

MOON PHASES

Science Experiment

Skills

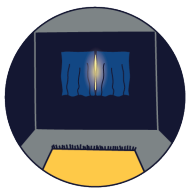
This project involves the following skills in Science:

- Predicting
- Following a procedure
- Considering safety aspects when working
- Processing and analysing data
- Evaluating
- Communicating



In His days shall the righteous flourish; and abundance of peace so long as the moon endureth.
Pslam 72:7

Materials you need

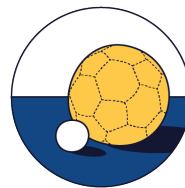


Dim room



Lamp

Any strong light source will work, for example a powerful torch, desk lamp or spotlight.



Two plain, light coloured balls

One larger and one smaller, such as a ping pong ball, soft ball, or plain soccer ball. Actual sizes do not matter.



Pencil and paper

Sketch your observations.

Instructions

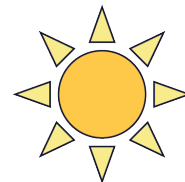
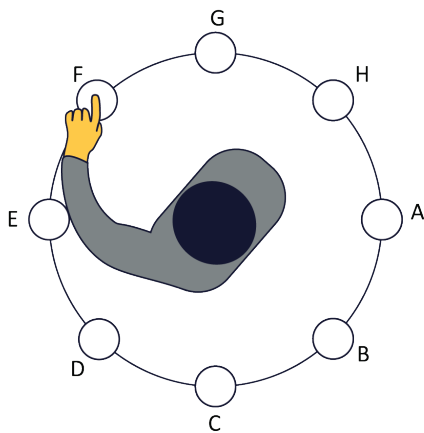
In this experiment, we will see what causes phases on the moon.

The lamp will be the "sun", our source of light, off to one side of the room. It should be about the level of your head.

You will be "Earth", near the centre of the room, holding the smaller ball, the "moon". Later, the larger ball will be "Earth".

Make sure the "sun" shines brightly on the face of the "moon," and there is not too much light coming from other light sources, such as windows or doorways.

Setup



Your task will be to sketch your "moon" when you hold it at each position shown above.

Think ahead!

Do you think your moon sketches will all look the same, or will they be different?

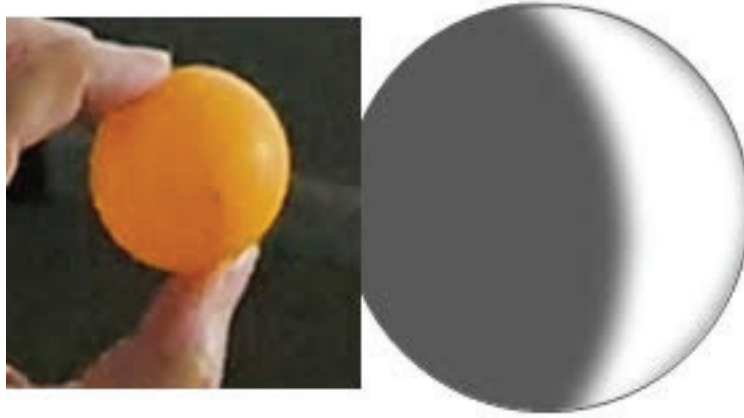
Can you guess, before doing the task, what problems you might have? Can you think of how to avoid them?_____

Can you guess, before doing the task, what the moon will look like in each position? Say aloud to your supervisor what you think you will see at each position, and then see if you're right!

Can you think of any dangers with this experiment? How can you keep safe?

Do the experiment

1. Hold the moon in each position. Carefully use a **pencil** to draw the light and shade in the circles. If there is something in the way that stops you seeing properly, hold the moon a little higher to clear the shadow.



