

THIRD GRADE ASTRONOMY STUDY

CLASS: ASTRONOMY: REASON FOR THE SEASONS

Students will learn that the seasons are caused by the rotation of the earth around the sun and the tilt of the earth's axis. Students will perform a group experiment that demonstrates how the earth's orbit and tilt affect how much direct sunlight our planet receives.

Pre Activity:

Do!

For Good Measure

Prepare students for the next class by giving them some shadow measuring practice. Provide pairs of students with the following items: a flashlight, record keeping worksheet (see below), ruler, and a collection of items to measure (a pencil, eraser, and glue stick). Instruct students to take three measurements for each item: the length of the item itself, the length of the shadow of the item when a light shines from directly above, and the length of the shadow of the item when the light shines at an angle. Discuss how the length of an item's shadow changes relative to its actual size when the light shines on it from different angles.

Think! Discuss or Write

What is your favorite season of the year? Why? Be sure to encourage students to comment on the amount of sunshine during that season.

Post Activity:

Do!

Seasons Around the World

When it's summer here in California, what kind of weather are people experiencing in Australia? Encourage students to look on a globe or a map of the world and figure out what the weather is like in other parts of the world. Provide students with a question for each search, such as "If we are having winter here, what season are people in Mexico experiencing?" They might be surprised to see which parts of the world share seasons with us, and which parts of the world experience different seasons. These activities allow students to think about the importance of the north and south hemispheres in our seasons and provide students with practice looking for specific locations on the globe.

Learning Goals Reinforced:

- Seasons change throughout the year.
- Not all areas of the world experience the same season at the same time.
- The tilt of the earth's axis as the earth rotates around the sun causes seasonal change here on earth.

Think! Discuss or Write

What do you think seasons are like at the equator?

Link:

http://www.windows.ucar.edu/tour/link=/earth/climate/cli_seasons.html&edu=high

THIRD GRADE ASTRONOMY STUDY

CLASS: ASTRONOMY: MOON PHASES

Students will learn that the moon itself does not change shape. Students will perform an hands-on activity that shows that, as the moon orbits around the earth, the people on earth can see different portions of the lighted surface of the moon.

Pre Activity:

Do!

Moon Journals

Encourage your students to draw and write journal entries about the moon every night. If possible, provide them with a small journal. Alternately, print out a blank monthly calendar with big empty boxes for each day. Students should record their observations of the moon on a day-to-day basis over the course of an entire month. As a class, discuss the students' observations and familiarize the students with helpful vocabulary (such as crescent, full moon, craters, etc).

Think! Discuss or Write

Why do you think the moon appears to change from night to night? What is happening? Enjoy discussing all of the creative responses you get from your students.

Post Activity:

Do!

Changing Moon Flip Books

Construct flip books to remind your students of the ever changing look of the moon. Provide students with the flip book template (see below) and encourage them to color in the moon to represent each phase. Begin with an all dark new moon, then continue to tell the full story of the moon's phases until the last square has a full moon. For help labeling and drawing the phases, visit the link below in the links section. When the drawings are complete, instruct students to cut the eight moon pages out, arrange them in order, and staple the left side. Show students how to use their thumbs and a flick of the wrist to flip through the pages and watch the moon change phases in high speed.

Learning Goals Reinforced:

- The moon's appearance changes in a regular cycle.
- The moon looks different depending on how much we get to see of its lighted half.

Think! Discuss or Write

What is a lunar eclipse? Explain to students that a lunar eclipse is when a full moon is covered in shadows and seems to partially disappear into the night sky. Encourage students to think about what they already know about the movement of the sun, the moon, and the earth to explain how a shadow might cover the bright side of the moon.

Link:

<http://www.woodlands-junior.kent.sch.uk/time/moon/phases.html>

http://www.moonconnection.com/moon_phases.phtml

THIRD GRADE ASTRONOMY STUDY

CLASS: ASTRONOMY: STARLAB

Students will learn about stars and constellations in the Palo Alto Junior Museum and Zoo's own Starlab station. This mobile planetarium brings the night sky to your classroom during the school day.

Pre Activity:

Do!

Constellation Creation

Show students connect-the-dot like images of several standard constellations (see below). Challenge students to create a picture of a character or object using those dots in some way. After they are satisfied with their creations, ask students to write a brief explanation or story about their artwork. Explain that this process actually helps describe how people over thousands of years have looked at and created stories about the stars in the night sky. Take a moment to share some traditional names and explanations for the constellation connect-the-dot images you provided them. Compare those stories with the students' own stories.

Think! Discuss or Write

Why do you think people created stories about the heroes and animals they saw in the night sky?

Post Activity:

Do!

