

## ACTIVITY: MOON PHASES

### Goal:

To allow student to re-create the phases of the moon with their own model. To allow student to match the visible lunar phases with the position of Moon, Earth, and Sun.

### Material:

- Foam balls (~7cm in diameter) \*
- Wooden skewers\*
- Lamp
- Light bulb (100 Watts)
- Desk for lamp
- Dark room (lights need to be turned off)

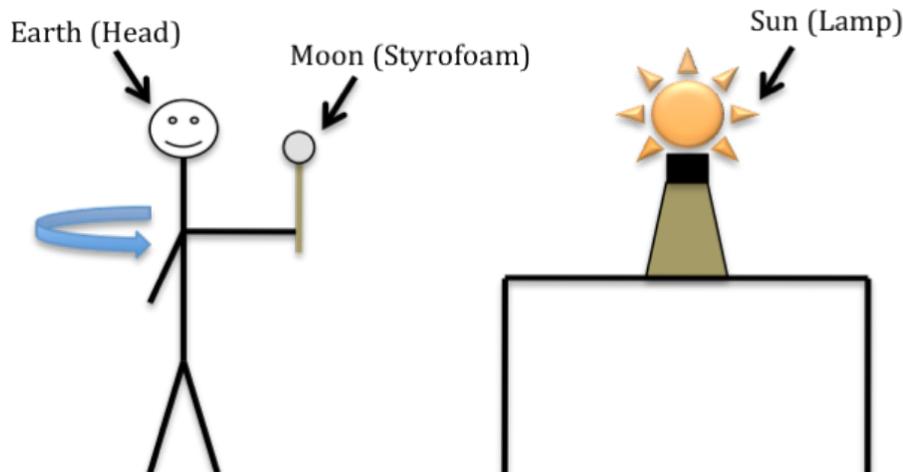
\* The number of these items depends on the number of students doing this activity simultaneously

### Preparation:

1. Place skewers through the foam balls such that it is secure but not through the foam entirely. The end product should resemble a balloon on a stick.
2. Present the phases of the moon to the students such that they are familiar with the terminology (*i.e.* Waxing, Waning, Gibbous, Crescent, Full, Half, and New).

### Activity:

- a) Turn off the lights of the room and close blinds/shutters/curtains.
- b) Turn on the 'sun' lamp
- c) Have students hold out their 'moon' (foam ball on a stick) directly facing the sun.



- d) The side of the moon that the students observe is dark.
- e) Have students turn *counterclockwise* and identify at what moment they can observe the Waxing crescent.

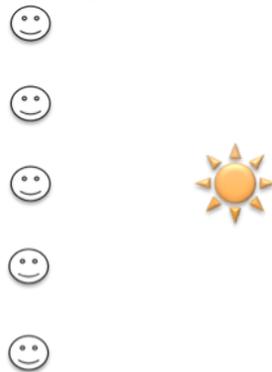
f) Have them continue to turn identifying all other phases of the moon.

*Note: If students observe their head casting a shadow on the moon while they are attempting to view a Full moon, this is a lunar eclipse. Have students hold the moon up slightly to see the full moon. Lunar eclipses only occur when the moon is exactly in the same plane as the Sun and Earth. Since the Moon's plane of rotation is tilted by 5 degrees, the eclipse phenomenon does not occur every month.*

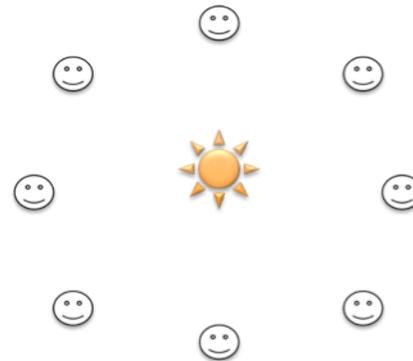
**Room Layout:**

The following are two diagrams of possible room layouts. The sun indicates the position of the light source (lamp) and the faces represent the students.

A: Easy



B: More difficult



In layout A, the students are all facing relatively same directions and can both participate in the activity and observe their classmates in the activity. This allows them two perspectives to see and understand the models they are creating of the phases and the relative Sun-Moon-Earth positions.

In layout B, more students can participate but their relative positions are different and at times even opposite. This would allow them to see the big picture of both the relative Sun-Moon-Earth position and visualize what this model would look like as the Earth rotates relative to the Sun. Because of this, the activity could become more confusing for students if they do not understand the initial phase positions first.