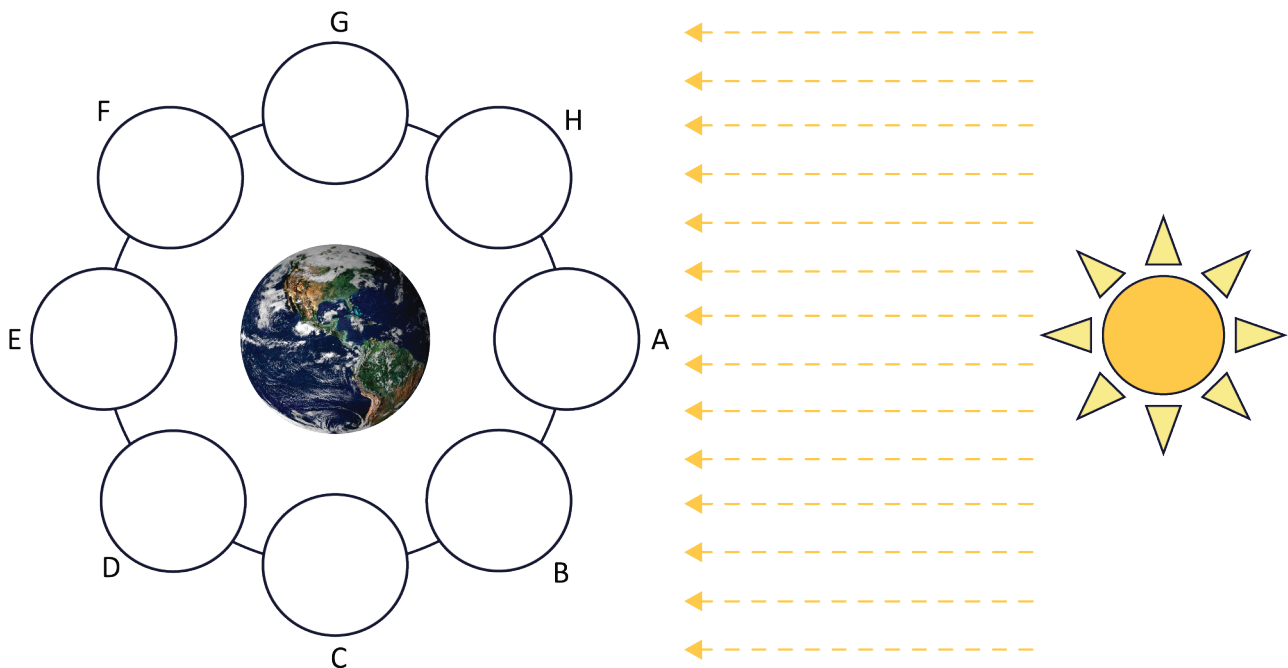
Remember:

Position A is when the moon is between you (Earth) and the sun.

Position C is to your right when you are facing the sun. **Position G** is to your left.

Position B is between positions **A** and **C**.

