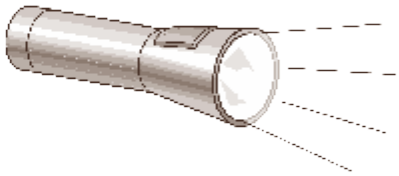
1 (a) Sita made a model of three parts of the solar system, the Sun, Earth and Moon. She used a marble, a torch and a tennis ball.

Draw a line from each part of the solar system to the object she used.

Draw only **three** lines.

part of the solar system	object
Sun	 marble
Earth	 torch
Moon	 tennis ball

2 marks

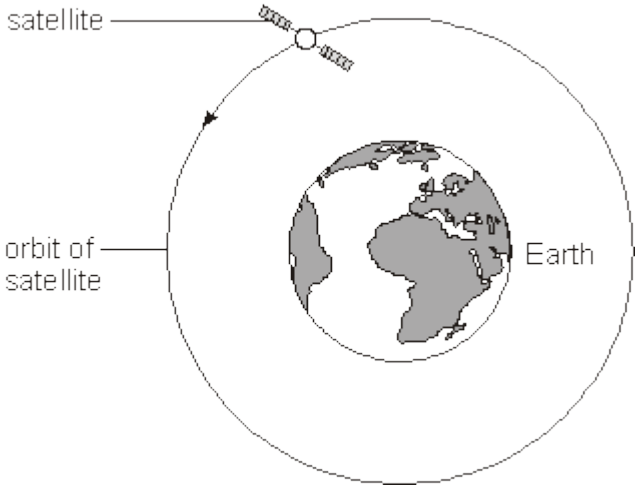
(b) The table below shows the order of some of the planets in our solar system.

Complete the table to show the positions of the Earth, Neptune and the Sun.

	Mercury	Venus		Mars	Jupiter	Saturn	Uranus	

2 marks

(c) The diagram shows a satellite in orbit around the Earth.



not to scale

(i) Give **one** use of a satellite.

.....

.....

(ii) Which force keeps the satellite in orbit around the Earth?
Tick the correct box.

gravity	☐	friction	☐
air resistance	☐	magnetism	☐

2 marks
maximum 6 marks

2 David lives in Britain. He sees that the Sun seems to move across the sky.

(a) Where does the Sun rise in the morning?
Tick the correct box.

in the north	☐	in the south	☐
in the west	☐	in the east	☐

1 mark

(b) (i) At what time of day is the Sun highest in the sky?

.....

1 mark

(ii) In which direction will David see the Sun when it is highest in the sky?
Tick the correct box.

towards the north	☐	towards the south	☐
towards the west	☐	towards the east	☐

1 mark

(c) Where does the Sun set in the evening?
Tick the correct box.

in the north	☐	in the south	☐
in the west	☐	in the east	☐

1 mark

(d) Explain why the Sun seems to move across the sky.

.....

.....

1 mark

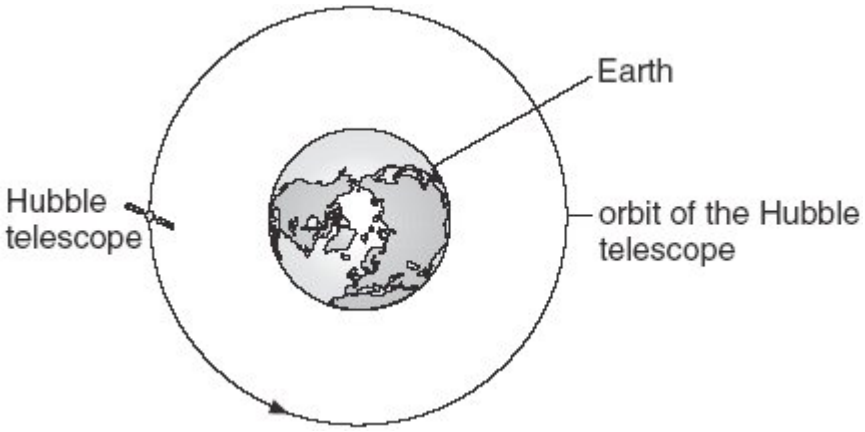
(e) Light from the Sun takes about 8 minutes to get to the Earth.

