Oct. 23 Moonlight and Craters

**A: Moonlight**

**Engage**

Guess Who? (Put up your hand when you know.)

This object is part of our solar sustem.

It is smaller than the Earth.

It is usually seen at night.

It has holes called craters on its surface.

It goes around the Earth.

It seems to change shape on different night.

If you look up at night, you will probably see it.

Ask them:

What is the moon made of?

What do you think is on the moon?

What shape is the moon?

**Explore**

Use a flashlight and a small, hand held mirror in the darkened room to shine a light around the room.

Ask the students what is going on? Lead them to a discussion of reflections.

Ask the students where moonlight comes from? Have them write their predictions in their science journals.

**Explain**

Discuss the activity with the students. Explain that moonlight is reflected sunlight.

**Extend**

Give students aluminum foil, a ball, and a flashlight. Have them wrap the foil around their balls. When everyone is ready, turn off the lights and let them experiment with shining their lights on their foil covered balls.

Have them record their results in their science journals.

Ask them how their models were like moonlight and how they were different.

**Evaluate**

Show the students photos of the planets as they appear in the night sky with the naked eye. Ask the students why they look like stars. Where do they think the light comes from? Show them views through a telescope, to make it more clear that the light is reflected.

**B: Moon’s surface**

**Explore**

Craters

Give students marble, pan full of play sand, ruler and meterstick.

What happens when the marble is dropped from different heights?

What happens when different-sized objects are dropped from the same height? (Use different sized marbles.)

Ask them what they will do and how they will record their data.

(If the lessons are running shorter than expected, then have them write this up in a formal lab report, which should take ½ hour to 45 minutes. Otherwise, have them use their journals, which would take 50-10 minutes.)

**Explain**

Have them make and look at a crater. What are the parts of a crater? How is each part formed?

Have them look at pictures of the Moon on the Smartboard. How do they think the craters on the Moon formed?

**Extend**

Don’t mention the word “crater”. Show them craters on other planets using the Smart board. How do they think these formed? Show them craters on Earth.

**Evaluate**

Venn Diagram on the board. Have the students tell how the sun and moon are different and how they are the same.

Moonlight and Craters ppt.

Nov 13 – Scale and Pluto

**Engage**

Journal – How big do you think the solar system is? How could we make a model of it?

<http://www.youtube.com/watch?v=97Ob0xR0Ut8&feature=related>

Bill Nye with a scale model of the solar system

**Explore**

<http://www.exploratorium.edu/ronh/solar_system/>

Use this link to get the distances. Have the students mark the distances off on adding machine tape (if available, otherwise on a roll of toilet paper).

They will need to use metersticks to make their measurements, and they will need to go to the end of the hallway to start. If we have enough help, we can split the students between two parallel hallways.

**Explain**

As needed.

**Extend**

Have students make and color scale models of the size of the Sun and planets. They can use modeling clay, balloons, and a punchball. Have them start with the punchball as a sun. Then, using the size of their sun, have them calculate (using the computer program) the sizes for their planets. They can use clay for the smaller planets, and small balloons for Jupiter and Saturn. They should use their metersticks to measure the diameters.

Once they have finished their models, have them guess how big their solar system would have to be if it were to scale. Then have them use the program to calculate the actual distance. Have them divide their adding machine solar system into it to see how many times bigger it would be.

**Evaluate** Show them the model of the solar system with the sun and planets all in a row. Ask them what is good and bad about the model. Hopefully, they will be able to identify that the model is not to scale for either the planets or the distances.

**Pluto**: Show pictures of the orbits of the planets and the relative sizes of the planets and their moons, as well as the planetoid from the asteroid belt. Also, give the criteria for planets and planetoids. Discuss, using this data, whether Pluto should be considered a planet or a planetoid.

Pluto ppt has both the scale and the Pluto activities.