New River Gorge is very important in improving travel within the state of West Virginia.
6. Explain that, today, the students will break into small groups in which they will construct two types of bridges. The students will explore what happens to the structure when pressure is applied on the top of it.
7. Distribute a "Building Bridges" lab sheet to each student and then divide the students into small groups of two or three. Direct the students to meet in their groups.
8. Read through the lab sheet as a class and answer any questions about the students' responsibilities during this investigation.
9. Model the students' first investigation problem to show how they will construct a beam bridge.
10. Direct each group to gather a materials tray, follow the directions on the lab sheet, and answer the first set of questions listed under "Investigation #1."
11. Once the students have all completed the first investigation, model the students' second investigation problem to show how they will construct an arch bridge. Direct them to read and complete the remainder of the investigation activities.
12. Direct each group to follow the directions on the lab sheet and answer the first set of questions listed under "Investigation #2."
13. As the students complete the investigations, direct them to compare the two bridges (beam and arch) with their lab partners.
14. Have the students file their "Building Bridges" lab sheets for use at a later time.

Sessions 3 and 4

1. Revisit the bridge-building activity from the previous session. As a class, discuss what the students learned about the bridges. Ask the students which of their models held the greatest amount of weight over the longest distance. Have the students discuss which of their questions from the K-W-L chart were answered by these activities. Add student responses to the **L** column of the chart.
2. Tell the students that, today, they will see a demonstration of Investigation #3, the third type of bridge, a suspension bridge. Explain that the experiment will be demonstrated to the class and that four student helpers will be needed.
3. The students should take out their "Building Bridges" lab sheets to record the findings of the demonstration under "Investigation #3."
4. Explain to the students that the third bridge investigation is more complicated than the other two. It requires more steps, time, and materials. Solicit four student volunteers. Have the other students follow along in their lab sheets as you set up, explain, and conduct the investigation for a suspension bridge. Tell them that a suspension bridge operates

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much like this example. Two towers (the chairs) support cables (the rope) that are anchored at each end. The roadway (the cardboard) is suspended from these cables.

5. Conduct the investigation and, from the class discussion, have the students fill out their lab sheets. Provide enough time for them to create their drawings of the investigation.
6. Review the discussion from Session 2 about the beam and arch bridges with the students. Discuss the strengths and weaknesses of the suspension bridge as well.
7. Direct the students to complete the "Investigation" question on their lab sheets.
8. Introduce the students to the selected video about bridges.
9. Distribute a "Bridge Basics" note-taking sheet to each of the students. Explain that, as the students watch the video, they will need to take notes about the different types of bridges that exist and how engineers choose a specific type of bridge.
10. As a class, view the selected video. After the viewing, attend to any student questions or concerns.
11. Direct the students to use the information from this video to amend their responses to the "Investigation" question on their lab sheets if necessary.
12. Review all the material presented in the investigation and video. Have the students discuss which of their questions from the K-W-L chart were answered by this video. Add student responses to the **L** column of the chart.
13. Tell the students to file their "Bridge Basics" note-taking sheets for use at a later time.

Session 5

1. Lead a discussion about the three investigations. Have the students reflect on the various parts of each investigation. They should review and discuss items such as the amount of time, materials, and people needed to complete the task.
2. Have the students discuss the strengths and weaknesses of the three bridge types. Responses should reflect that both the arch and suspension bridges can span longer distances. The suspension bridge takes the longest to build, costs the most, and requires the most materials. The beam bridge is the most basic type of bridge, requiring very little time and materials.
3. Direct the students to get with a partner and think about all of the new information that they have learned about bridges and the area surrounding the New River Gorge. Based on the information the students have collected on their "Building Bridges" and "Bridge Basics" sheets as well as the information listed on the K-W-L chart, the students should make a final decision about what kind of bridge they feel would work best for crossing the New River Gorge.
4. Distribute a photocopy of the 'Missing Bridge' page and the "'Missing Bridge' Quarter" page to each student.

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Bridging the Gap

5. Direct each student to complete the West Virginia quarter design by drawing his or her selected bridge type on this image. On a piece of writing paper, have each student write an explanation for why he or she believes his or her selected type of bridge would work best in this scenario. The students should use information from their investigations and research to support this choice.
6. After all papers are written and collected, display the actual West Virginia quarter design for the students.
7. Have the students identify the type of bridge displayed on this coin. Ask the students how many of them thought that an arch would be the best choice for this bridge.
8. As a class, discuss why this is an appropriate bridge type for this situation and have the students justify their conclusions. Direct the students to include in their final response reasons that the other types of bridges would not be appropriate bridge options for this site.

ENRICHMENT/EXTENSIONS

- Introduce students to the terms "compression" and "tension" in relation to bridges. Use these terms when discussing the way the bridge reacts to the weight being placed upon it.
- Invite students to explore the bridge that is shown on the Rhode Island quarter. They should investigate what type of bridge this is, where this bridge is located, and express why this type of bridge was selected rather than a different type.

DIFFERENTIATED LEARNING OPTION

Provide students with a vocabulary list of key bridge terms to assist with their investigation.

