The speed of light is 300 000 km/s. It takes light from the Sun 8.5 minutes to reach Earth. It takes 1.3 seconds for light to travel from the Moon to Earth. The nearest star to the Earth (other than the Sun) is called Proxima Centauri. It takes light 4 years to reach us from Proxima Centauri.

You may need to use these formulae to answer some of the questions. Use units of km/s for speed, km for distance and s for time.

speed = distance ÷ time time = distance ÷ speed distance = speed × time

1 **a** Copy the diagram and draw rays to show how people on the Earth can see the Sun.

b Draw rays to show how people on the Earth can see the Moon.

2 If we could travel as fast as light, how long would it take to reach Proxima Centauri?

3 **a** Jupiter is a planet that is approximately five times further away from the Sun than we are. How long will it take for light from the Sun to travel to Jupiter?

b Mars is half as far again from the Sun as the Earth. How long will it take for light to travel from the Sun to Mars? Give your answer to the nearest minute.

4 Approximately how long will it take for light to travel from the Sun to the Moon? Explain your answer. (*Hint*: look at the diagram in question 1 – you don't need to do any calculations to get your answer.)

5 Calculate the distances below. You will need to convert the times to seconds before working out your answers.

a Sun to Earth

b Earth to Moon

c Earth to Proxima Centauri

6 Mercury is the closest planet to the Sun. On average it is at a distance of 58 000 000 km from the Sun. Calculate how long it takes for light to get from the Sun to Mercury.

I can…

- explain how we can see the Moon
- calculate distances and times.