How long does light from other stars take to get to the Earth?
Tick the correct box.

more than 8 minutes	☐
8 minutes	☐
less than 8 minutes	☐
zero minutes	☐

1 mark
Maximum 6 marks

3 The diagram below shows the Hubble telescope in orbit around the Earth.



not to scale

(a) Which force keeps the telescope in orbit around the Earth?
Tick the correct box.

air resistance	☐	friction	☐
gravity	☐	magnetism	☐

1 mark

(b) The Hubble telescope is a satellite used for looking at planets and stars.

Give **one** other use of satellites.

.....

.....

1 mark

(c) Fill each of the gaps in the following sentences with a different word from the box below.

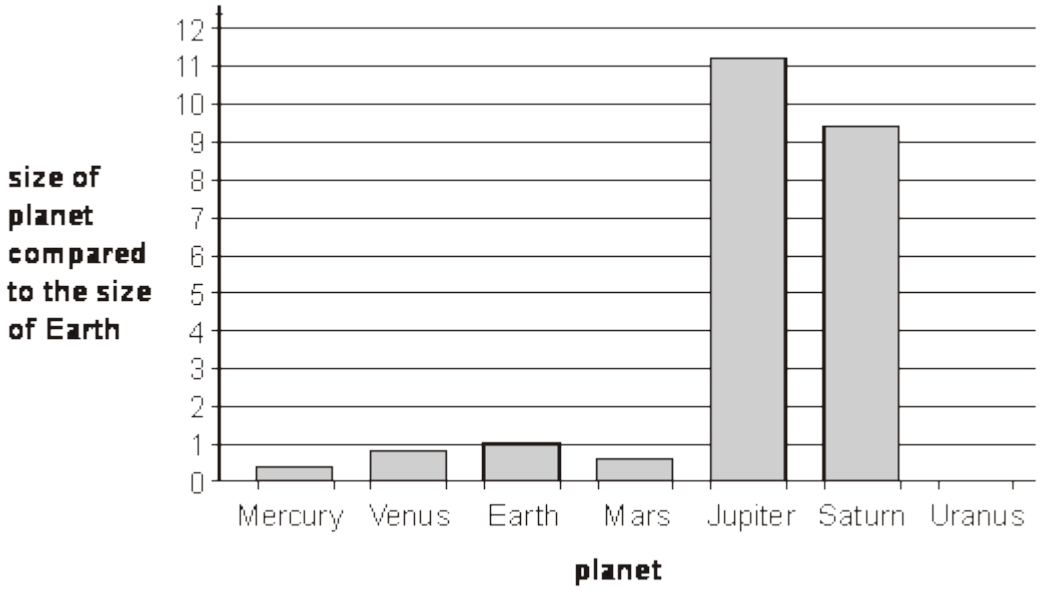
absorbs	**produces**	**reflects**

You can see the Sun because it ..... light.

You can see a satellite because it ..... light.

1 mark

(d) The bar chart shows the size of five planets compared to the size of Earth.



The planet Uranus is four times the size of Earth.
On the chart above, draw a bar for the planet Uranus.

1 mark

(e) (i) Arrange the following in order of size, starting with the smallest.