CONNECTION TO WWW.USMINT.GOV/KIDS

What's another great arch that has been featured on a coin? Take a look at the Missouri quarter under "The Coins Are Coming" on the United States Mint H.I.P. Pocket Change™ Web site. (www.usmint.gov/kids/index.cfm?fileContents=coinNews/50sq.cfm)

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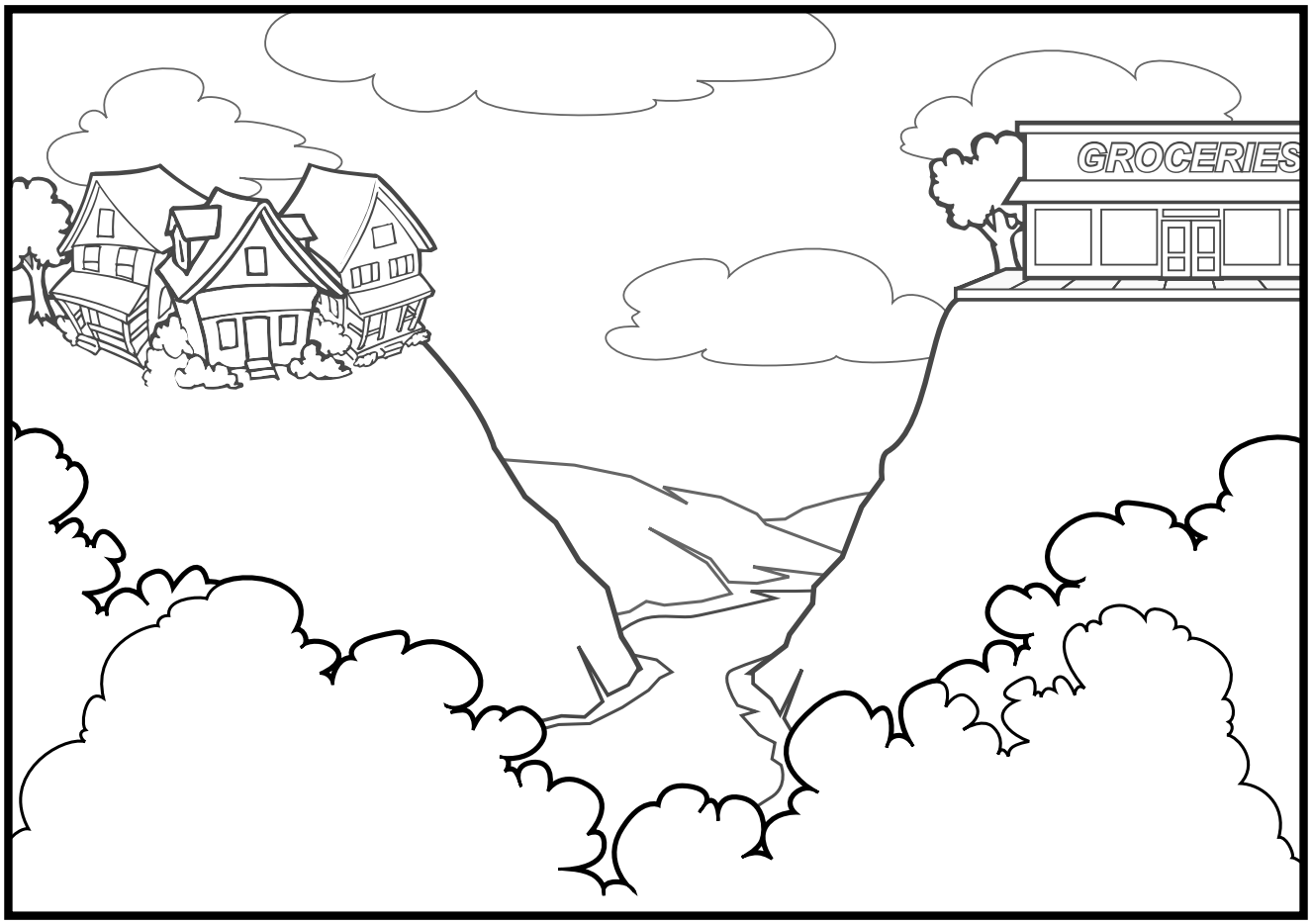
NAME_____

What's the Problem?



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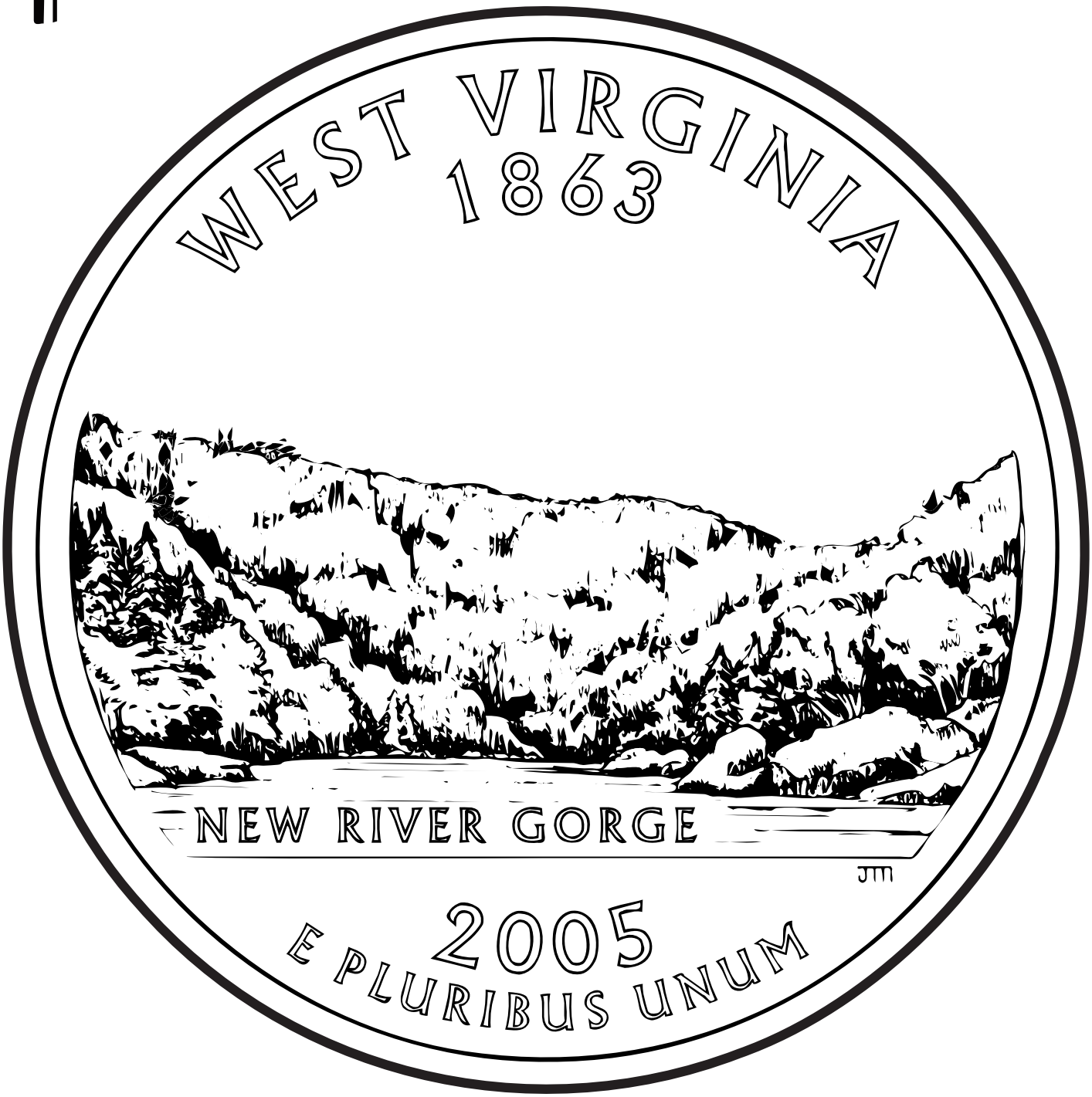
NAME_____

