Visualizing Moon Phases (page 1)

NGSS MS-ESS1-1

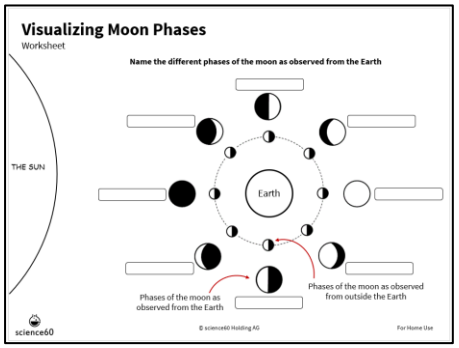
Activity

Introduction: On a full moon night, the moon is so bright that it casts shadows of objects – yet the moon has no light of its own and only reflects the light from the sun. From a full moon to a new moon, as the moon rotates around the Earth, different parts of the moon get lit up. As the moon completes a full rotation around the Earth in about 29.5 days, all the phases of the moon cycle make an appearance in a set sequence.

Lesson Objective: To visualize the different phases of the moon (as observed from the Earth).

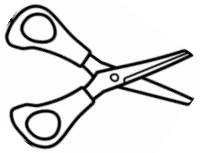
GLOBE STAND

PAINTED BALL (MOON)

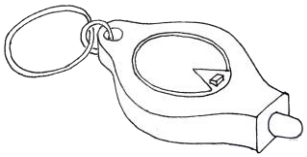


WORKSHEET

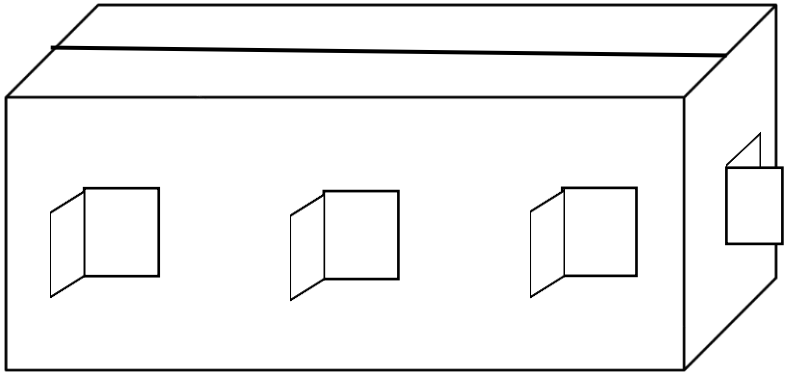
BULLETIN BOARD PINS



SCISSORS



KEYCHAIN FLASHLIGHT



MOON PHASE BOX

TAPE

Materials:

1. Moon Phase Box
2. Painted Ball (Moon)
3. Globe Stand (from the Seasons Activity)
4. Bulletin Board Pins
5. Tape
6. Scissors (from the classroom)
7. Keychain Flashlight (from the Seasons Activity)
8. Worksheet

Visualizing Moon Phases (page 2)

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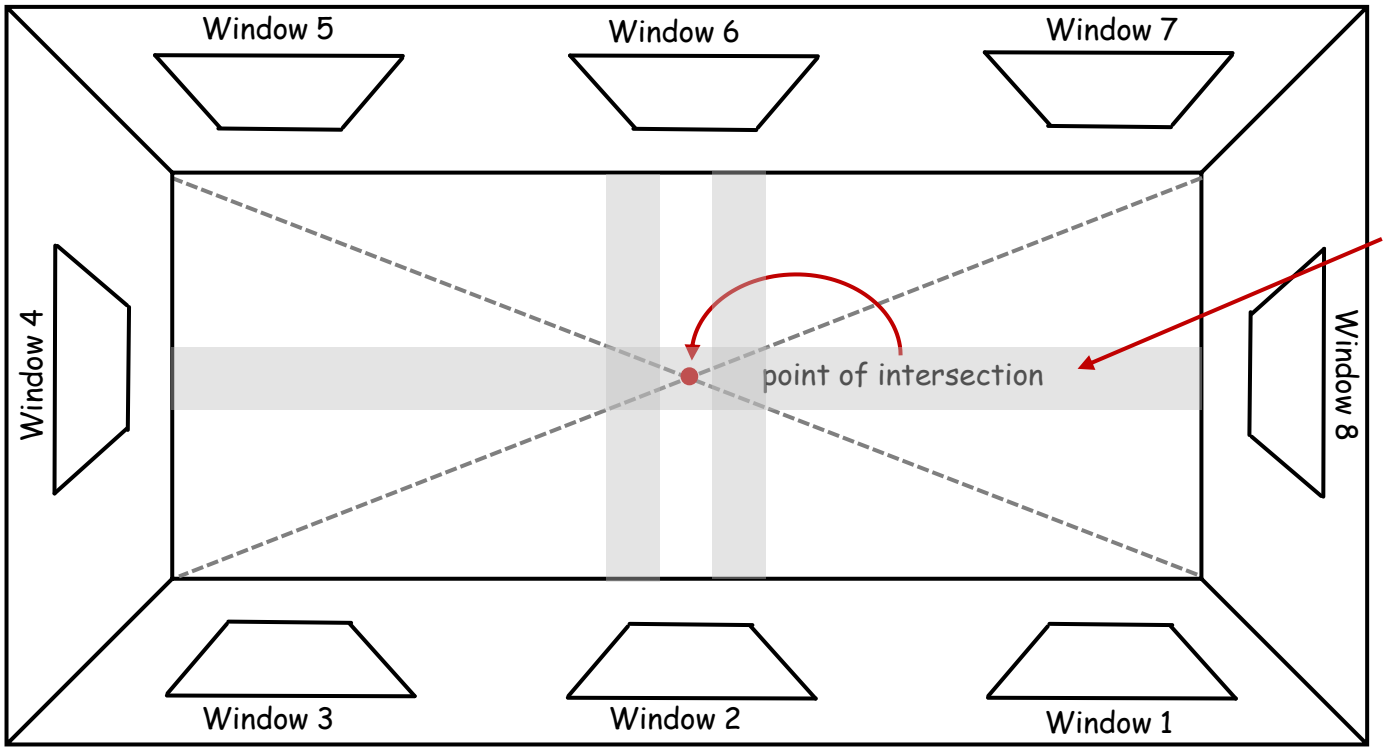
Activity