Sun	**Hubble telescope**	**Earth**

....
smallest **largest**

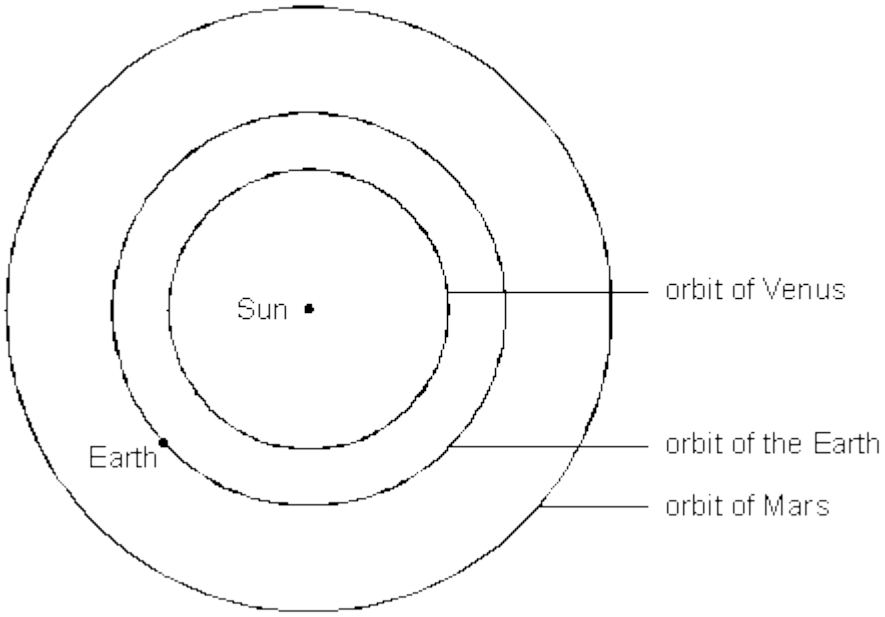
1 mark

(ii) Some stars are bigger than the Sun but they look smaller.
Why do they look smaller than the Sun?
Tick the correct box.

They are brighter than the Sun.	☐	They are the same colour as the Sun.	☐
They are further away than the Sun.	☐	They are nearer than the Sun.	☐

1 mark
maximum 6 marks

4 The diagram shows the orbits of the Earth, Mars and Venus.
The position of the Earth is shown.



not to scale

A person on the Earth observes Mars and Venus.

(a) (i) On the diagram above, draw **two** more dots to show the positions of Mars and Venus when they are closest to the Earth.

Label the dot for Mars with a letter M and the dot for Venus with a letter V.

1 mark

(ii) Why is it easiest to see Mars when it is closest to the Earth?

… … … … … . . … … … … … … … … … … … … … … . … … … …

… … … … … . . … … … … … … … … … … … … … … . … … … …

1 mark

(b) What force keeps the Earth in its orbit and stops it flying off into space?

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

1 mark

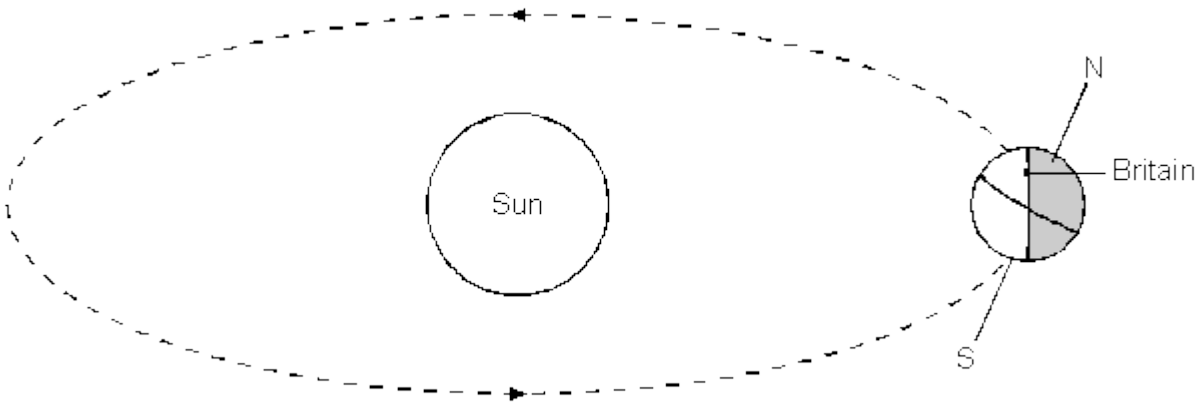
(c) From the Earth, the Moon always looks approximately the same size.
What can you conclude from this about the orbit of the Moon around the Earth?

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

1 mark

(d) The diagram shows the Earth in its orbit around the Sun.



not to scale

What season is it in Britain? Explain your answer.

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

… … … … … . . … … … … … … … … … … … … … … . … … … … … ..

