Moon Phases

Materials: Chalk, Styrofoam balls, bright lights/flashlights

Part 1: Shadows (pending on sun)

Have everyone pair up in twos. One person is the shadow maker, one is the shadow marker. Have them mark the shadow maker's feet, then mark the top of the shadow maker's shadow. Tell them we will return at the end of the lesson. Before we go inside ask if anyone knows what shape the moon is right now. Is the moon ever out in the daytime?

Part 2: The Shape of the Moon – Discussion

The goal for this first part is for the kids to understand that the phases of the Moon are the result of the Moon's own shadow from the light of the sun. Guiding questions:

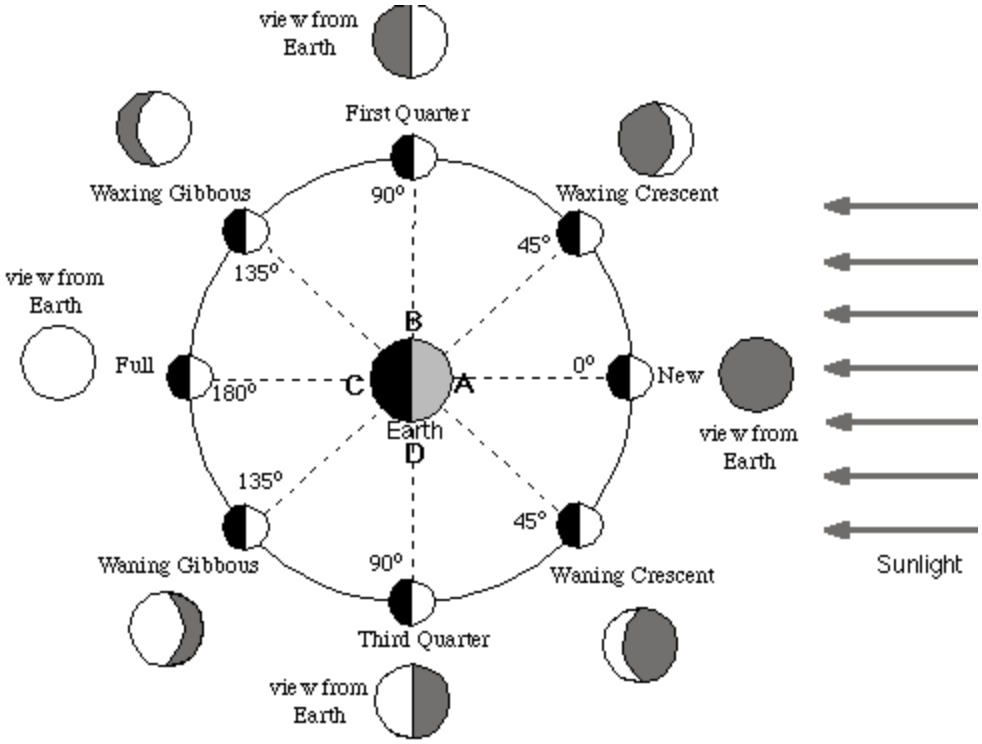
- What shape is the moon (round) ?
- Does the moon always look round? If not, how else does it look?
  - Invite students to draw shapes of the moon up on the board. No repeats, BUT
  - Encourage mirror images (e.g. 1st and 3rd quarter moons). If these aren't showing up, prompt the class.
  - Ask the students what names the different shapes have – try to label the ones that come up.
- Is the moon changing its shape? Or does it simply look different?
- Why is the light part light? What is casting a shadow on on the dark part?

Introduce the next section to figure out in what order the different shapes appear.

Part 3: Lunar Phases- Activity

Turn out the lights, but turn on your über-bright lamp. Move the "moon" to eight different positions around the table (the moon orbits counterclockwise), and ask the students to sketch what they see. They should also label the different phases (introduce them to terms such as waxing, waning, gibbous, etc.)

Next, ask the students if they know the current shape of the moon. Ask if they remember how the moon looked last week.
Lead them to the conclusion that the moon moves about one quarter every week.
What day will the new moon be?



Part 4: Eclipses - Discussion

Remind the students that until now, you've been talking about seeing the Moon's shadow on the Moon itself.

· What would it look like if (if!) you were standing on the Earth and the moon got between you and the Sun? Has anything like this happened recenlty?

◦ Yes! We had a partial solar eclipse last May (2012).

· What would it look like if the Earth came between the Sun and the Moon? What shape would the moon normally have if the Earth were just slightly out of the way (full)?

· Thinking back to the Planets lesson, what other things could get between the Earth and the Sun?

· Venus and Mercury. The “transit of Venus” happened only last June, and the “transit of Mercury” will happen in 2016. Explain that Venus and Mercury are too far away to obscure the whole Sun.

Part 4: Shadows (cont.)

If shadow portion was done return to playground and remeasure the shadows. Notice how the shadows have moved. Explain how this is because the earth is revolving, and moving around the Sun. The moon revolves around the earth, and the shadow of the moon appears different to us as it moves around the earth.