7

DepED
DEPARTMENT OF EDUCATION

# Science Activity Sheet
# Quarter 4 – MELC 6
# Week 6
## Solar and Lunar Eclipses

**REGION VI – WESTERN VISAYAS**

**Science 7**
**Activity Sheet No. 6 Solar and Lunar Eclipses**
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# Introductory Message

Welcome to **Science 7!**

The **Learning Activity Sheet** is a product of the collaborative efforts of the Schools Division of Sipalay and DepEd Regional Office VI - Western Visayas through the Curriculum and Learning Management Division (CLMD). This is developed to guide the learning facilitators (teachers, parents and responsible adults) in helping the learners meet the standards set by the K to 12 Basic Education Curriculum.

The **Learning Activity Sheet** is self-directed instructional materials aimed to guide the learners in accomplishing activities at their own pace and time using the contextualized resources in the community. This will also assist the learners in acquiring the lifelong learning skills, knowledge and attitudes for productivity and employment.

**For learning facilitator:**

The **Science 7 Activity Sheet** will help you facilitate the leaching-learning activities specified in each Most Essential Learning Competency (MELC) with minimal or no face-to-face encounter between you and learner. This will be made available to the learners with the references/links to ease the independent learning.

**For the learner:**

The **Science 7 Activity Sheet** is developed to help you continue learning even if you are not in school. This learning material provides you with meaningful and engaging activities for independent learning. Being an active learner, carefully read and understand the instructions then perform the activities and answer the assessments. This will be returned to your facilitator on the agreed schedule.

Name of Learner:_____
Grade and Section:_____**Date:** _____

# SCIENCE 7 ACTIVITY SHEET NO. 6
# Lunar and Solar Eclipses

## I. Learning Competency with Code

Explain how solar and lunar eclipses occur using models

## II. Background Information for Learners

In the previous lesson, you have learned that the Earth and the Moon are continuously moving in their respective orbits- the Earth is moving around the Sun and the Moon is moving around the Earth. What will happen when the Sun, Moon, and Earth falls in one straight line? A shadow is formed when the light from the Sun is completely or partially blocked by the celestial body. Thus, when the shadow of one celestial object falls on another, an eclipse happens.

What is an eclipse? An eclipse is the dimming or darkening of one celestial object by another as viewed by the observers.

## III. Accompanying DepEd Textbook

Department of Education. *Science 7 Learners Material (p354-356)*.
Pasig City, Philippines.

## VI. Activity Proper

**Activity 1. Are There Shadows in Space?**

**Note: Ask your parents to help you with this activity.**

What you need?

1 big ball (plastic or stytrofoam)
1 small ball, diameter is ½ of the big ball (plastic or Styrofoam)
flashlight or other light source
2 pcs barbecue stick about 1-foot long
any white or cardboard paper bigger than the size of the big ball
Styrofoam block or block of wood

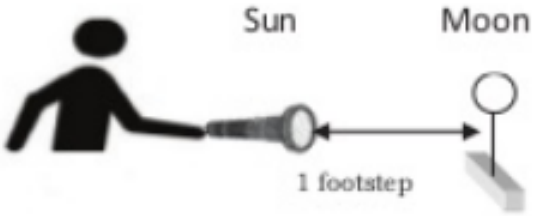
*Note: All throughout the activity, stay at the back of the flashlight.*

What to do

1. Pierce the small ball in the middle with the barbecue stick. Push the stick into the Styrofoam block to make it stand (refer to Figure 1). The small ball represents the moon.

2. Do the same with the big ball. This ball represents the Earth.

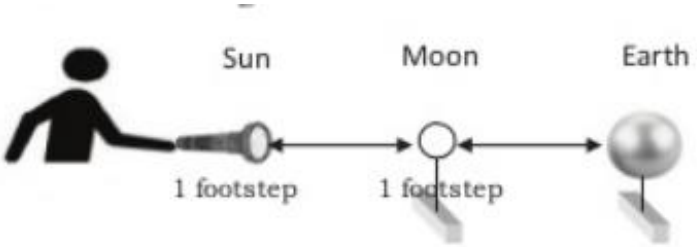

3. Put on the flashlight and focus the light on the small ball. The distance between is one footstep. Observe the small ball as you focus the light on it. The flashlight represents the sun.




a. What is formed on the other side of the Moon?

_____

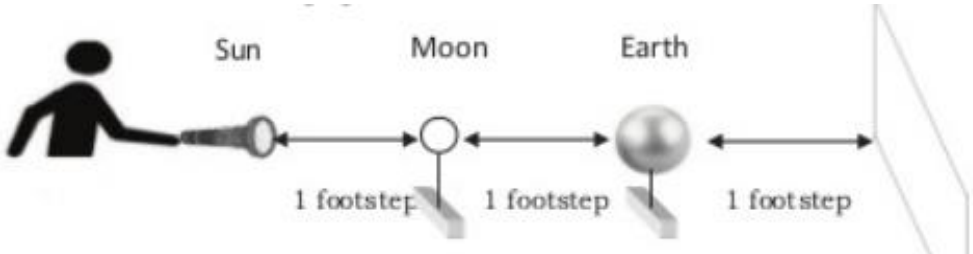
4. Place the Earth one footstep away from the Moon. Make sure that the Sun, earth and Moon are on a straight line. Turn on the flashlight and observe.




b. What is formed on the surface of the Earth?

