

The Moon's journey

Autumn 1 · Week 7 · Lesson A · 40 minutes

Learning objective

Describe the Moon orbiting Earth roughly monthly; explain moonlight as reflected sunlight and ordinary phases as changing views of the illuminated half.

Source lesson timing

Elapsed minutes	Source stage	Minutes
0–1	Title	1
1–5	Arrival Task	4
5–7	Today at a Glance	2
7–16	I Do 1	9
16–26	We Do 1	10
26–30	I Do 2	4
30–40	We Do 2	10

Split slide times are added within their original source stages. Printed tasks and adaptations replace activity within these timings; they do not add extra lesson time.

Equipment and preparation

- Adult-prepared card circles or the pupil's three-circle drawing
- Crayons or pencils; simple labels new, half and full
- A matte ball and a low-power torch operated by an adult, if using the physical model
- A static diagram or adult drawing for an equal offline alternative

TEACHING SEQUENCE

Guide the lesson

Use the source stage times; choose prompts appropriate to the pupil.

Title · 1 minute

Current W7 learning objective. Success: state Moon orbits Earth roughly monthly; explain it reflects sunlight; describe ordinary phases. This lesson stops at We Do 2; Tuesday contains the phase-wheel workshop. Do not introduce a cumulative term test that is not the current source.

Arrival Task · 4 minutes

Provide original three-circle new/half/full strip or a simple adult drawing; pupil can draw/direct rather than write. Full Moon shows the whole illuminated face from Earth. Orbit about 27.3 days, roughly a month; light is reflected sunlight. Keep initial response for correction.

Today at a Glance · 2 minutes

A satellite is an object orbiting a planet; Moon is Earth's natural satellite. Phase means the apparent shape of the illuminated part visible from Earth. Reflection is light returning from a surface. Crescent means a thin curved visible sunlit portion.

I Do 1 · 9 minutes

Native diagram traces a possible light path schematically, not a measured ray diagram or phase map. Sun is light source; Moon reflects/scatters sunlight towards observers, rather than glowing like a star. This diagram does not show the illuminated half; use the ball model next.

Adult operates low-power torch, never into eyes. Get agreement before changing light levels; no blackout required. Keep ball above the observer's shadow and compare positions from a fixed observer point. Outside eclipses, about half the Moon is sunlit. Do not say the whole ball becomes physically crescent-shaped.

Demonstrate new near the light direction, half at side, full opposite the light direction while preventing observer-shadow eclipse. A 'half Moon' in appearance is commonly a quarter phase in cycle terminology. Phase depends on viewing geometry, not Earth's shadow. Pupil may direct positions or use still diagrams. Repeat the model from one pupil-requested view.

We Do 1 · 10 minutes

Decide first with cards or speech. First three are ordinary phases from seeing differing illuminated portions; new Moon is near Sun's direction with near side mostly unlit, not Moon ceasing to exist. Lunar eclipse involves Earth blocking direct sunlight; reddish light reaching Moon has passed through Earth's atmosphere. Explain red briefly only if asked; key contrast is shadow versus phase.

Ask pupil to repair the claim 'a crescent is Earth's shadow'. Expected: as Moon orbits Earth, we see a different amount of its sunlit half. A lunar eclipse can occur at full Moon but not each full Moon because lunar orbit is tilted; this is optional explanatory note, not extra assessed content.

I Do 2 · 4 minutes

Source evidence loop: roughly monthly orbit, reflected sunlight, cause of phases. Model with pupil's own words rather than copying. An adult may keep a pupil-labelled view or record explanation; no compulsory photo, public display or accreditation claim.

We Do 2 · 10 minutes

Mark T/F before checking. Expected T,F,F,T,F. 'Glow by itself' means own visible light source in this classroom context. Pupil may point to labels or ask adult to read. Correct one false claim with explanation.

Original claim order T,F,F,T,F. Correct false claims: Moon reflects sunlight; ordinary phases depend on viewing illuminated half; Moon can be visible in daytime. Exact time distinction is 27.3-day orbit relative to stars versus 29.5-day new-to-new cycle, not contradictory month lengths.

