

- 2 Mrs Liong is sewing. She needs to see the needle she is trying to thread.



- a Name the light source Mrs Liong is using.

- b Name the objects Mrs Liong is trying to see.

- c Sometimes Mrs Liong sits outside in her garden in the morning and sews. Describe how she sees her sewing.

Challenge

- 3 Zara is looking for a box of books. She thinks the box is in the cupboard. It is very dark in the cupboard.

a What is the object that Zara is trying to see?

b Why can't Zara see the object in the cupboard?

c What must Zara do to be able to see the object in the cupboard?

d Explain how Zara will see the object when she follows your advice.



- 2 Arun is looking at a palm tree.



a Identify the source of light.

b Draw rays to show how Arun sees the tree.
Label the arriving ray and the reflected ray.

- 3 Rabah and Khalid are walking along the corridor at school.
The corridor is lit by lamps in the ceiling.

Rabah is behind Khalid. Rabah can see Khalid.

But then Khalid turns the corner at the end of the corridor and Rabah cannot see Khalid anymore.

- a What is the source of light in the corridor?

- b Fill in the spaces in these sentences to explain how Rabah can see Khalid:

Light shines on _____. Light _____ off Khalid
and travels into _____ eyes.

- c Explain why Rabah cannot see Khalid when Khalid has walked around the corner.

- 4 On the picture, draw rays to show
how Mrs Liong sees her needle.
Label the arriving ray and the
reflected ray.



5 Marcus is sitting under the table. His friend Sofia puts a can on top of the table.

'What have I just put on top of the table, Marcus?', asks Sofia.

'I don't know Sofia, I can't see on top of the table.'

Marcus can use a mirror. Then he will see what is on top of the table.

On the picture below, draw **three** rays to show how Marcus sees the can.



f Write down **two** things that scientists discovered when telescopes were invented.

g What information have scientists obtained recently that:

explains why Mars is red in colour?

shows that people cannot be living there?

- 2 a Why does almost every part of the Earth's surface have some hours of daylight and some hours of darkness every day?

- b All the planets spin on their axes. Why do all the planets have some hours of daylight and some hours of darkness?

- c Mercury takes 59 Earth days to spin once round its axis.

Are the nights and days longer or shorter than on Earth?

- d Jupiter takes 10 Earth hours to spin once round its axis.

Are the nights and days shorter or longer than on Earth?

- 3 Earth is one of the planets in the solar system. All the other planets spin on their axes, like Earth does. But they spin at different speeds. Look at the data in the table. Mercury takes 59 Earth days to complete one spin. This means one 'day' on Mercury would be like 59 days on Earth!

Planet	Time taken to complete one spin
Mercury	59 Earth days
Venus	243 Earth days
Earth	24 Earth hours
Mars	24½ Earth hours
Jupiter	10 Earth hours

- a When a planet spins on its axis, what does the half of the planet facing the Sun experience?

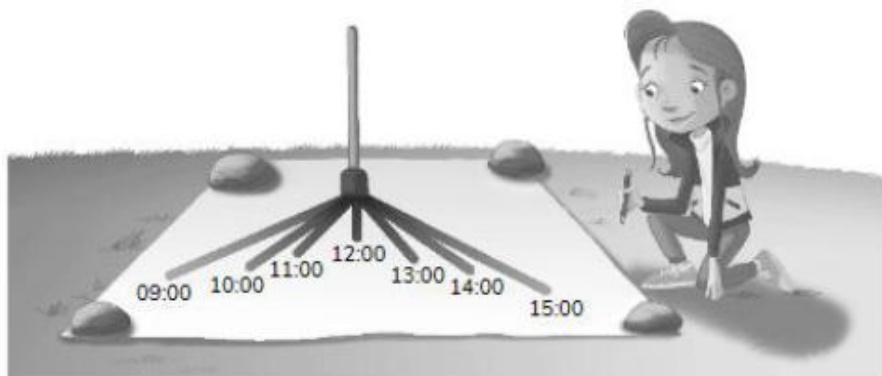
b Which planet has the longest 'day'?

c If you lived on the planet with the longest day and slept for half the day, how long would you sleep for every day?

d Which planet has the shortest day?

e If you lived on the planet with the shortest day, how many hours would you be at school every day if, on Earth, you spend about 6 hours at school every day?

1 The drawing shows the results of a shadow stick experiment.



a At what time on the shadow stick does the Sun appear to be highest in the sky?

b Does this result in a long or a short shadow?

c At which times on the shadow stick does the Sun appear lowest in the sky?

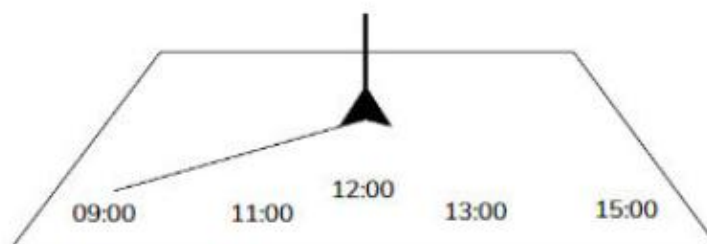
d Does this result in a long or a short shadow?

e Describe the pattern in the lengths of shadows at different times of day.

2 Here is a diagram of a shadow stick experiment.

Look at the position of the Sun at 09:00.

A ray comes from the Sun and casts a shadow of the stick, labelled 09:00.



a On the picture, draw the positions of the Sun at 11:00, 12:00, 13:00 and 15:00. Then draw the shadows of the stick for each position of the Sun.

b What movement does the Sun appear to make between 09:00 and 15:00?

c Does the Sun really move how it appears to do?
Explain your answer using your scientific knowledge.
