

Discovery Lab Post-Visit Activities Forces of Nature Grades K-2

We hope that you enjoyed your visit to the Orlando Science Center! As a means of enhancing and extending your students' Discovery Lab experience into the classroom, we are providing you with these post-visit materials to share with your class.

Discussion Topics:

- Weathering and erosion slowly changes the surface of our planet. What are some of the changes we can see where we live that is caused by weathering? What are some of the changes we can see where we live that is caused by erosion?
- Volcanoes are places in the Earth's surface that look like mountains where molten rock, dust, and gas can escape. Why do volcanoes erupt? Are there any volcanoes in Florida? Why or why not?
- A hurricane is a big storm up to 600 miles across that has strong winds spiraling inward and upward at speeds of 75 to 200 mph. Florida is prone to experiencing hurricanes because of its position on Earth and being surrounded by water on three sides. What is a forecast and how do meteorologists make them? How can we prepare for hurricanes?
- Our Sun, the closest star to us, has continuously caused slow changes to our Earth since it formed along with the planets about 5 billion years ago. The Sun's energy can have beneficial and harmful effects to the planet and the living things on it. What are some of the beneficial effects of the Sun? What are some of the harmful effects of the Sun? How can we protect ourselves from these harmful effects?

In Class Activities:

- This activity will explore solar energy and color. You will need I plastic bottle painted white, I plastic bottle painted black, 2 balloons of the same color, and an outdoor sunny area. Talk with the students about how the Sun gives us energy in the form of heat and light. Lighter objects tend to reflect the light of the Sun (the light is bounced away) and darker objects absorb more light (the light is taken in). Light is energy so when it is absorbed by an object, its temperature should increase. Place both bottles outside on the ground in a sunny spot close together but not shading each other. Tell the students that a balloon will be placed over the top of each bottle. Ask the students to predict what will happen. Take predictions then place the balloons over the top of each bottle. Tell students to observe what happens (after a few minutes the black bottle's balloon will begin to inflate slightly while the white bottle's balloon will stay limp). Ask the students what they see and why they think the black bottle's balloon is inflating. Have the students touch both bottles (the black bottle will be warmer than the white bottle). What color shirt should you wear on a hot and sunny summer day? What color roof would be best for a house in Florida that you are trying to keep cool?
- Your students can make a simple barometer out of a glass jar or can, tape, plastic wrap, scissors, a straw, rubber band, and an index card. Barometers measure air pressure. Using the rubber band, tightly cover the top of the container with plastic wrap. Place the straw horizontally on the plastic wrap so 2/3rds of the straw is on the can. Tape the straw to the middle of the plastic wrap to secure it in place. Tape an index card to the back of the container. The straw will act

as a pointer on the card. Use a pencil to mark the position or location of the straw on the card. After 15 seconds, record the new location of the straw on the index card. Repeat as long as desired. Over time, the straw will move up and down in response to changes in air pressure. High atmospheric pressure will push on the plastic wrap, causing it to cave in and the straw to go up. Low atmospheric pressure will cause the plastic wrap to bulge out because the air pressure in the can is higher. This will make the straw go down. Why are barometers important? What can changes in air pressure tell us about the weather?

Math Problems:

- 1. Hurricane Katie is a Category 2 storm with winds of 100 mph. Hurricane Emily is a Category 4 storm with winds of 152 mph. How much faster are the winds of Hurricane Emily than Hurricane Katie?
- 2. An evacuation has been issued in 2 communities; Satellite Beach and Melbourne Beach as Category 5 Hurricane Monica approaches. Satellite Beach has 11,792 people living in it and Melbourne Beach has 3,130 people. How many people in total need to be evacuated?

Year	Number of Hurricanes
2011	7
2010	12
2009	9
2008	8
2007	5

- 3. What is the total number of hurricanes for the 5-year period listed?
- 4. Which year in the table had the most hurricanes?

Writing Prompt:

Have a discussion about what occurs during a hurricane and what needs people would have during and after a hurricane has hit. Talk about the importance of being prepared before a major storm hits. Tell students to imagine if a major hurricane had hit their area and they were going to be without power for 3-5 days. Have students write a one page paper about objects that would be needed in their hurricane survival kit and to explain why.

Art Project:

On a large poster board or paper, have students draw a volcano. They can add color with paints, markers, crayons. Have students be creative by adding other types of materials to their volcanoes such as dirt, glitter, tissue paper, etc. Be sure to include and label the following parts; crater, vent, lava, pyroclastic flow, ash cloud, and the magma chamber.

Additional Resources:

<u>Volcanoes</u> by Anne Schreiber (National Geographic Children's Books) <u>Hurricanes!</u> by Gail Gibbons (Holiday House) <u>The Sun: Our Nearest Star</u> by Franklyn Branley (Collins)