"Missing Bridge" Quarter



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NAME_____

Building Bridges (1)

INVESTIGATION #1: BUILDING A BEAM BRIDGE

Materials:

- Two books of identical thickness
- One 4" x 6" index card
- Sixteen U.S. quarters
- One ruler

Directions:

1. Use your ruler to help you place the two books one inch away from each other.
2. Place the index card across the two books so that same amount of index card is covering both books.
3. One at a time, stack your quarters on the bridge that you've made between the two books.
4. How many quarters was your bridge able to hold when the books were only one inch apart? _____
5. Remove all of your quarters and the index card from their current location.
6. Now move your books so that the gap between them is two inches apart.
7. Again, place the index card across the two books so that same amount of index card is covering both books.
8. One at a time, add your quarters to the bridge that you've made between the two books.
9. How many quarters was your bridge able to hold when the books were two inches apart? _____
10. Draw a picture and describe what your bridge looked like with that number of quarters on it.

    _____

    _____

    _____

11. Repeat steps 5 through 8, but make the gap between the books three inches apart.
12. How many quarters was your bridge able to hold when the books were three inches apart? _____
13. Draw a picture and describe what your bridge looked like with that number of quarters on it.

    _____

    _____

    _____

14. Does the weight of the quarters seem to settle in the middle or at the end of the bridge? _____
15. What can you tell about a beam bridge based on this model? Do you think it is a poor or ideal structure to place across a long distance? Why?

    _____

    _____

    _____

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NAME_____

Building Bridges (2)

INVESTIGATION #2: BUILDING AN ARCH BRIDGE

Materials:

- Two books of identical thickness
- One 4"x 6" index card
- Sixteen U.S. quarters
- Scissors
- One ruler

Directions:

1. Hold the index card so that the lines are facing you and vertical (up and down).
2. Cut a one-inch notch along the pink line at the top of the card.
3. Cut a second one-inch notch along the third blue line from the bottom of the card. Your card should look like Figure 1.
4. Turn the card so that you now have the opposite end facing you.
5. Repeat steps 2 and 3 for this side of the card. Your card should look like Figure 2.

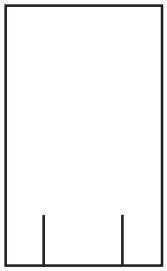

Figure 1

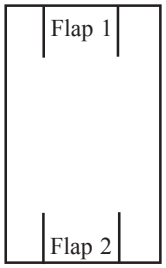

Figure 2

6. Place the two books two inches apart with their openings facing each other.
7. Bend flaps 1 and 2 and place them under the book covers.
8. In piles of four, stack your quarters on the bridge that you've made between the two books.
9. How many quarters was your bridge able to hold when the books were two inches apart? _____
10. When these coins were added, were the flaps against the books, or did they stick up in the air? Draw a picture and describe the bridge at this point.

    _____

    _____

11. Remove all of your quarters from the bridge. Carefully spread your books to four inches apart.
12. Replace the quarters. How many quarters did your bridge hold when the books were four inches apart? _____
13. When these coins were added, were the flaps against the books, or did they stick up in the air? Draw a picture and describe the bridge at this point.

