

Shadows, Moon phases and eclipses explained

Grade 6 science (Year 7 · Class 6) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test covers shadow formation, Moon phases and eclipses. Show your working for calculations and use labelled diagrams where helpful. The test lasts 45 minutes and is worth 20 marks.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-ESS1-1

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 How a shadow forms (2 marks)

Explain how a shadow is formed and why it has the shape of the object.

Question 2 Shadow of a model (3 marks)

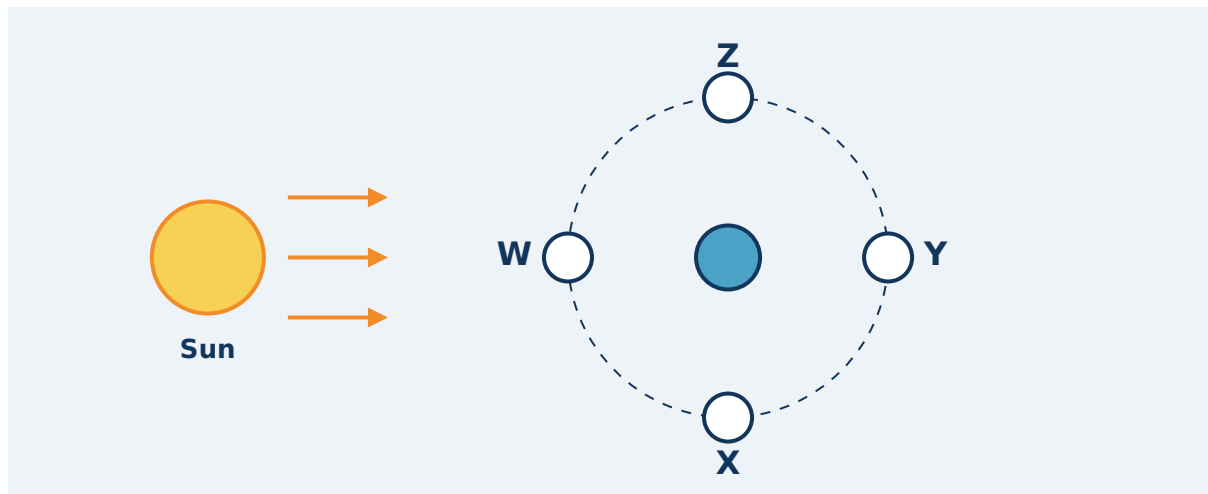
A model 25 cm tall stands 40 cm from a small lamp. A screen is 120 cm from the lamp. Use $\text{shadow height} = \text{object height} \times (\text{lamp-screen distance}) \div (\text{lamp-object distance})$.

- Calculate the shadow height. (1 mark)
- The model moves to 60 cm from the lamp. Calculate the new shadow height. (1 mark)
- State the effect of moving the model away from the lamp. (1 mark)

Question 3 Moon positions (3 marks)

Use the figure.

- State which position gives a full Moon. (1 mark)
- State which position gives a new Moon and explain why it cannot be seen. (2 marks)



Four positions of the Moon in its orbit, not to scale.

Question 4 Eclipses (3 marks)

- State the order of Sun, Moon and Earth in a solar eclipse. (1 mark)
- State the Moon phase during a lunar eclipse. (1 mark)
- Name the dark centre of a shadow. (1 mark)

Question 5 Not every month (3 marks)

Explain why there is not a solar eclipse at every new Moon.

Question 6 Phases in order (2 marks)

List, in order, the four phases that follow the full Moon.

Question 7 Earth's shadow (2 marks)

Lina's friend says that the Moon phases are caused by Earth's shadow on the Moon. Explain why this is wrong.

Question 8 Calendar (2 marks)

A full Moon is on 5 January. The cycle lasts 29.5 days. Estimate the date of the next full Moon.