2 marks
Maximum 6 marks

5 Satellites can sometimes be seen in the night sky. They look like stars slowly moving across the sky.

(a) We can see stars because they are light sources. They give out their own light. Satellites do not give out their own light. Explain why satellites can be seen in the clear night sky.

.....

.....

.....

2 marks

(b) Sometimes a satellite suddenly stops being visible. However, you can usually see it again in another part of the sky later the same night. This can happen when there are no clouds in the sky and the satellite is overhead.

Why does the satellite suddenly stop being visible?

.....

.....

1 mark

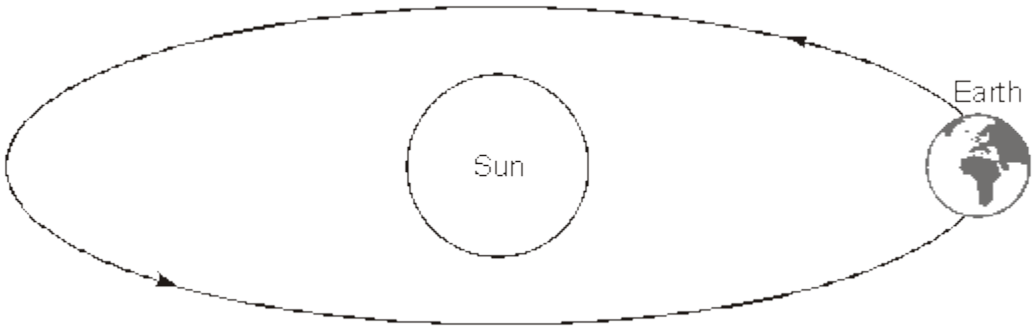
(c) Give one use of satellites in orbit around the Earth.

.....

.....

1 mark
Maximum 4 marks

6 The diagram shows the Earth in orbit around the Sun.



(a) (i) Give the name of **one** planet in the Solar System which is closer to the Sun than the Earth is.

.....

1 mark

(ii) Give the name of **one** planet in the Solar System which is further away from the Sun than the Earth is.

.....

1 mark

(b) Night-time is when Britain is in the Earth's shadow. Daytime is when Britain is in sunlight. Explain why Britain has both day and night.

.....

.....

1 mark

(c) (i) On the diagram, draw the position of the Earth nine months later than shown.

1 mark

(ii) Explain why you have drawn the Earth in this position.

.....

.....