    _____

    _____

14. Based on what you've seen, which type of bridge do you think would hold more weight? Explain your reasons.

    _____

    _____

15. Which type of bridge (beam or arch) would work best across a long distance? Why do you think so?

    _____

    _____

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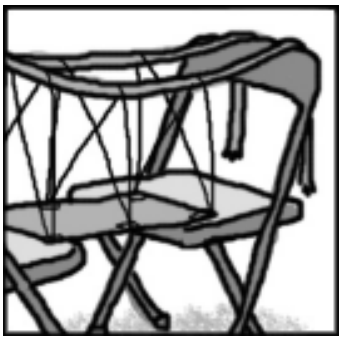
Building Bridges (3)

INVESTIGATION #3: BUILDING A SUSPENSION BRIDGE



Materials:

- Two chairs with backs
- Heavy string
- 1 piece of cardboard 3 feet by 1-1/2 feet
- Stack of books
- Two 9-foot pieces of rope
- Strong tape
- Scissors

Directions:

1. Your teacher will ask for four volunteers to help with this more complex experiment.
2. Two chairs will be placed to face each other and the cardboard will rest on them, each end on a seat.
3. The two pieces of rope will be suspended between the chair backs, above the cardboard.
4. The students pull the ropes until they are tight, with extra rope hanging down the chair backs.
5. Three pieces of string will be tied onto each one of the ropes. The ends of the string will be taped to the outer edges of the cardboard at both ends and the middle of the cardboard.
6. Predict how many books the bridge will hold: _____ books.
7. Now to test the bridge. Students will place one stack of books on the cardboard.
8. How many books did it hold? _____ books.
9. More books will be placed on the bridge. How many were added? _____ books.
10. Describe what happened: _____.
11. Why was the bridge able or not able to support the weight of the books?

_____

13. Try the same experiment not pulling on the ropes as hard. What happens?

_____

_____

14. Draw what the bridge looks like at this point.
15. Of the three types of bridges you have investigated, which would be the strongest for crossing an extremely long distance? Explain.

_____

_____

_____

Investigation Question: The distance across the New River Gorge is 3,030 feet. Now, make a prediction! Based on what you've seen from these investigations, which type of bridge do you think would work best at the New River Gorge? Why?

_____

_____

_____

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NAME_____

Bridge Basics

Directions: Record what you learn about each of the following types of bridges. Be sure to listen for reasons that an engineer would choose one type of design over another.

TYPE OF BRIDGE	BEAM	ARCH	SUSPENSION
What are the strengths of this type of bridge?			
What are the weaknesses of this type of bridge?			
Normally, how long is this type of bridge (between what lengths)?			
List any other important information you have learned about this type of bridge (such as amount of materials needed, time required for construction, cost of building materials, etc.).			

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West Virginia Quarter Reverse

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6: Slowly But Surely

OBJECTIVE

Students will explore and experiment with various sentence structures. Students will identify nouns, adjectives, verbs, and adverbs and use these parts of speech in writing sentences. Students will use addition and multiplication to compute the "value" of each sentence.

MATERIALS

- "Warm Up!" page
- "Verb List" page
- "Challenge Yourself!" page
- "Reproducible Coin Sheet, Obverse" page from the Additional Resources section
- "Coin Codes" page
- "Coin Codes Key" page
- "Crack the Code!" page
- 1 overhead projector
- Overhead markers
- Chart paper/markers
- 1 age-appropriate text relating to adverbs, such as:
  - *Dearly, Nearly, Insincerely: What Is an Adverb?* by Brian P. Cleary, Brian Gable
  - *Up, Up and Away: A Book About Adverbs* by Ruth Heller
  - *Adverbs (Sentences)* by Kelly Doudna
  - *Adverbs (Magic of Language)* by Ann Heinrichs
- Chalkboard/chalk
- Lined paper
- Envelopes
- Scissors

PREPARATIONS

- Make copies of the following:
  - "Warm Up!" page (1 half page per student)
  - "Verb List" page (1 per group)
  - "Challenge Yourself!" page (1 half page per student)
  - "Reproducible Coin Sheet, Obverse" page from the Additional Resources section (1 per group)
  - "Coin Codes" page (1 per group)

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Slowly But Surely

  - "Coin Codes Key" page (1 copy)
  - "Crack the Code!" page (1 per group)
- Make an overhead transparency of each of the following:
  - "Warm Up" page
  - "Challenge Yourself!" page
- Locate an age-appropriate text relating to adverbs (see examples under "Materials").
- Cut out the coins from the "Coin Cut Outs" page and separate them into the group envelopes.

GROUPINGS

- Whole group
- Pairs
- Individual work

CLASS TIME

Three 45- to 60-minute sessions

CONNECTIONS

- Language Arts
- Mathematics

TERMS AND CONCEPTS

- Quarter
- Reverse (back)

BACKGROUND KNOWLEDGE

Students should have a basic knowledge of nouns, verbs, and adjectives.

STEPS

Session 1

1. Distribute one "Warm Up!" slip to each student and display the overhead transparency of the "Warm Up" page. Explain that the students will be reviewing what they know about nouns, adjectives, and verbs. Direct the students to complete the exercise individually.

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Slowly But Surely

2. Allow an appropriate amount of time for the students to complete the activity.
3. Review the "Warm Up!" page as a class. Record student responses on the overhead transparency.
4. Have the students brainstorm what other parts of speech they know or have heard of. If necessary, introduce the idea that an adverb is a part of speech and explain that the students will be exploring adverbs in this lesson.
5. Write the word "adverb" on a piece of chart paper. Have students discuss which other part of speech an adverb sounds like. The students should respond that the word "ad-verb" has the word "verb" in it.
6. Have the students predict what an adverb might be and record responses on chart paper.
7. Introduce the selected text.
8. Read the text aloud to the group. During the reading, attend to any unfamiliar vocabulary.
9. Have the students define "adverb." The students should respond that adverbs are words that tell more about verbs and describe how, when, or where something is done. Students should also recognize that many adverbs end in "ly."
10. Write the word "run" on the board. Point out that the word "run" is a verb that shows action. Have the students brainstorm different ways to run (fast, quickly, slowly, straight, crooked, swiftly, excitedly, etc). List these words on the board. Circle the brainstormed words and explain to the students that these words are adverbs. Point out that many of these words end in "ly."
11. Separate the class into groups of three and distribute one "Verb List" slip to each group.
12. Direct the groups to brainstorm two to four adverbs for each of the verbs listed on the page. Explain that all of the adverbs on their group worksheet should be different.
13. Allow an appropriate amount of time for the students to complete the activity.
14. Collect the group worksheets. Ask for one group to come up to the front of the class.
15. Read aloud the first verb from the list. Have the group act out this verb for the class. For example, if the verb is "run," students will run in place.
16. Then, read aloud one of the adverbs that the groups brainstormed. Direct the students to act out the verb in the way the adverb indicates. For example, students may run "slowly" or "quickly" in place.
17. Continue steps 16 and 17 with the other groups, using the remaining verbs and adverbs on the group worksheets.

