

2: It's All in the Pattern

Based on the New Mexico quarter reverse



OBJECTIVE

Students will understand the meaning of the Zia Sun symbol. Students will understand that the Earth's tilt and movement around the Sun causes the seasons.



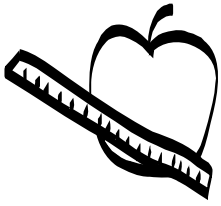
MATERIALS

- 1 overhead projector (optional)
- 1 overhead transparency (or photocopy) of the “New Mexico Quarter Reverse” page
- “My Own Flag” worksheet
- “The Earth Moves!” worksheet
- 1 color picture or transparency of the New Mexico state flag
- 1 class map of the United States
- 1 copy of a text that gives information about the seasons. For example:
 - *Reasons for Seasons* by Gail Gibbons
 - *Sunshine Makes the Seasons* by Franklyn Mansfield Branley
 - *What Makes the Seasons?* by Megan Montague Cash
- Computers with Internet access
- Chart paper
- Markers
- Crayons
- Watercolors
- Pencils
- Notebook paper
- Globe
- Yarn
- Spheres of various sizes



PREPARATIONS

- Make an overhead transparency (or photocopy) of the “New Mexico Quarter Reverse” page
- Locate a color picture or transparency of New Mexico state flag
- Make copies of the following:
 - “My Own Flag” worksheet (1 per student)
 - “The Earth Moves!” worksheet (1 per student)



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- Locate a text that gives information about the seasons (see examples under “Materials”).
- Gather spheres of various sizes to use as props for skits in session 5.
- Reserve the computer lab for one session.
- Bookmark Internet sites that contain information about the seasons.



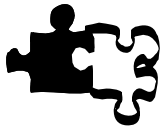
GROUPINGS

- Whole group
- Small groups
- Individual work



CLASS TIME

Five 30- to 45-minute sessions



CONNECTIONS

- Science
- Language Arts
- Social Studies
- Mathematics



TERMS AND CONCEPTS

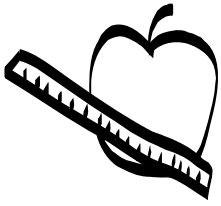
- Quarter
- Zia Sun symbol
- Rotation
- Sphere
- International Date Line
- Obverse (front)
- Topographical map
- Revolution
- Equator
- Reverse (back)
- Hemisphere
- Axis
- Prime Meridian



BACKGROUND KNOWLEDGE

Students should have a basic knowledge of:

- 3-dimensional shapes
- Symbol
- Seasons
- Solar System



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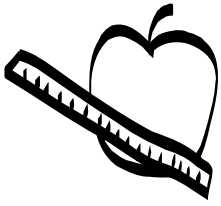
STEPS

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 “New Mexico Quarter Reverse” page. Locate New Mexico on a classroom map. Note its position in relation to your school’s location.
2. Ask the students to examine the New Mexico quarter and tell you what they know about this image. Explain to the students that the image features the ancient Sun symbol of the Zia people of New Mexico over a topographical outline of New Mexico. Explain to the students that a topographical map is one that shows the natural surface features of a region, such as hills, rivers, roads, and mountains.
3. Draw the Zia Sun symbol and a large circle on a piece of chart paper. Explain to the students that the Zia Sun symbol tell us about some of the beliefs of the Zia people from long ago. The Zia believed that the giver of all good gifts gave the Zia people gifts in groups of four. (For example, the four cardinal directions (North, East, South, and West), the four seasons of the year (spring, summer, autumn, winter), the four times of day (morning, noon, evening, and night), and four stages of life (childhood, youth, adulthood, and old age). Add some of the examples to the chart paper around the image of a circle. Tell the students that the Zia believed that they were bound together in a circle of life and love, without a beginning or end.
4. Ask the students to think of circular symbols from their own culture to show how things happen, as the Zia did. (For example, wedding ring, clock, and compass rose).
5. Display the color picture or transparency of the New Mexico state flag and explain to the students that flag makers often use colors and symbols to represent things that are important to the people of that area. The red and yellow colors represent Spain, which ruled New Mexico from the early 1500s through 1821.
6. Distribute a “My Own Flag” worksheet to each student. Using the ideas on the chart paper and ideas from the New Mexico quarter reverse tell the students that they will create a personalized flag to represent themselves or their characteristics. The students will also write a few sentences below their flag describing the reason for and meaning of the colors and symbols they chose.
7. Have the students create their flags at home to bring in and share with the class.

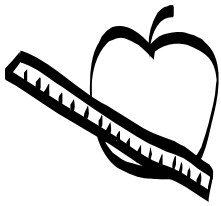
Sessions 2, 3, and 4

1. Display and discuss the students’ flags created in session 1.
2. Display the chart paper of the Zia symbol. Review material covered in the previous session.



