**Name: Barbara DeJarnette Date: 7-12-2011**

**Content Area: Earth Science Grade: 9/10**

**Topic: Phases of the Moon Lab**

**Standards: (SOL)**

ES.1: The student will plan and conduct investigations in which c.) scales, diagrams, maps, charts, graphs, tables, and profiles are constructed and interpreted.

ES.4: The student will investigate and understand the characteristics of the Earth and the solar system

Key concepts include: b) sun-Earth- moon relationships.

**Objectives:**

Understand: The moon revolves around Earth creating the moon phases (and eclipses). From earth, we see only one side. I

Students should be able to identify and name the phases of the moon.

**Materials and Resources:**

Powerpoint: The Sun- Earth- Moon System

Slot outline for Notes from Powerpoint

Lab sheet

**(Optional)** Glencoe text: Earth Science- Geology, the Environment & the Universe, section 28.3, pages 762-763)

8 Oreo Cookies per student

1 toothpick per student

1 paper towel per student

**Safety Considerations**:

Be aware of food allergies or special diets the students may have.

Make sure students handle their cookies only; wash hands before starting

Do not put cookies directly on the table, use the paper towel.

Beware of cookies accidentally getting lost so replacements may need to be given!

**Engage**:

**Time: 5 minutes**

How many of you can already identify or name the phases of the moon? From earth, let’s see how the moon appears to change shape as it revolves around us. Can you explain why this is so? We’re going to demonstrate how we can only see the portion of the moon that is reflecting sunlight.

Have students to refer to their Unit Organizer regarding the Earth, Sun, and Moon System

**Explore**:

**Time: 30 minutes**

Following the procedures listed below, students complete the Phases of the Moon Lab.

1. Label the phases of the moon beneath the circles below, and shade the dark area of the moon to show what would be visible during the indicated moon phase.
2. Come up the teacher to pick-up your lab supplies.
3. Place Oreo cookies on the paper towel (**Do Not Put Them On The Dirty Lab Table!)**
4. Carefully twist open the Oreo cookies so that all of the white frosting is on one side. (**You May Eat the NON-Frosting Cookie Side!**)
5. Use the toothpick to carve the shape of each moon phase drawn below onto a different frosted cookie half. (The frosting represents the visible side of the moon.).
6. Raise your hand and the teacher will come check your cookie phases for a lab grade.
7. Complete the remainder of the lab as you EAT your Moons!!!!!

**Explain**:

**Time: 8 minutes**

Using the Slot- outline notes and text, and looking at their lab drawings, students should be able to describe how the moon appears to change shape as it revolves around us. They should be able to tell how we can only see the portion of the moon that is reflecting sunlight.

**Extend**:

**Time: 5 minutes**

Does anyone know of any Old Wives tales about any of the phases of the moon? (babies being born, werewolves, trouble, etc.).So, now what happens when the Earth gets in between the sun and the moon? What happens when the moon gets between the Earth and the sun? (eclipses)

**Evaluate**:

Teacher checks sheet for first part of the lab (cookies). Turn in page 2 of lab for a grade.

**Plans for Diversity**:

Some students may “accidentally” eat their cookies before completing the lab. Some students may need a partner when completing page 2 in order to understand where the earth and sun are positioned for each phase. Page 2 may need to be made larger so only 4 pictures are on each page. File cards could be used instead of the worksheet and they could be numbered on the back.

**Connection**:

This Lesson is apart of the Earth, Sun, Moon System Unit. Space exploration and Earth’s movements (seasons, equinoxes, solstices, etc.), have already been studied. Basic information and theory of the Moon’s origin has also been discussed. The Moon Phases precedes the study of eclipses.