Session 2

1. Display the overhead transparency of the "Challenge Yourself" page and distribute a "Challenge Yourself" slip to each student.
2. Direct the students to complete the activity according to the directions.

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3. Review the activity as a class. Record student responses on the overhead transparency. Answer student questions.
4. Collect the "Challenge Yourself" slips from the students for assessment.
5. Explain to the students that they will be using what they know about parts of speech to play a game with coins.
6. Organize the students into pairs.
7. Give each pair an envelope of coin cut outs or real coins, if available, and one of the "Coin Codes" worksheets.
8. Explain that the students will be analyzing sentences for their parts of speech and assigning coin values to each word. Then, the students will calculate the value of each sentence.
9. Allow an appropriate amount of time for the students to complete the "Coin Codes" worksheets.
10. Review the activity as a class. Answer student questions.
11. Explain that each pair will now be creating its own coin code. Have each pair assign a coin (penny, nickel, dime, quarter) to each part of speech (noun, verb, adjective, adverb).
12. Distribute one "Crack the Code!" page to each pair. Then, direct each group to create a key for their system. Explain that this key should be kept secret from the other groups.
13. Allow a few minutes for each pair to create its own coin code and key.
14. Direct each group to write five sentences and analyze them using its key. Then, direct the students to calculate the value of each sentence.
15. Explain that, in the next session, the students will be attempting to crack each others' codes.

Session 3

1. Direct the students to meet in their pairs from the previous session.
2. Have each pair of students review its coin code and double-check the accuracy of the sentence coin values.
3. Explain that the students will try to break each others' coin codes in this session.
4. Model the process of attempting to break a coin code. On the board, write the following sentence: "Mary walked quietly." Next to the sentence, write "40 cents" and indicate to the students that this is the sentence's coin value.
5. Allow a few minutes for the students to figure out which coin values have been assigned to the parts of speech.
6. When most of the students feel they have cracked the code, write the following sentence on the board: "Billy creates beautiful drawings." Next to the sentence, write "21 cents" and indicate to students that this is the sentence's coin value.

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Slowly But Surely

7. Direct the students to check their coin codes to see if they work for this sentence.
8. Have student volunteers share how they cracked this coin code. If necessary, reveal that your coin code assigned the following values to each part of speech:
   - Noun: 5 cents
   - Adverb: 25 cents
   - Adjective: 1 cent
   - Verb: 10 cents
9. Explain to the students that this is how they will try to break the codes of the other groups.
10. Direct each pair to copy the five sentences from their "Crack the Code" page onto a piece of paper. Have the students include the value of each sentence.
11. Direct each pair to swap papers with another group. The groups will try to break each other's codes and will write down the keys.
12. Challenge the groups to continue swapping coin codes, breaking as many as possible.
13. Keep a tally on the board of how many codes each group has broken. At the end of class, determine which pair broke the most codes and declare them the "Crack the Code" experts.

ENRICHMENT/EXTENSIONS

- Revisit this game as students learn about the other parts of speech.
- Have the students use the "Crack the Code" page to write sentences about the 50 State Quarters® Program.

DIFFERENTIATED LEARNING OPTION

Students needing more practice with adverbs can visit any of the following sites for interactive practice identifying and using adverbs:

- www.berghuis.co.nz/abiator/rdg/adverbhelp.html
- grammar.englishclub.com/adverbs_quiz.htm
- webster.commnet.edu/cgi-shl/quiz.pl/adverbs_quiz.htm
- www.cityu.edu.hk/elc/quiz/adjadvb.htm

CONNECTION TO WWW.USMINT.GOV/KIDS

Have students learn more about the coins in their pockets by having them play Mark My Words, an information-packed word-find puzzle on the United States Mint H.I.P. Pocket Change™ Web site! (www.usmint.gov/kids/index.cfm?fileContents=games&pick=6)

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NAME_____

Warm Up!

Directions: See how much you remember about nouns, verbs, and adjectives by answering the questions below.

1. What is a noun? _____

2. Circle all of the nouns in the following sentence:

   The students studied very hard for their spelling test.

3. What is a verb? _____

4. Give three examples of verbs. _____ _____ _____

5. What is an adjective? _____

6. Write three adjectives that describe your favorite food. _____ _____ _____

NAME_____

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3. What is a verb? _____

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5. What is an adjective? _____

6. Write three adjectives that describe your favorite food. _____ _____ _____

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NAME_____

Verb List!

Directions: Brainstorm several adverbs for each verb listed below.

Blink	Bounce	Laugh	Yell	Swim
Growl	Look	Shake	Whistle	Sleep

NAME_____

Verb List!

Directions: Brainstorm several adverbs for each verb listed below.

Blink	Bounce	Laugh	Yell	Swim
Growl	Look	Shake	Whistle	Sleep

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NAME_____

Challenge Yourself!

Directions: In the following list of words, circle the adverbs, put a box around the adjectives, and underline the nouns.

