April 20, 2009 - Science

Science SOL 6.8a, d, e

Objectives: After lecture/activity, students will be able to:

- Identify the 8 phases of the moon in order by name and picture.
- Explain the synchronous rotation/revolution of the Moon around the Earth

Procedure:

1) Display a picture of the Moon. Ask students to take 5 minutes to describe what they see.
    a. What things do you see on the surface of the Moon?
    b. How large do you think it is compared to Earth?
    c. What is the shape?
    d. Do you think it is hot or cold on the Moon?
    e. Does the Moon make its own light? Where does its light come from?
2) Hand out notes sheet. Review the answers with the students. As a student shares an observation that it connected to the notes, fill it in on the note sheet.
3) Ask students to write down all of the phases of the moon that they know (in order, if possible).
4) Tell students that they will explore how the phases of the moon happen. Review the directions of the lab activity (attached) with the students.
5) After students finish lab activity, have the students share what they observed during the activity. Review drawings with the students and have them correct their work, if necessary.
6) Ask students if they ever see anything besides the Man on the Moon. (Guiding question: Based on this, do you think that the Moon rotates?) Explain that the Moon does rotate on its axis. Tell students that it takes about 27 days for the Moon to rotate on its axis, and about 27 days for the Moon to revolve once around the Earth This is called synchronous rotation, and it causes us to see the same side of the moon all the time.
    a. Ask students to demonstrate this with their moons in their groups.
7) Review

Notes:

- Periods 3/4 - Mrs. Anello's students will get copies of the notes already filled out.
- Period 4 – will get lunar phases sheet with word bank
- Synchronous rotation
    - Periods 1/2 – as written
    - Period 3 – Ask students if they ever see anything besides the Man on the Moon. Then ask students to demonstrate the Moon's movement around the Earth, making sure that the Earth can constantly see the same side of the Moon. Then discuss synchronous rotation and the amount of time for one full rotation/revolution.
    - Period 4 – Whole class demonstration before asking students to work in groups.

Name: _____ Period: _____
Teacher: _____Mrs. Thrash_____ Date: _____

All About the Moon…

1) The Earth is about _____ from the Moon.
2) The Moon is about _____ of the size of the Earth. It has about _____ of the Earth's gravity.
3) The Moon's atmosphere is _____ than Earth's atmosphere. This is why the Moon has so many _____.
4) During the day, the Moon can be as hot as _____. At night, it can be as cold as _____. This is because of the Moon's thin atmosphere.
5) _____ has been found on the surface of the Moon.

Features of the Moon:

1) Maria:
   _____
   _____
   _____
2) Craters:
   _____
   _____
   _____

Movement of the Moon:

1) It takes about _____ for the Moon to complete one revolution around Earth.
2) It takes about _____ for the Moon to complete one rotation on its axis.
3) The Moon is in _____. This means that on the Moon, a day and a year are the same.
4) It takes _____ to cycle from one New Moon to the next New Moon.

Name: _____ Period: _____
Teacher: _____Mrs. Thrash_____ Date: _____

All About the Moon…

1) The Earth is about __384,400 km_____ from the Moon.
2) The Moon is about _1/4_ of the size of the Earth. It has about _1/6_ of the Earth's gravity.
3) The Moon's atmosphere is _much thinner_____ than Earth's atmosphere. This is why the Moon has so many ___craters_____.
4) During the day, the Moon can be as hot as __100°_C_____. At night, it can be as cold as __-170° C_____. This is because of the Moon's thin atmosphere.
5) __Ice_____ has been found on the surface of the Moon.

Features of the Moon:

1) Maria: These are the really dark patches on the surface of the moon. They are made of cooled lava.
2) Craters: Craters are caused by objects hitting the Moon at high speeds.

Movement of the Moon:

1) It takes about _27 days__ for the Moon to complete one revolution around Earth.
2) It takes about __27 days____ for the Moon to complete one rotation on its axis.
3) The Moon is in __synchronous rotation_____. This means that on the Moon, a day and a year are the same.
4) It takes _28 days__ to cycle from one New Moon to the next New Moon.

Lab Directions:

1) Choose one person to hold the Moon, and one person to hold the Sun. The other people in the group will be observers.
2) The observers should sit back to back. The Sun will stand far enough away that it shines on the Moon and the observers.
3) The Moon will walk around the observers in a circle COUNTER-CLOCKWISE. The Moon will stop at 8 points. Everyone else should be still.
4) The observers will look at the phases that they see on the Moon, and draw them on their paper.
5) Switch roles so that everyone gets to be an observer.
6) As a group, try to draw the phases that you saw in order. Try to name the phases.