Retains source WAGOLL. Qualify that outside an eclipse about half is illuminated. A pupil can produce a labelled sequence with an oral explanation. Do not use a ball entering head-shadow as evidence of ordinary phases.

End Monday after We Do 2 as source instructs. Tuesday follows 32-minute workshop, 4-minute feedback and 4-minute exit. No extra test or private-pack replacement. Adult may note the pupil's chosen question.

TEACHER ANSWERS

Worked answers and expected evidence

Use after an attempt. Accept equivalent correct explanations; record support given.

1. Arrival: a first idea

Full Moon shows the whole visible disc illuminated. Moon orbit about 27.3 days, roughly a month. Moonlight is reflected sunlight.

2. Trace the light

Sun produces light. Moon reflects/scatters some sunlight towards observers. Moon is not its own visible light source.

3. Watch three model views

New: little/none of illuminated part faces us. Half: about half visible disc illuminated. Full: whole visible disc illuminated. Observer's shadow must not fall onto ball during ordinary-phase model.

4. Phase or eclipse?

First three ordinary phases; last lunar eclipse. Normal phases come from different views of sunlit half. Lunar eclipse involves Earth blocking direct sunlight.

5. True or false?

T,F,F,T,F. Moon reflects sunlight; normal phases depend on viewpoint; Moon can be visible in daytime.

6. Build the explanation

The Moon reflects sunlight. As it orbits Earth, we see different amounts of its sunlit half. Earth's shadow is not the ordinary-phase cause.

Misconceptions and corrections

- The Moon stays approximately spherical; the visible sunlit part changes.
- The Moon reflects sunlight; it is not a light source like the Sun.
- Outside eclipses, about half the Moon is illuminated by the Sun. The fraction of that illuminated half visible from Earth changes.
- Earth's shadow causes a lunar eclipse, not the ordinary monthly phases.
- One orbit relative to the stars is about 27.3 days; a new-to-new phase cycle is about 29.5 days. Both are roughly a month.
- The Moon can be seen during daytime as well as at night.
- The torch/ball model is not to scale and is easily affected by the observer's shadow.

Teach safely; keep the evidence

The source record identifies this conversion; it is not a claim of publication.

Safety

- Agree before any light-level change; ordinary room light or still diagrams are valid alternatives.
- No blackout, lasers or looking at the Sun.
- Never direct a torch into eyes; adult holds and controls the torch.
- Keep the ball slightly above the observer's/head's shadow so an accidental eclipse does not masquerade as a phase.
- Use pre-cut card or an adult preparing the circles; do not introduce sharp construction tools.

Access and offline alternatives

- Use spoken, pointed, drawn, signed or adult-scribed responses; public demonstration is optional.
- No online video or publisher images are needed; all diagrams/tasks are original editable teaching aids.
- Retain a clear visual distinction between a top-down model and the view from Earth.
- No photos or public display assumed; record actual witnessed science and independence.

Close and continue

Stop Monday after We Do 2. Keep the explanations for Tuesday's phase-model workshop. Current W7 assesses Moon outcomes, not an added half-term summative test.

Source and revision

Repository: [MattRoper1977/Lessons](#)

Source path: [Science_Teesside/Grow/SCI_G_W7_The_Moon.html](#)

Source file Git blob: [cad3ed6bbbb2f2b3a8cd2ee83b6e504388f82386](#)

Current source link (mutable): https://github.com/MattRoper1977/Lessons/blob/main/Science_Teesside/Grow/SCI_G_W7_The_Moon.html

Document revision: 2026-09-06

Recorded conversion changes

- Current weekly W7 teaching sequence: Moon orbit, reflected light and ordinary phases; not an invented end-of-term test.
- Editable native light-path schematic and paper tasks replace HTML animation and clickable sorting.
- Outside-eclipses qualifier repairs the source shorthand 'half is always lit'.
- 27.3-day orbit and 29.5-day phase cycle kept distinct, following source's workshop correction.
- Private OneDrive pack and its separate assessments retained untouched; original logo not replaced.