Method

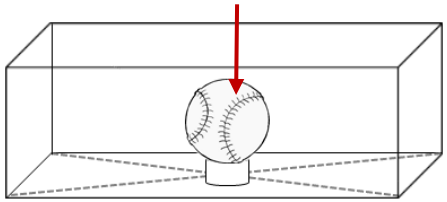
Part A– Preparation:

1. Carefully assemble the Moon Phase Box (unless it is already assembled from prior use). Make sure to tape the bottom flaps of the box: so the box takes the expected shape.



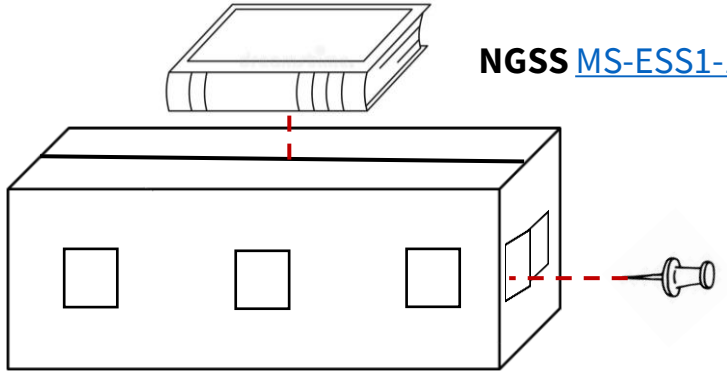
Ref>(Step 1): Tape the bottom flaps of the box: so the box takes the expected shape.

Ref>(Step 3): Place the painted ball on the globe stand



2. Secure the globe stand to the center of the box using tape (hint: draw two diagonal lines on the base of the box, the intersection point of the diagonals is the center of the box).
3. Place the painted ball (moon) on the globe stand.

Visualizing Moon Phases (page 3)



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Activity

Method

Part B– Procedure:

1. Open the flap of Window 8 and secure it open with a bulletin board pin.
2. Next, open the flap of Window 1 and secure it open with a bulletin board pin.
3. Carefully close the top lids of the box (hint: place a heavy textbook on top of the box for stability).
4. Hold the keychain flashlight at Window 8: **this will act as the sun for the entire activity**.
5. Close the flaps of all the windows, except Window 1, and make sure the flashlight is switched on.
6. Observe the moon (ball) through the window.
7. Follow step 2 and 6 to observe the other moon phases through the other windows.
8. Record your observations in the Data Table.
9. Complete the worksheet – use the data table as reference.

Data table

Moon phases observed through	Name of the moon phase observed
Window 1	
Window 2	
Window 3	
Window 4	
Window 5	
Window 6	
Window 7	
Window 8	

Hint: names of the moon phases

Waxing Crescent	Waning Gibbous	First Quarter	Full Moon
Waning Crescent	Waxing Gibbous	Third Quarter	New Moon

Understanding Scale and Proportion

In this activity, you are trying to visualize the phases of the moon using an exceptionally miniaturized scale of the system. Consider the limitations of this setup and reflect on potential areas for improvement.