

Elementary School Astronomy Activities

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Activity One: The Sun's Apparent Path Across the Sky

Objectives

Through observing and estimating, the students will explore the apparent path of the sun in the sky.

Materials

- Easel
- Paper
- Black Marker
- Student Sheet (white paper) and Pencil (one per student)
- Clipboards (one per student)

Activity

1. Early in the morning on a sunny day, take the students outside to an open area of the parking lot.
2. Set up the easel to view the southern sky.
3. Have the students stand facing south.
- **Students who have not been introduced to the cardinal directions should be instructed using left and right.**
4. Ask them to turn to the north and review the cardinal directions from this common orientation.
5. Immediately have them turn to the south and again, from this orientation, repeat the cardinal directions.
6. Discuss where the sun rises and where it sets.
7. Discuss where on the earth the sun shines strongest.
8. Ask why it is necessary for us to look in the southern sky for the sun.
- **Be sure to remind the students that they should never look directly at the sun.**
9. Discuss and plot the cardinal directions on the easel; have students mark their student sheets south, east, north and west.
10. Direct students to view of skyline using the school building, rooftops or tree line.
11. Draw the view one third of the way down on the easel. Have students draw the view on their student sheets.
12. Have students communicate where the sun should be placed on the easel so that it would represent the location in the sky at that time.
13. Draw their observation on the easel. Have the students mark first plot of the sun on their student sheets.
14. Continue to make observations at intervals throughout the day.

Evaluation

Have the students infer where the sun will be in an hour. The students should make a small mark on their student sheets to plot their prediction. They can then test their prediction to determine validity.

Activity Two: Locating an Object's Shadow

Objectives

Through observing, estimating and predicting the student will draw the conclusion that shadows are found on the opposite side of the object that is blocking the light.

Materials

- Easel
- Paper
- Black Marker
- Student Sheet (white paper) and Pencil (one per student)
- Attribute Blocks
- Small Toys
- Small Geometric Shapes
- 6 Baskets To Hold Blocks, Toys and Geometric Shapes
- Clipboards (one per student)

Activity

1. Follow steps 1 through 13 of Activity One with the students. (You may want to go out closer to noon on this day, so that the shadows that are cast are shorter.)
2. Have students form cooperative groups of four.
 - **Be sure to remind students that they should never look directly at the sun.**
3. Give each group a basket of manipulatives.
4. Stagger each group so that they are not blocking the sun of another group. Have students lay or sit on the ground in a straight line with their group.
5. Tell the students that the sun must be on their left-hand side.
6. Show the students how to prop up their shapes so that they cast a shadow on their paper. To ensure that the shadow fits the paper they should keep their shapes toward the left of their paper.
7. Have the students mark the side of their paper where the sun is located.
8. Have the students trace the shadows that are produced on the paper.
9. Ask the students if the shadow of their object is on the same side as the light, or on the opposite side of the light.
10. Using the easel as a blocking device, circulate around the groups and ask why they can no longer produce a shadow.
11. Have the groups find the tallest object and shortest object in their basket, have them compare the shadows produced by both.
12. Pass out a new sheet of paper and have each group mark again where the sun is located on their paper.
13. Have each group pick one tall object to cast a shadow on their paper.
14. Have them trace the shadow, then collect papers and objects from the groups.
15. Toward the end of the school day, return to the area and have the students retrace the same objects shadow.
16. Ask the students what is different about the sun's position at the end of the school day to when they first drew the objects shadow in late morning.
17. Discuss how shadows shorten and lengthen during the day depending on the apparent position of the sun in the sky.

Evaluation

Using a simple activity sheet, the student will match the shapes of shadows and the objects that made them.

Activity Three: Measuring Shadows

Objectives

The students will measure outdoor shadows and investigate how the movement of the Earth changes the perceived length of the shadow.

Materials

- Easel
- Paper
- Black Marker
- String
- Index Cards with a hole punched in one end
- Meter Stick
- Globe
- Flashlight
- Small Figure
- Clay

Activity

1. Early in the morning on a sunny day, take the students outside to an open area of the parking lot.
2. Set up easel to view the southern sky.
3. Have students stand facing south.
- **Be sure to remind the students that they should never look directly at the sun.**
4. Direct the students to view of skyline using the school building, rooftops or tree line.
5. Draw the view one third of the way down on the easel.
6. Have students communicate where the sun should be placed on the easel so that it would represent the location in the sky at that time.
7. Mark the time and label one index card with the time.
8. Pick a student and using the string as a measuring tool, measure out the length of the student's shadow.
9. Tie the index card to the end of the string.
10. Repeat this activity throughout the day using the same student. Plot the time and movement of the sun on the easel.
11. Lay out the string in the classroom. Have the students measure the strings using meter stick.
12. Ask the students to make quantitative observations about length and time.
13. Use clay to mount the small figure to the globe. Leave the flashlight within reach of the globe and students.
14. Guide the students to infer that it may be the Earth that is moving and not the sun.

Evaluation

Give each student a two long and one short pieces of string. Ask them to hold up which piece would represent their shadow at 9 AM, twelve noon and 4 PM.

Activity Four: Moon Watch

Objectives

Through a school or grade wide project, the student will draw the full moon.

Materials

- Paper
- Pencil

Activity

1. Have a moon viewing night; assign students to draw the full moon.
2. Assign different grades levels to compare the developmental stages of the students.

Background Information

- The full moon rises just as the sun sets.
- The full moon rises in the east.
- The full moon is visible all night, setting in the west at sunrise.
- There will be two blue moons in 1999.
- A blue moon * is the second full moon in a month.
- Dates for full moon in 1999.
- January 1-31*
- February N/A
- March 2-31*
- April 30
- May 30
- June 28
- July 28
- August 26
- September 25
- October 24
- November 23
- December 22

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