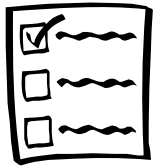
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3. Divide the students into small groups. Ask the students to discuss in their groups what they know about the Sun and the seasons. They should record their thoughts on a piece of notebook paper.
4. On a piece of chart paper, create two columns labeled “The Sun” and “The Seasons.” As a class, discuss the students’ ideas and record them on the chart paper. Emphasize how the earth moves around the Sun and that the Earth’s tilt and movement around the Sun causes the seasons.
5. As a class, create a few statements about the Sun and its effect on the seasons. Record the ideas on the chart paper. Tell the students they will use this information for a project in a later session.
6. Collect the students’ papers.
7. Show the students a globe. Ask the students to tell you what shape the globe is (sphere). Ask the students for the definition of the term “hemisphere.” Student responses should be that it is half of a sphere. Use yarn to trace the Equator and point out the Northern and Southern Hemispheres on the globe. Ask the students what imaginary line separates the Northern and Southern Hemispheres (Equator).
8. Use yarn to trace the Prime Meridian and International Date Line and point out the Eastern and Western Hemispheres on the globe. Ask the students what imaginary line separates the Eastern and Western Hemispheres (Prime Meridian and International Date Line).
9. Introduce the students to the selected text about the seasons. As a group, preview the text. Read the selected text to the class and attend to any unfamiliar vocabulary and concepts. During the reading, students should listen for and point out any clues about the seasons. Chart the students’ ideas. After concluding the selected text, review the students’ ideas.
10. Tell the students they will be doing research and creating a skit to show how the Earth’s tilt and movement around the Sun causes the seasons.
11. Distribute a “The Earth Moves!” worksheet to each student. Allow the students to go to the computer lab for research, if necessary. Discuss the findings and be sure the students know to include the following information:
 - The Earth rotates on its axis.
 - The Earth revolves around the Sun.
 - Some places are tilted toward the Sun, other places are tilted away from the Sun.
 - The part of the Earth that is tilted toward the Sun receives the most direct rays.
 - The number of hours of darkness and light depend on the tilt of the Earth.



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12. Discuss the students' findings and record the information on chart paper. Discuss why the Sun is so important to us, and why it was important to the Zia Pueblo. Have the students share why New Mexico chose to include this symbol on the quarter design.
13. Divide the class into small groups. Explain to the students that they will be writing a script using the information shared in class along with their research. The script will be used in a skit to be performed for the other students in the class. Encourage the use of costumes and props.
14. Allow the students sufficient time to create their script and practice their skit. If the class is large, student groups could act out different seasons to provide variety in the skits.
15. Display the collection of spheres for the students to utilize for their skits.
16. Allow the students time to complete their scripts and practice their skits.
17. Have the students perform their skits using props and costumes.
18. Encourage the students to perform the skits for other classes.



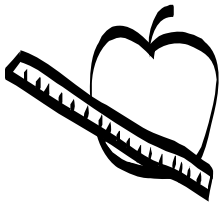
ASSESSMENT

- Analyze students' worksheets for understanding of the Zia Sun symbol and its use on New Mexico's flag.
- Use the students' class participation to evaluate whether they have met the lesson objectives.
- Assess completed scripts and skits for understanding of how the seasons are created by the interaction between the Earth and the Sun.



ENRICHMENTS/EXTENSIONS

- Have students create a class quilt using each of their flag images in a square to be displayed in the school.
- Have the students create a colored labeled diagram of how the Earth moves around the Sun and the Earth's tilt and movement around the Sun causes the seasons.
- Have students combine the class's ideas and scripts to develop a class play to be performed for other classes.



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DIFFERENTIATED LEARNING OPTIONS

- Make a basic Earth outline for students, including solid lines for the hemispheres and dotted lines for the Equator, International Date Line, and Prime Meridian.
- Create a basic illustration showing the Earth's movement around the Sun.
- Allow students to work with a scribe to create their part of the script.



CONNECTION TO WWW.USMINT.GOV/KIDS

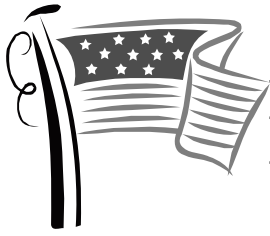
Have students take a look at time zones and the rotation of the earth using the Teacher Feature “Brand New Day” at: www.usmint.gov/kids/teachers/features/2003/06.cfm.



Name _____

My Own Flag

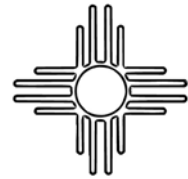
Directions: Draw your flag in the box and describe the meaning of the colors and symbols on the lines below it.



Name _____

The Earth Moves!

Directions: Answer the questions below based on your research.



1. Describe how the Earth rotates.

2. How often does the Earth go around the Sun in one year?

3. Explain why some places are tilted toward the Sun when other places are tilted away from the Sun.

4. Does the time of year affect what part of the Earth receives the most direct rays from the Sun? Explain.

5. During the year, the Earth receives more or fewer hours of light. What does this number of hours depend on?

Draw diagrams and illustrations below to help you create your skit.

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New Mexico Quarter Reverse