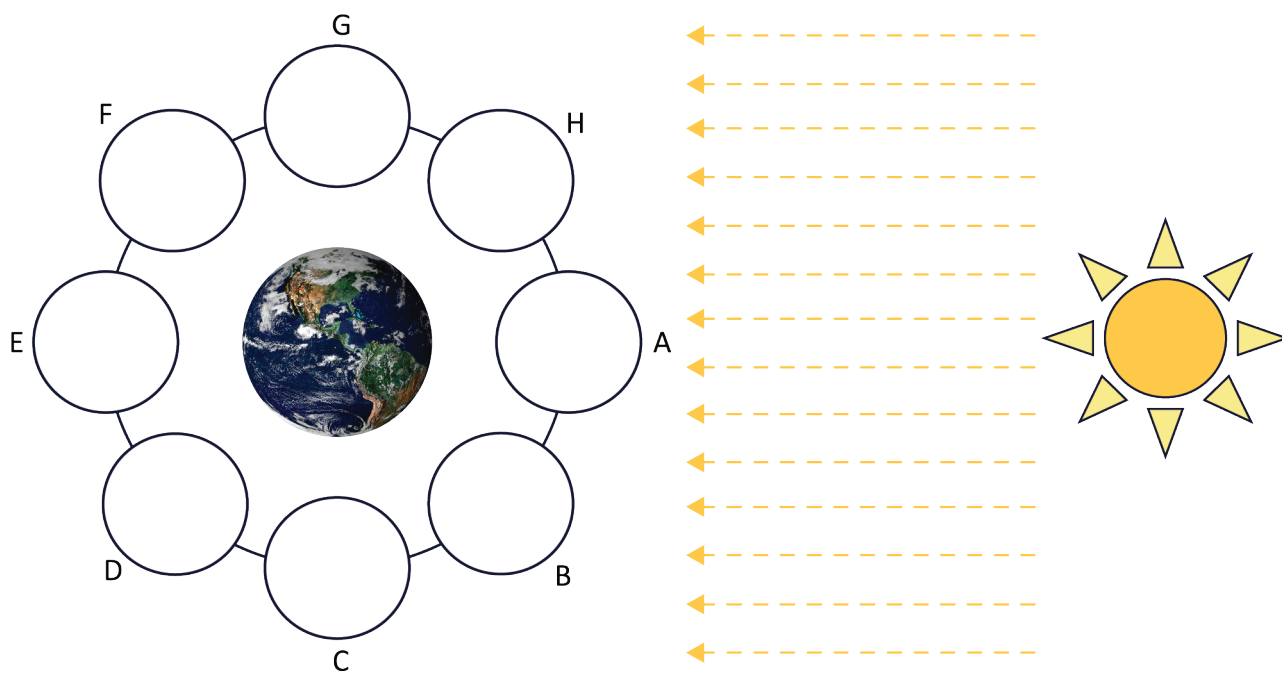
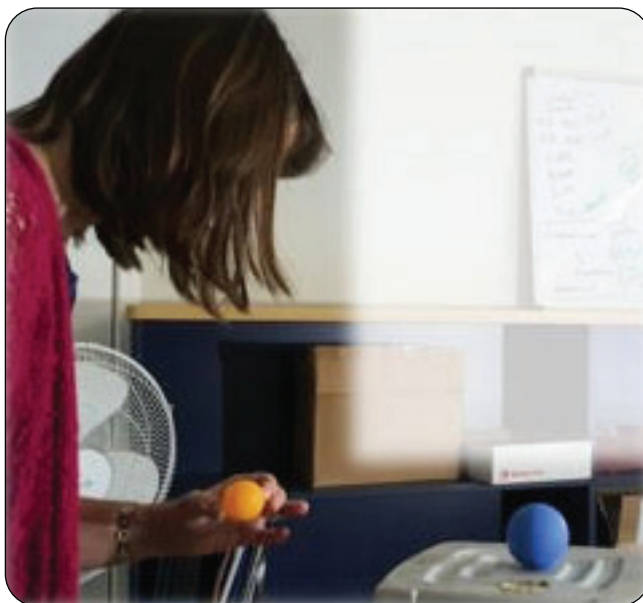
Position E is straight in front of you when you have your back to the sun.



How the moon looks from **Earth** in each position.

2. Now place "Earth" (the larger ball) on a stand, where you stood when you did the first part. Move the moon around Earth, at about the same distance from it as you held it away from you in the first part.

Look at the moon from **above**, and draw the light and shade in each position.



How the moon looks from **above** in each position.

*He appointed the moon for seasons: the sun
knoweth his going down.
Psalm 104:19*

1. Are the results what you expected?

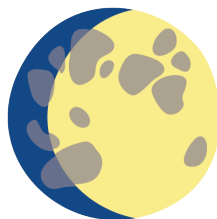
2. Briefly describe what causes the phases of the Moon.

3. As you move the moon around the Earth, does the Earth also appear to have phases?

4. The word **eclipse** means to hide or block out light. At which position do you think the **sun** is eclipsed for people on earth?

5. At which position do you think the **moon** is eclipsed for people on Earth?

6. Can you think of ways to improve the way you did the experiment so that you can see the results better?



*Praise ye Him, sun and moon: praise Him, all
ye stars of light.
Psalm 148:3*

Experiment Notes

PACE Levels

The activity is suitable for all ages, but relates specifically to some PACE levels.

Level 1: Science 1005 teaches about the sun, moon and stars.

Science 1006 expands on the sun, moon and stars, and teaches about Earth's movements.

Level 2: Science 1015 teaches about "heavenly bodies," naming the sun, moon and stars.

Level 3: Science 1027 teaches about the sun, moon and stars.

Science 1028 expands on the sun, moon and stars, and teaches about light and shadows.

Level 5: Science 1054 teaches about the Solar System.

Level 6: Science 1065 teaches about light.

Level 8: Science 1085 teaches about the Earth , and the sun's effect on Earth.

Science 1095 teaches about Earth in space.



CHRISTIAN HOME SCHOOLING

As for me and my house, we will serve the Lord. Joshua 24:15b