_____

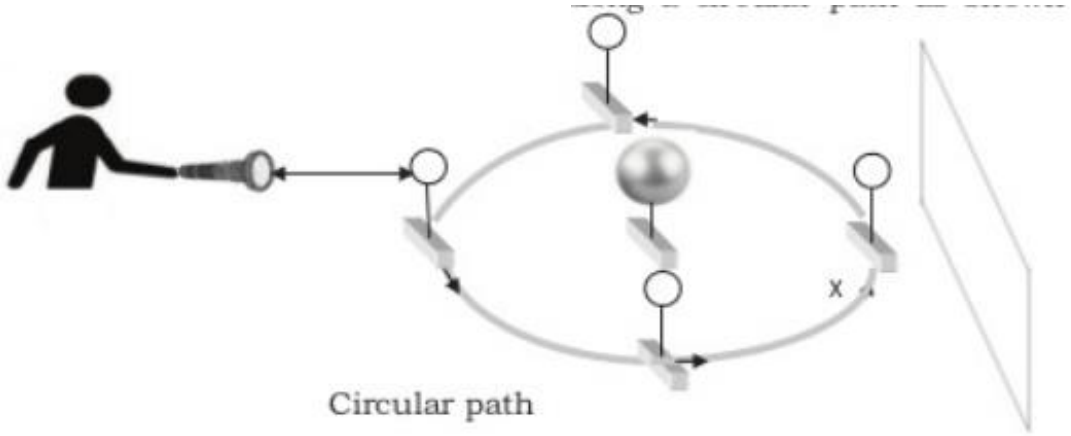
5. Place the white paper one footstep away from the Earth. Observed what is formed in the white paper.




c. What is formed on the white paper?

_____

6. Ask a member of your family to move the moon along a circular path as shown below.




d. What happened to the shadow of the Moon as you move it around the path?

_____

e. Observe the appearance of the Moon. What is the effect of the shadow of the Moon as the Moon reaches position X (see Figure above)?

_____

You have just simulated the formation of shadow on astronomical objects in space. The formation of darkening is exactly the same as the formation of shadows commonly seen around you. When shadows are formed by astronomical objects, a darkenimg effect is observed. This phenomenon is known as eclipse.

*Note: If you have no available materials at home and you have not performed the activity, read the following and answer the questions that follow.*

Sun gives off light. As the planets revolve around the sun, they block the light of the sun and form shadows, even their moons have shadows too. However, these astronomical bodies are far from you, therefore you can only see the shadows of the earth and moon.

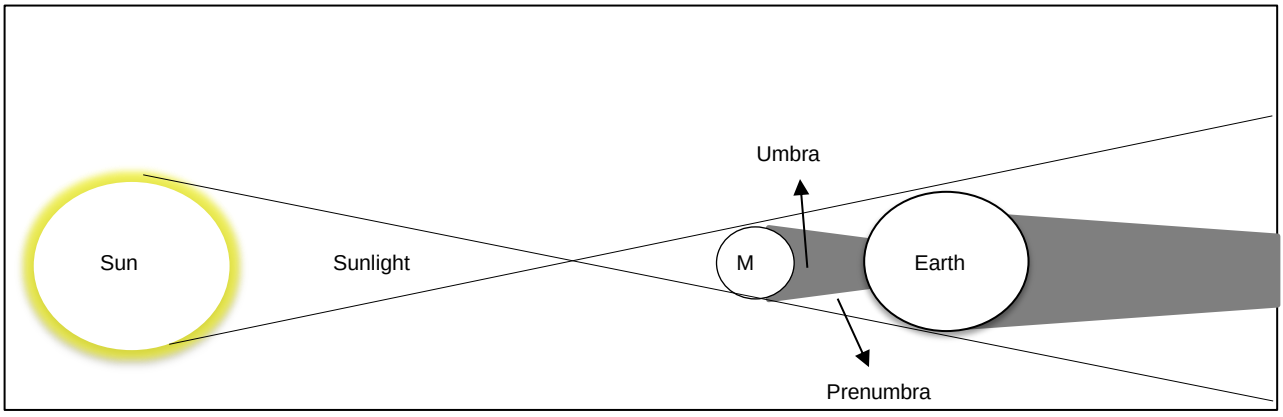



Figure 1. Solar Eclipse

**Activity 2. The Moon's Shadow**

**Directions:** Study the Sun-Moon-Earth diagram in Figure 1. Observe the formation of the shadows of the Moon and Earth. Make this as your guide in answering the guide questions. Write your answer in your Science notebook.