SADLY	SCHOOL	WATER
BOY	QUIET	SMALL
PRETTY	GIRL	EASILY
WILDLY	BRAVELY	BLUE

NAME_____

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SADLY	SCHOOL	WATER
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WILDLY	BRAVELY	BLUE

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NAME_____

Coin Codes

Directions: In each sentence below, label each noun, verb, adjective, and adverb. Use the key to assign a coin value to each word. Finally, calculate the value of each sentence.

KEY

Noun

Verb

Adjective

Adverb

Example: Ellen sang loudly.

Noun	Verb	Adverb	
(1¢)	(5¢)	(25¢)	(1+5+25=31)

This sentence's value is 31 cents.

1. Malik swam gracefully.

_____ _____ _____
( ) ( ) ( )

This sentence's value is _____.

2. Sarah quickly ran home.

_____ _____ _____ _____
( ) ( ) ( ) ( )

This sentence's value is _____.

3. Peyton easily stole second base.

_____ _____ _____ _____ _____
( ) ( ) ( ) ( ) ( )

This sentence's value is _____.

4. Kevin's comedy routine made Jill laugh hysterically.

_____ _____ _____ _____ _____ _____ _____
( ) ( ) ( ) ( ) ( ) ( ) ( )

This sentence's value is _____.

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Coin Codes
Key

1. Malik swam gracefully.
   Noun Verb Adverb
   (1¢) (5¢) (25¢)

This sentence's value is **31 cents.**

2. Sarah quickly ran home.
   Noun Adverb Verb Noun
   (1¢) (25¢) (5¢) (1¢)

This sentence's value is **32 cents.**

3. Peyton easily stole second base.
   Noun Adverb Verb Adjective Noun
   (1¢) (25¢) (5¢) (10¢) (1¢)

This sentence's value is **42 cents.**

4. Kevin's comedy routine made Jill laugh hysterically.
   Noun Adjective Noun Verb Noun Verb Adverb
   (1¢) (10¢) (1¢) (5¢) (1¢) (5¢) (25¢)

This sentence's value is **48 cents.**

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NAME_____

Crack the Code!

Directions: Create a coin code with your partner. Then, fill out the Key below. Do not share your coin code key with anyone else. Write five sentences and analyze them using your coin code key. Record a value for each sentence. Use the "Coin Codes" worksheet as a format guide.

KEY

_____

_____

_____

_____

Sentence 1: _____
Parts of speech:
Coin code:
This sentence's value is _____.

Sentence 2: _____
Parts of speech:
Coin code:
This sentence's value is _____.

Sentence 3: _____
Parts of speech:
Coin code:
This sentence's value is _____.

Sentence 4: _____
Parts of speech:
Coin code:
This sentence's value is _____.

Sentence 5: _____
Parts of speech:
Coin code:
This sentence's value is _____.

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State Information 2005 Quarters

California

The first quarter released in 2005 honors California, and is the 31st in the United States Mint's 50 State Quarters® Program. California was admitted into the Union on September 9, 1850, becoming our Nation's 31st State. Nicknamed the "Golden State," California's quarter depicts naturalist and conservationist John Muir admiring Yosemite Valley's monolithic granite headwall known as Half Dome with a soaring California condor. The coin bears the inscriptions "California," "John Muir," "Yosemite Valley," and "1850."

In 1849, the year before California gained statehood, the family of 11-year-old John Muir emigrated from Scotland to the United States, settling in Wisconsin. In 1868, at the age of 30, Muir sailed up the West Coast and landed in San Francisco. He made his home in the Yosemite Valley, describing the Sierra Nevada Mountains as "the Range of Light… the most divinely beautiful of all the mountain chains I have seen." He devoted the rest of his life to the conservation of natural beauty, publishing more than 300 articles and 10 books that expanded his naturalist philosophy.

In 1890, Congress established Yosemite National Park, and in 1892 John Muir helped form the Sierra Club to protect it, serving as that organization's President until his death in 1914. The California condor, with a wingspan as long as nine feet, is also featured on the coin in a tribute to the successful repopulation of the once nearly extinct bird.

Did You Know? State Fun Facts

State Capital: . . . . . Sacramento
State Bird: . . . California Valley Quail
State Tree: . . . . . Redwood and Giant Sequoia
State Flower: . . . . . California Poppy
State Motto: . . . . . Eureka
Entered Union (rank): . . . . . September 9. 1850 (31)
Nickname(s): . . . . . Golden State
Origin of Name: . Named after Califia, a mythical paradise in a Spanish romance by Montalvo
State Song: . . . . . I Love You, California

Minnesota

The second quarter released in 2005 commemorates the state of Minnesota, "Land of 10,000 Lakes." On May 11, 1858, Minnesota became the 32nd state admitted into the Union, and as such, it is the 32nd coin to be issued in the United States Mint's popular 50 State Quarters® Program. The design features a tree-lined lake with two people fishing, a loon on the water, and a textured outline of the state surrounding its nickname, "Land of 10,000 Lakes."

The "Land of 10,000 Lakes" actually contains more than 15,000 such bodies of water whose total shoreline exceeds 90,000 miles—more than California, Hawaii, and Florida combined. Equally renowned as the home of the headwaters of the mighty Mississippi River, the name Minnesota is derived from the Dakota Sioux word for "cloudy water."

The natural beauty of Minnesota is vividly depicted on the reverse of this new quarter-dollar. Lined with Norwegian Pines, many of the lakes throughout the state offer much in the way of outdoor recreation, as well as providing a home for the graceful loon, Minnesota's state bird. Minnesota is also home to the Boundary Waters Canoe Area Wilderness. This one-million-acre wilderness area was established by Congress in 1978 and contains more than 1,500 miles of canoe routes and nearly 2,200 designated campsites.