1 mark
Maximum 5 marks

7 Each of the observations shown below has one explanation.

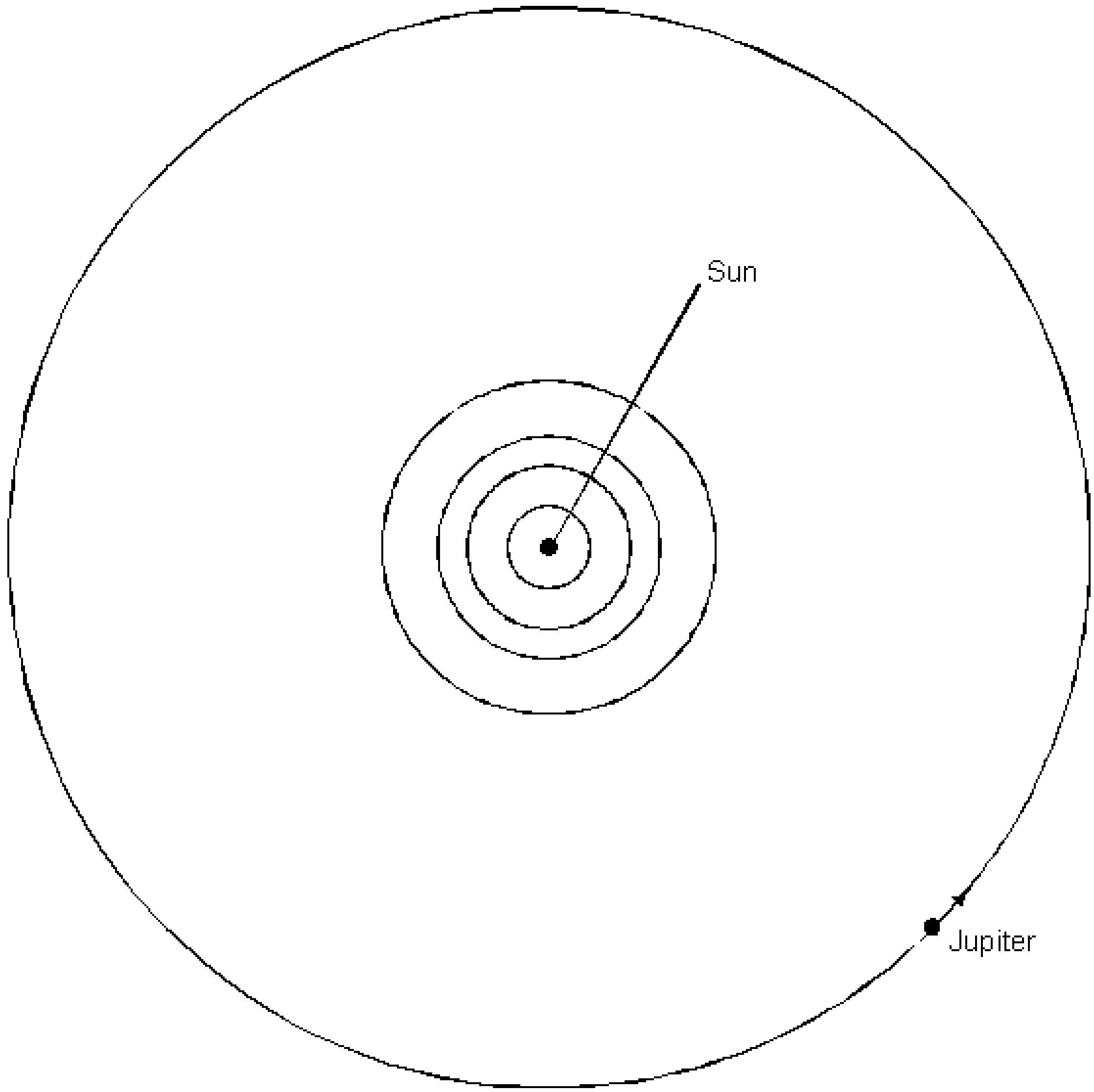
Draw a line from each observation to the correct explanation.

observation	explanation
A ship going out to sea goes out of sight.	The Earth spins on its axis.
We have day and night.	The Earth is a sphere.
We have summer and winter.	The Earth orbits the Sun and the Earth's axis is tilted.
One year on Earth is 365 days.	Gravity attracts objects towards the Earth.
	The Earth orbits the Sun.

maximum 4 marks

8

The diagram shows the Sun and the orbits of the five inner planets.
The distances (but **not** the sizes of the Sun and Jupiter) are to scale.



(a) On the diagram, draw a dot to show the Earth's position when Earth and Jupiter are moving parallel to each other and in the same direction.
Label the dot E.

1 mark

(b) As Jupiter moves in its orbit, it appears to move across the pattern of stars in the background.
When Jupiter and the Earth are moving parallel to each other, Jupiter appears to move backwards across the pattern of stars. Explain why.

… … … . … ..

… … … . … ..

1 mark

(c) The light from the Sun takes about 8.3 minutes to reach the Earth.
Using the diagram above, estimate how long it takes for light to travel from Jupiter to the Earth when they are the shortest possible distance apart. Show your working.