**Guide Questions:**

1. Looking at Figure 1, what is the relative position of the Sun, Moon, and Earth?
   _____
   _____
2. What is the position of the Moon in relation to the position of the Sun and Earth?
   _____
   _____
3. Where does the shadow of the Moon falls?
   _____
   _____
4. Explain when does total solar eclipse and partial solar eclipse can be observed?
   _____
   _____
5. Using the Sun-Moon-Earth diagram, explain how solar eclipse occur?
   _____
   _____

**Solar Eclipse** occurs when the Moon comes directly between the Sun and the Earth. Moon's shadow falls on the earth. It only occurs during the **new moon** phase. The shadow of the eclipse has two parts: a darker inner part of the shadow is called umbra and a lighter outer part is called prenumbra. If you are standing in the prenumbra, the sun is partially seen, hence partial solar eclipse occurs. But if you are standing in the umbra, you cannot view the sun because the moon blocks the light of the sun, thus total solar eclipse occurs in wich the surroundings appear dimmer.

**Lunar Eclipse** occurs when the Earth comes directly between the Sun and the Moon. Earth's shadow falls on the Moon. It only occurs during the **full moon** phase. Total lunar eclipse occurs when the moon and the sun are on opposite side of the earth. A partial lunar eclipse happens when only a part of Earth's shadow covers the Moon.

**Activity 3. The Earth's Shadow**

**Directions:** Study the Sun- Earth – Moon diagram in Figure 2. Observe the formation of the shadows of Earth. Make this illustration as your guide in answering the guide questions. Write your answer in your Science notebook.

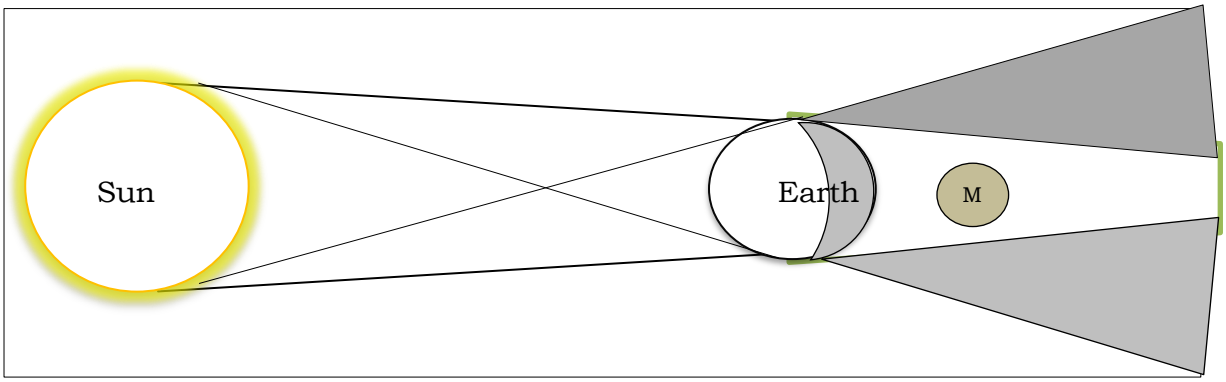



Figure 2. Lunar Eclipse

**Guide Questions:**

1. Looking at Figure 2, what is the relative position of the Sun, Moon, and Earth?
   _____
   _____
2. What is the position of the Earth in relation to the position of the Sun and Moon
   _____
   _____
3. Where does the shadow of the Earth falls?
   _____
   _____
4. Explain when does total lunar eclipse and partial lunar eclipse occur.
   _____
   _____
5. Using the Sun- Earth- Moon diagram in Figure 2, explain how lunar eclipse occur.
   _____
   _____

## IV. Reflection

**Complete the statements below.**

I understand _____
_____

I don't understand _____
_____

I need more information about _____
_____

## V. Answer Key

**Activity 1**

1. None
2. The shadow of the small ball is seen on the surface of the big ball
3. The shadow of the big ball is seen on the white paper
4. As the small ball move, the shadow moves too.
5. The shadow of the big ball darkened the small ball

**Activity 2**

1. Looking at figure 1, the Sun, the Moon, and Earth fall in one straight line.
2. The Moon comes directly between the Sun and Earth.
3. The Moon's shadow falls on earth.
4. Total eclipse is observed when you are on the earth under the umbra of Moon's shadow, that is, the Sun is completely covered. On the other hand, partial eclipse is observed when you are on the earth under the prenumbra of the Moon's shadow, whereby only a part of the sun disk is covered.
5. Based on Sun-Moon-Earth diagram in figure 1, Solar Eclipse occur when the Sun, Moon, and Earth falls in one line and the Moon comes directly between the Sun and Earth thus the Moon's shadow falls on Earth during the new moon phase.

**Activity 2**

1. In figure 2, the Sun, the Earth, and Moon are in line.
2. The Earth is between the Sun and the Moon.
3. The Earth's shadow falls on the moon that the moon moves through the earth's shadow.
4. Total lunar eclipse occurs when the moon and the sun are on opposite side of the earth. However, partial lunar eclipse happens when only a part of Earth's shadow covers the Moon.
5. Based on the illustration in figure 2, Lunar Eclipse occur when the Sun, Earth, and the Moon fall in one straight line and the Earth is between the Sun and Moon that the Moon cannot be seen from Earth because the Earth is blocking the light from the Sun during full moon phase.

**Reflection** (Answers vary)