

Light and the Speed of Light

KS3 Physics · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Is the Moon a luminous object?

Step 1 · Luminous means

It gives out its own light, like the Sun, a candle flame or a screen.

Step 2 · The Moon

The Moon does not make light; it reflects light from the Sun.

Answer: No — it is non-luminous; it reflects sunlight

Check: We see non-luminous objects because light reflects off them into our eyes.

2. Now try one with the steps

How is a shadow formed?

Step 1 · Light travels in straight lines

Step 2 · Blocked

Step 3 · Result

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What does 'luminous' mean? Give one example. [1]

2. Is the Moon luminous? Explain. [1]

3. How does light travel? [1]

4. Explain how a shadow is formed. [2]

5. What is the difference between transparent, translucent and opaque materials? [3]

6. What is the speed of light in a vacuum, in km/s? [1]

7. How far does light travel in 2 s, in km? [1]

8. The Moon is 384 000 km away. How long does its light take to reach Earth, in seconds? [2]

9. The Sun is 150 000 000 km away. How long does sunlight take to reach Earth, in seconds? [2]

10. What evidence shows that light can travel through a vacuum? [1]

11. Why does a shadow get bigger when the object is moved closer to the lamp? [2]

12. Explain how you can see this page, which is not luminous. [2]

13. Light travels at about 300 000 000 m/s and sound at about 300 m/s in a rough comparison. [1]
Roughly how many times faster is light?

14. When light hits a surface, name three things that can happen to it. [3]

4. Before you hand it in

"We see things because light comes out of our eyes."

Light from a source reflects off objects and enters our eyes.

"The Moon gives out light."

Moonlight is sunlight reflected from the Moon's surface.

"Light needs air to travel through, like sound."

Light travels fastest through a vacuum, at 300 000 km/s.