Did You Know? State Fun Facts

State Capital: . . . . . Saint Paul
State Bird: . . . . . Common Loon
State Tree: . . . . . Red Pine
State Flower: . . . . . Pink and white lady's slipper
State Motto: . . . . . L'Etoile du Nord (the star of the north)
Entered Union (rank): . . . . . May 11, 1858 (32)
Nickname(s): Land of 10,000 Lakes/North Star State
Origin of Name: Dakota Sioux for "sky-tinted water"
State Song: . . . . . Hail! Minnesota

Oregon

The state of Oregon is honored with the third quarter to be released in 2005, and the 33rd in the United States Mint's 50 State Quarters® Program. On February 14, 1859, Oregon became the 33rd state to be admitted into the Union. Its coin design features a portion of Crater Lake, the deepest lake in the United States, viewed from the south-southwest rim. The design incorporates Wizard Island, as well as Watchman and Hillman Peaks on the lake's rim, and conifers. The coin bears the inscription "Crater Lake."

Crater Lake is a unique and stunning natural treasure, formed more than 7,700 years ago by the collapse of Mt. Mazama in what is now southern Oregon. At 1,949 feet, it is the deepest lake in the United States and the seventh deepest in the world, and has a record clarity depth of 134 feet. The main cause of Crater Lake's remarkable clarity is its isolation from incoming streams and rivers.

President Theodore Roosevelt established Crater Lake National Park in 1902, with the lake itself as the Park's crown.

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State Information 2004 Quarters

jewel. It is the sixth oldest national park in the country. Since its creation, Crater Lake National Park has helped protect both the Native American cultural ties to the area and the natural habitat of the animal and plant life that lies within its boundaries.

State Capital: . . . . . Salem
State Bird: . . . . . Western Meadowlark
State Tree: . . . . . Douglas Fir
State Flower: . . . . . Oregon Grape
State Motto: . . . . . Alis Volat Propiis (She flies with her own wings)
Entered Union (rank): . . . . . February 14, 1859 (33)
Nickname(s): . . . . . Beaver State
Origin of Name: Unknown; maybe from French map showing Wisconsin River as "Ouaricon-sint"
State Song: . . . . . Oregon, My Oregon

Kansas

The fourth quarter released in 2005 commemorates the state of Kansas. On January 29, 1861, the "Sunflower State" became the 34th state to be admitted into the Union. Kansas marks the 34th coin to be issued in the United States Mint's popular 50 State Quarters® Program, and features a buffalo and sunflower motif, emblematic of the state's history and natural beauty.

The Kansas commemorative quarter incorporates two of the state's most beloved symbols, the state animal and flower, the buffalo and the sunflower. Each of these two design elements is a visual reminder of our nation's heartland. They feature prominently in the history of the territory, and both were found in abundance throughout the state in the middle of the 19th century when Kansas gained its statehood. With its release in the fall of 2005, it is the second United States circulating coin of 2005 to carry an image of the buffalo.

State Capital: . . . . . Topeka
State Bird: . . . . . Western Meadowlark
State Tree: . . . . . Cottonwood
State Flower: . . . . . Sunflower
State Motto: . . . . . Ad astra per aspera (To the stars through difficulties)
Entered Union (rank): . . . . . January 29, 1861 (34)
Nickname(s): . . . . . Sunflower State
Origin of Name: From Sioux for "south wind people"
State Song: . . . . . Home on the Range

West Virginia

The fifth and final quarter released in 2005 commemorates the state of West Virginia. On June 20, 1863, the "Mountain State" became the 35th state to be admitted into the Union, making this the 35th coin to be issued in the United States Mint's popular 50 State Quarters® Program. This coin captures the scenic beauty of the state with its depiction of the New River and the New River Gorge Bridge. The coin bears the inscription "New River Gorge."

Prior to gaining statehood, the area that is now West Virginia formed the western part of Virginia. Settlers in the western part of the "Old Dominion" began their efforts to join the Union when Virginia announced its secession in 1861. In the western part of the state, the Restored Government of Virginia in Wheeling drafted a state constitution in 1862. The new state called West Virginia applied to Congress for admission into the Union. Congress approved the request with one condition: that the new state abolish slavery. President Lincoln signed the West Virginia statehood bill and on June 20, 1863, West Virginia officially became the 35th state to be admitted into the Union.

The design chosen to represent West Virginia is one that combines the natural physical beauty of the state and the triumph of the human intellect exemplified by the engineering wonder that is the New River Gorge Bridge. At 3,030 feet long and 69 feet wide, the bridge is the world's largest steel span and the second highest bridge in the United States, rising 876 feet above the New River Gorge in southern West Virginia. In 1978, 53 miles of the New River was added to the National Park System as the New River Gorge National River.

For years, crossing the New River Gorge meant long detours along narrow, winding mountain roads. The completion of the bridge in 1977 reduced this dangerous 40-minute trip to a smooth and scenic one-minute drive.

State Capital: . . . . . Charleston
State Bird: . . . . . Cardinal
State Tree: . . . . . Sugar Maple
State Flower: . . . . . Rhododendron
State Motto: . . . Montani simper liberi (Mountaineers are always free)
Entered Union (rank): . . . . . June 20, 1863 (35)
Nickname(s): . . . . . Mountain State
Origin of Name: . . . Named after England's Queen Elizabeth I, the "Virgin Queen"
State Song: . . "West Virginia, My Home," "The West Virginia Hills," "This Is My West Virginia"

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The United States of America

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50 State Quarters Program Designs