Another Constellation Creation

Collect toilet paper rolls, Pringles containers or other hollow cylinders so that each student in class has one cylinder for this constellation project. Provide each student with a cylinder, a small piece of construction paper, a pencil, and a rubber band. First, use the circular edge of the cylinder to trace a circle on the construction paper. Draw dots in the shape of your favorite constellation in the small traced circle. Place the construction paper at the end of the cylinder so that the traced circle lines up with the circular edge of the tube. Push the edges of the paper down along the side of the cylinder and use the rubber band to secure it in place. Using a sharp pencil tip or tack, carefully punch out the constellation dots from the circle. Peek through the bottom opening of your cylinder while looking towards a light source to see your constellation. Try to make a constellation glow by placing a flashlight at the bottom opening in a dark room. Your constellation should project onto the wall.

Learning Goals Reinforced:

- We can see stars in the dark night sky.
- Cultures throughout time have told stories about the stars they can see in the sky.

Think! Discuss or Write

What environments are the best for stargazing? Ask students to consider city, country, and other wild settings. Where would you be able to see the most stars? Why?

Link:

<http://starchild.gsfc.nasa.gov/docs/StarChild/StarChild.html>

Name _____ Date _____

Measuring Shadows

Collect three small items to measure. Write or draw an item in each box in the item column. Then, make three measurements for each item.

Item 	Item's length	Length of shadow (Light coming from above)	Length of shadow (Light coming from an angle)
	cm	cm	cm
	cm	cm	cm
	cm	cm	cm

Name _____ Date _____

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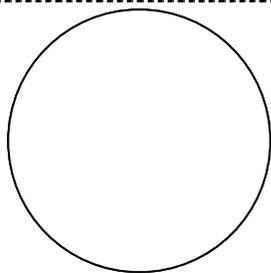
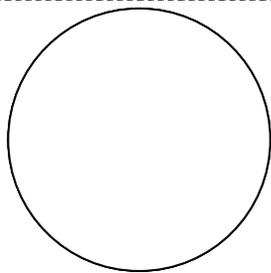
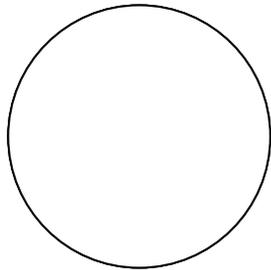
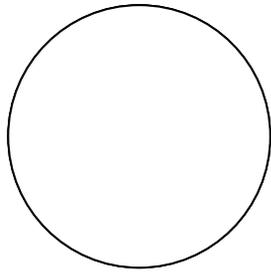
My Moon Journal

Month: _____

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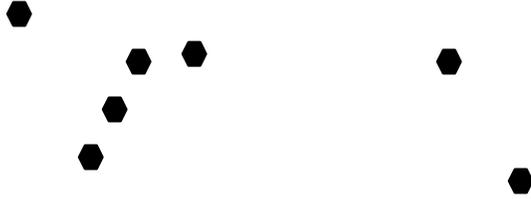
Moon Phase Flip Books!

Fill in the circles below to illustrate the phases of the moon. Cut out and arrange in order. Attach with two staples along the left edge. Flip the pages to watch the moon change!



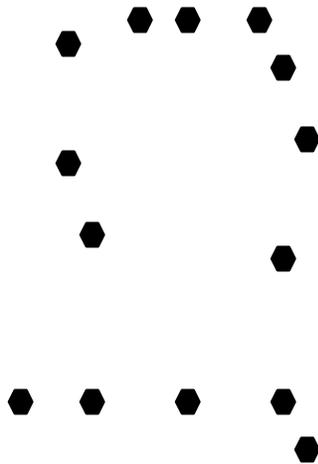
Connect the Dots

What shape can you make from these dots?
Is it an animal, a person, or a thing? Write a story about your creation.



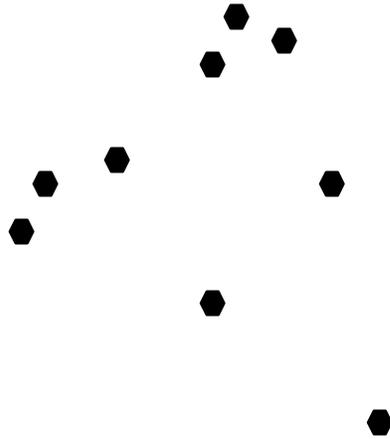
Connect the Dots

What shape can you make from these dots?
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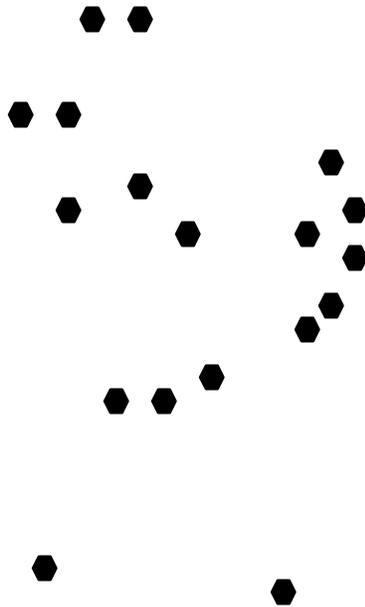
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CONSTELLATION GUIDE FOR CLASS USE

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Cepheus the King

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Orion the Hunter

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Canis Major the Big Dog

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Gemini the Twins