



EduTrend Contents

W4C · ASTRONOMY & SPACE SCIENCE · PRIMARY

Moon Phases Model

Why does the Moon change shape?

Ages 8–11

Level: Developing

60 minutes

Groups of 3 · up to 30

Activity 02

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 pupil worksheets · assessment checklist

ACTIVITY 02 · AT A GLANCE

Moon Phases Model

Pupils find out why the Moon seems to change shape. In a darkened room, each pupil holds a ball on a stick as the Moon and turns around a lamp that represents the Sun. They see the lit part of the ball change from new moon to full moon and back, draw the phases and start a moon diary to observe the real Moon.

Learning outcomes

By the end of the session pupils can:

- explain that the Moon does not make its own light;
- model how the Moon orbits the Earth;
- name and order the main phases of the Moon;
- record real observations over time.

KEY WORDS

Moon · orbit · phase · reflect · new moon · full moon · crescent · gibbous

CURRICULUM LINKS

Science: Earth and space, light.
Maths: time and sequencing.
English: observation diaries.

1**QUESTION**

What do we want to know?

2**OBSERVE**

Watch the sky

3**MODEL**

Build a model

4**MEASURE**

Take readings

5**COMPARE**

Model vs reality

6**EXPLAIN**

Use evidence

Materials (per group)

- Lamp without a shade (one for the class)
- Polystyrene balls or white balls on pencils
- Moon phase cards
- Worksheets 1, 2 and 3

Before the session

- Darken the room as much as possible.
- Place the lamp at head height in the centre.
- Push balls onto pencils.
- Check the current moon phase for the diary.

SAFETY

Do not look directly into the lamp. Lamps get hot. Move carefully in the dark room.

ACTIVITY 02 · SESSION PLAN

Step by step

Timings are for 60 minutes. The moon diary continues at home for four weeks.

Time	What happens	Say or ask
0–5 min Hook	Show photos of the Moon as a crescent and full. Is it the same Moon?	<i>"Why does the Moon look different?"</i>
5–15 min Ideas	Pupils draw their ideas. Collect common ideas without correcting.	<i>"What do you think causes it?"</i>
15–35 min Model	Pupils stand around the lamp, hold the ball at arm's length and turn slowly anticlockwise, watching the lit part.	<i>"What shape is the lit part now?"</i>
35–45 min Record	Pupils draw the phases in order on Worksheet 1.	<i>"Where is the Moon when it is full?"</i>
45–55 min Compare	Revisit early ideas. Which ones does the model support?	<i>"Is it the Earth's shadow?"</i>
55–60 min Diary	Set up the moon diary for home.	

CHALLENGE CARD (print or copy onto the board)

Use the model to show a partner a crescent, a half moon and a full moon, and explain where the Sun, Earth and Moon are each time.

ACTIVITY 02 · FACILITATOR NOTES

The astronomy in brief

The Moon does not make its own light; it reflects sunlight. Half of the Moon is always lit by the Sun. As the Moon orbits the Earth, about once every 29.5 days, we see different amounts of its sunlit half, which we call phases.

At new moon the Moon is between the Earth and the Sun, so we see its dark side. At full moon it is on the far side of the Earth from the Sun, so we see the whole lit half. The phases are not caused by the Earth's shadow; that happens only during a lunar eclipse.

Common ideas to listen for

- “The Earth’s shadow causes the phases.” The phases come from our changing view of the lit half.
- “The Moon makes its own light.” It reflects sunlight.
- “The Moon is only out at night.” It is often visible in the daytime.

Adapting the activity

Support

Show four phases only and label them on the cards.

Stretch

Use the diary to predict the date of the next full moon and check it.

WORKSHEET 1

Phases from the model

Name: _____

Class: _____ Date: _____

Draw the lit part you saw at each position.

My drawings

Position	Drawing	Name
1		
2		
3		
4		
5		
6		
7		
8		

WORKSHEET 2

Sun, Earth and Moon

Draw where the Moon is at new moon and full moon.

Diagram



Show the Sun, the Earth and the Moon. Shade the dark half of the Moon.

Why does the Moon look different each night?

WORKSHEET 3

Moon diary

Draw the Moon every clear evening for four weeks.

Diary

Mon	Tue	Wed	Thu	Fri	Sat	Sun

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight pupils; copy as needed.

Pupil	Uses the model correctly	Orders the phases	Explains with reflected light

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Moon Phases Model is a sample activity from the EduTrend Contents W4C Astronomy & Space Science programme (primary, level: developing). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

© 2026 EduTrend Contents. This activity may be printed and copied for use with pupils in your own school, club or home. It may not be resold or published elsewhere. Photos: Aron Visuals / Unsplash.