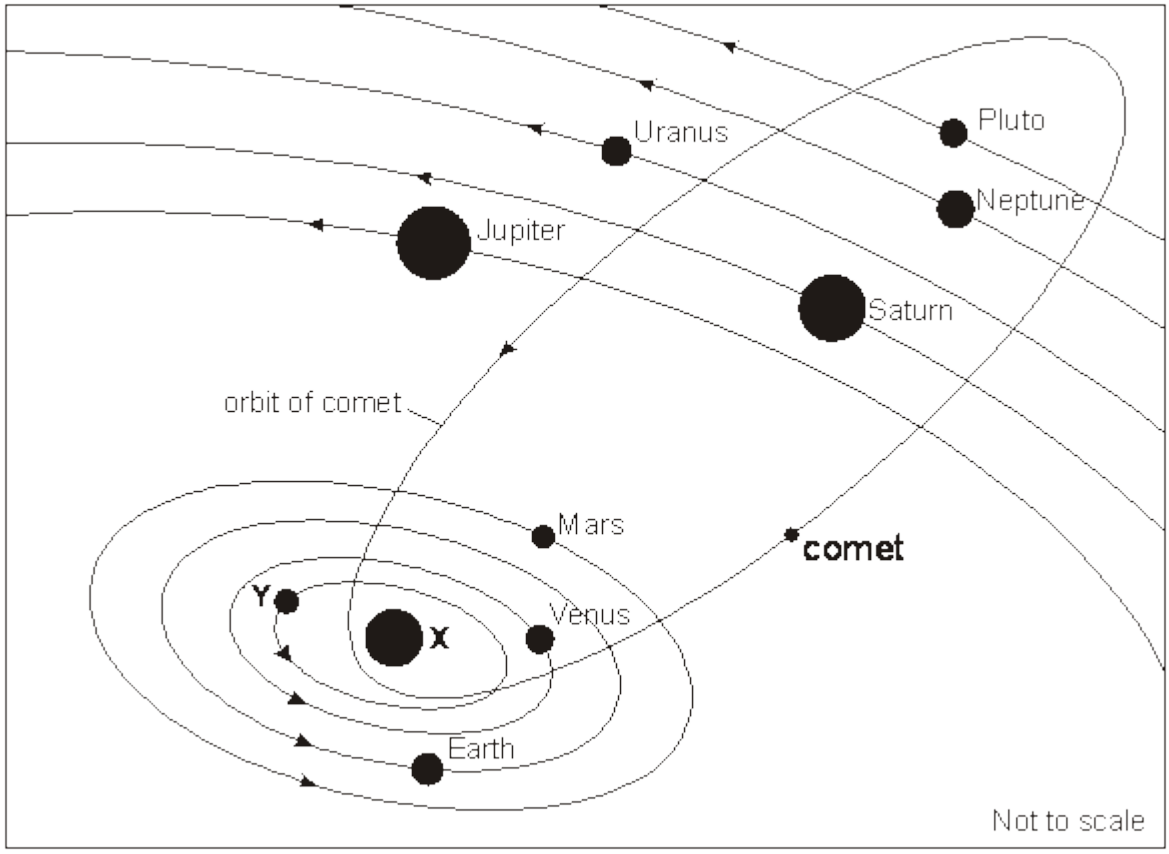
… … … . … ..

… … … . … ..

… … … . … ..

2 marks
Maximum 4 marks

9 (a) The diagram below shows part of the solar system.



Look at the diagram.
Give the names of X and Y.

X.....

Y.....

2 marks

(b) It takes Jupiter much longer than Mars to complete one orbit.
Give **two** reasons for this.

1 .....

.....

2 .....

.....

2 marks

(c) The diagram also shows the orbit of a comet.

In 1531, 1607 and 1683 scientists recorded that had seen a comet in the sky.

(i) Edmund Halley looked at these dates and suggested the scientists had all seen the same comet.

Explain how he worked out that it was the same comet each time.

.....

.....

1 mark

(ii) The comet was last seen in 1986.

Predict when it will be seen next.