Reverse

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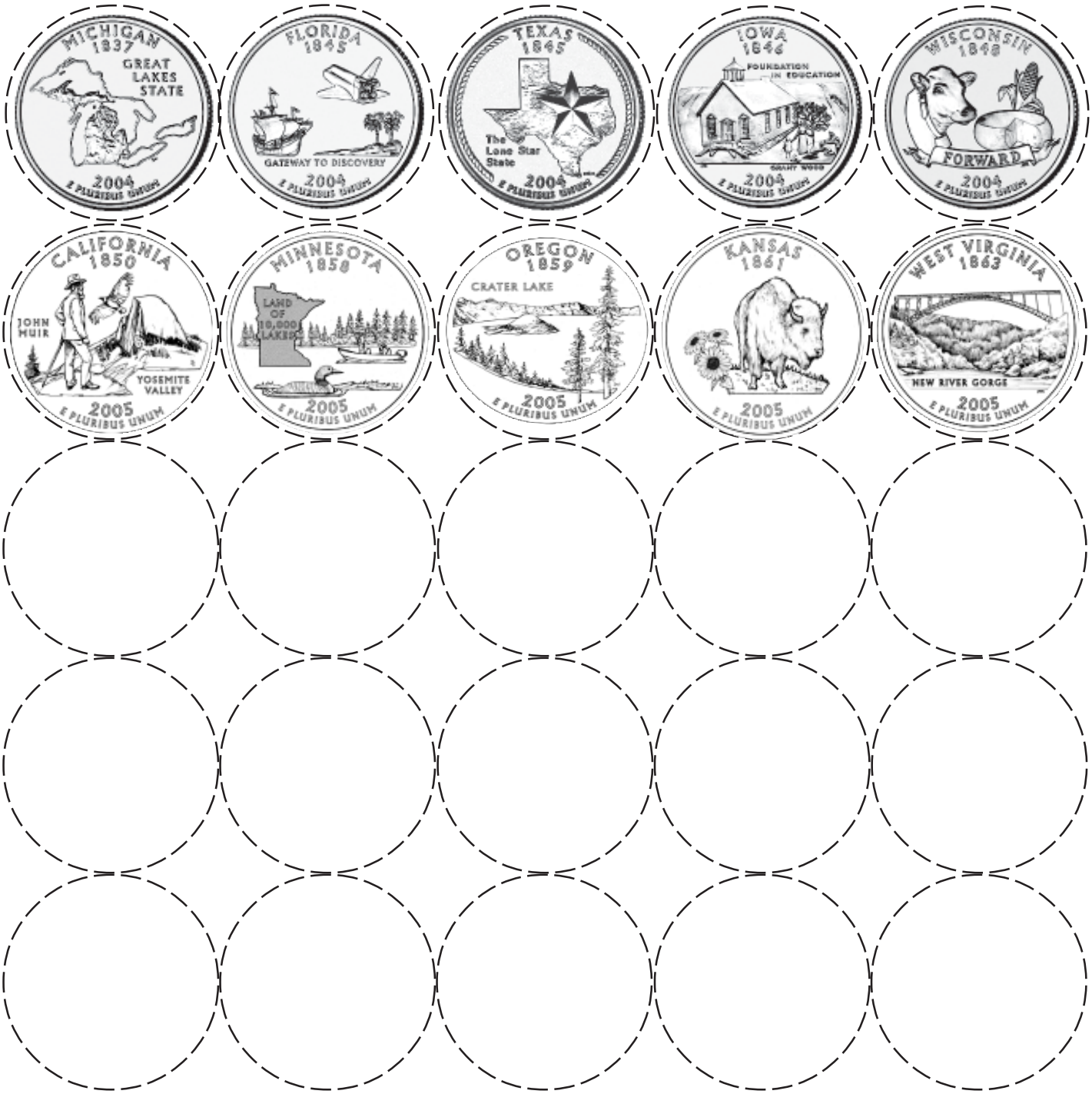
50 State Quarters Program Designs

Reverse



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50 State Quarters Program Designs

Obverse

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Reproducible Coin Sheet
Obverse

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Reproducible Coin Sheet

Reverse

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The United States Mint

50 State Quarters Program

Release Year/State	Statehood Date
1999	
Delaware	December 7, 1787
Pennsylvania	December 12, 1787
New Jersey	December 18, 1787
Georgia	January 2, 1788
Connecticut	January 9, 1788
2000	
Massachusetts	February 6, 1788
Maryland	April 28, 1788
South Carolina	May 23, 1788
New Hampshire	June 21, 1788
Virginia	June 25, 1788
2001	
New York	July 26, 1788
North Carolina	November 21, 1789
Rhode Island	May 29, 1790
Vermont	March 4, 1791
Kentucky	June 1, 1792
2002	
Tennessee	June 1, 1796
Ohio	March 1, 1803
Louisiana	April 30, 1812
Indiana	December 11, 1816
Mississippi	December 10, 1817
2003	
Illinois	December 3, 1818
Alabama	December 14, 1819
Maine	March 15, 1820
Missouri	August 10, 1821
Arkansas	June 15, 1836

Release Year/State	Statehood Date
2004	
Michigan	January 26, 1837
Florida	March 3, 1845
Texas	December 29, 1845
Iowa	December 28, 1846
Wisconsin	May 29, 1848
2005	
California	September 9, 1850
Minnesota	May 11, 1858
Oregon	February 14, 1859
Kansas	January 29, 1861
West Virginia	June 20, 1863
2006	
Nevada	October 31, 1864
Nebraska	March 1, 1867
Colorado	August 1, 1876
North Dakota	November 2, 1889
South Dakota	November 2, 1889
2007	
Montana	November 8, 1889
Washington	November 11, 1889
Idaho	July 3, 1890
Wyoming	July 10, 1890
Utah	January 4, 1896
2008	
Oklahoma	November 16, 1907
New Mexico	January 6, 1912
Arizona	February 14, 1912
Alaska	January 3, 1959
Hawaii	August 21, 1959

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