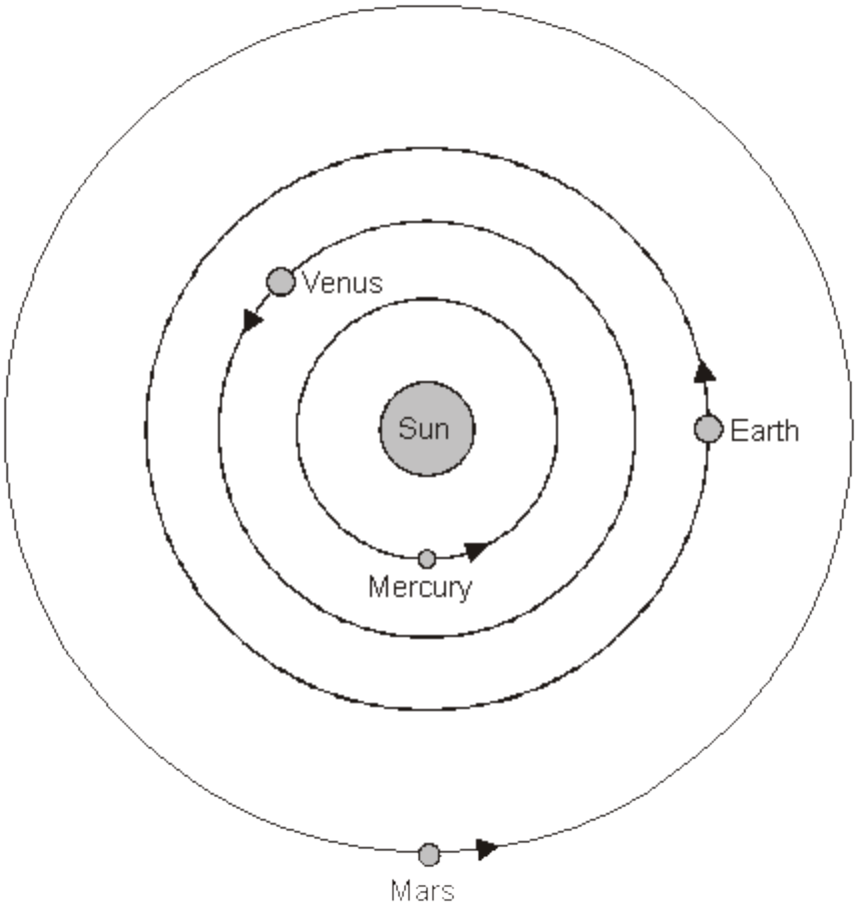
.....

1 mark
maximum 6 marks

10 The table below shows information about four planets.

planet	**time taken to orbit the Sun (Earth years)**	**distance from the Sun (million km)**
Mercury	0.25	60
Venus	0.5	108
Earth	1.0	150
Mars	2.0	228

The diagram below shows the orbits of the Earth, Mercury, Venus and Mars, and their position at one particular time.
The arrows show the direction in which the planets move.



not to scale

(a) Show the position of each planet six months later by drawing a letter X on the orbit of each planet.

2 marks

(b) Use the information in the table to calculate the largest and smallest distance between the Earth and Venus.

closest ..... million km

1 mark

furthest ..... million km

1 mark

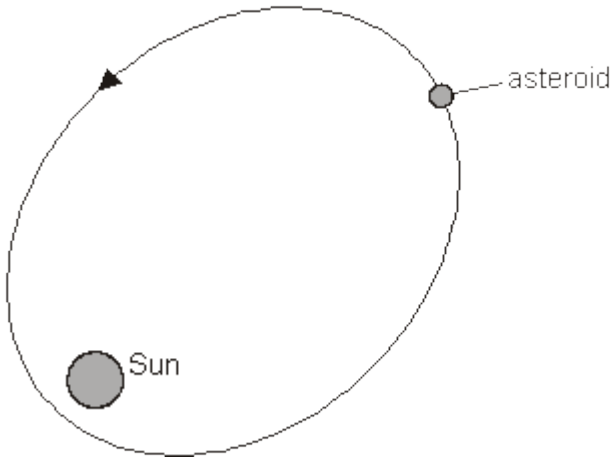
(c) The speed of light is 300 000 km/second.
Calculate how long light takes to reach the Earth from the Sun.

.....

..... s

1 mark

(d) The diagram below shows the path of an asteroid around the Sun.



not to scale

(i) **On the path of the asteroid**, draw a letter S to show the position where the asteroid is travelling the slowest.

On the path of the asteroid, draw a letter F to show the position where the asteroid is travelling the fastest.

1 mark

(ii) Explain why the speed of the asteroid changes.

.....

.....

1 mark
maximum 7 marks