

## 7L The solar system and beyond

### Assessment for learning...year 7 (level 3-6)

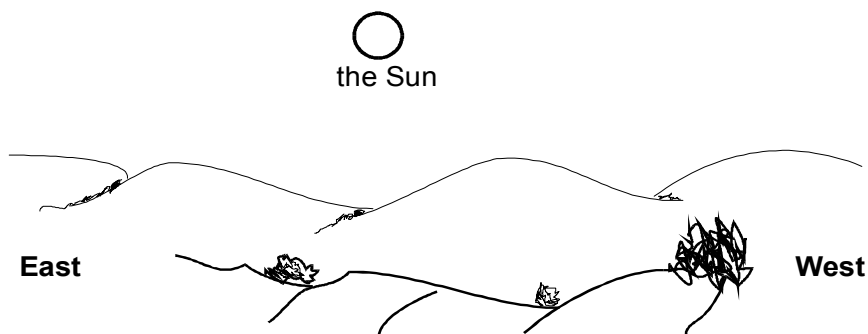
Answer all questions:

Total marks	19
Time allowed	25 mins.

#### Question1:

The Sun appears to move across the sky each day.

The drawing shows the position of the Sun at mid-day on the 21st March.



(a) (i) Draw the path which the Sun appears to take **from sunrise to sunset** on the 21st March. Label the path 'March'.

1 mark

(ii) Put an arrow on the line you have drawn to show the direction in which the Sun appears to move across the sky.

1 mark

(b) Draw another line to show the path which the Sun appears to take **from sunrise to sunset** in December. Label the path 'December'.

2 marks

Maximum 4 marks

**Question 2:**

Regulus is a bright star in the constellation Leo. In February, an astronomer visited a country close to the equator. While she was there she observed Regulus.

(a) During the night, Regulus appeared to move across the sky.

(i) Why do stars appear to move across the sky?

.....

1 mark

(ii) Choose from the words below to complete the sentence.

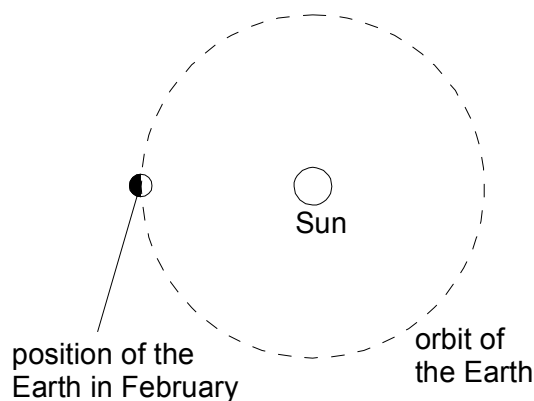
**North      east      south      west**

Regulus appeared to move across the sky from

..... to .....

1 mark

(b) The diagram below shows the position of the Earth and the Sun when the astronomer made her observations. She noticed that Regulus was directly overhead at midnight. On the diagram, draw an arrow from the Earth to show the direction in which she looked to see Regulus.



1 mark

(c) Six months later, in August, Regulus cannot be seen at any time.

Explain why.

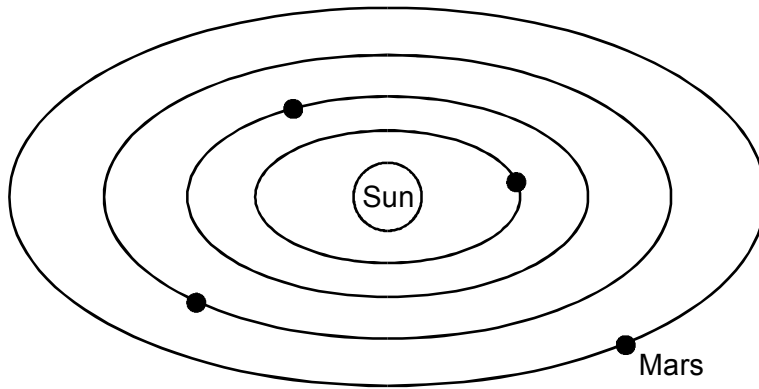
.....  
.....

1 mark

Maximum 4 marks

**Question 3:**

Mars is the fourth planet from the Sun.



*not to scale*

(a) Name **one** planet which is closer than Mars to the Sun.

.....

1 mark

(b) A day and night on Mars lasts nearly 25 Earth hours. Explain why there is daytime and night-time on Mars.

.....  
.....

1 mark

(c) Like Earth, Mars has summers and winters. Suggest why there are seasons on Mars.

.....  
.....

1 mark

Maximum 3 marks

**Question 4:**

In 1610, the Italian scientist, Galileo, observed four bright moons near Jupiter. Each night the moons moved.

(a) (i) The Sun and stars are light sources, and the planets are seen by reflected light. Explain how we can see the moons of Jupiter.

.....  
.....  
.....  
.....

2 marks

(ii) The four moons are approximately the same distance from the Earth. However, they do **not** have the same brightness. Suggest **one** reason for this.

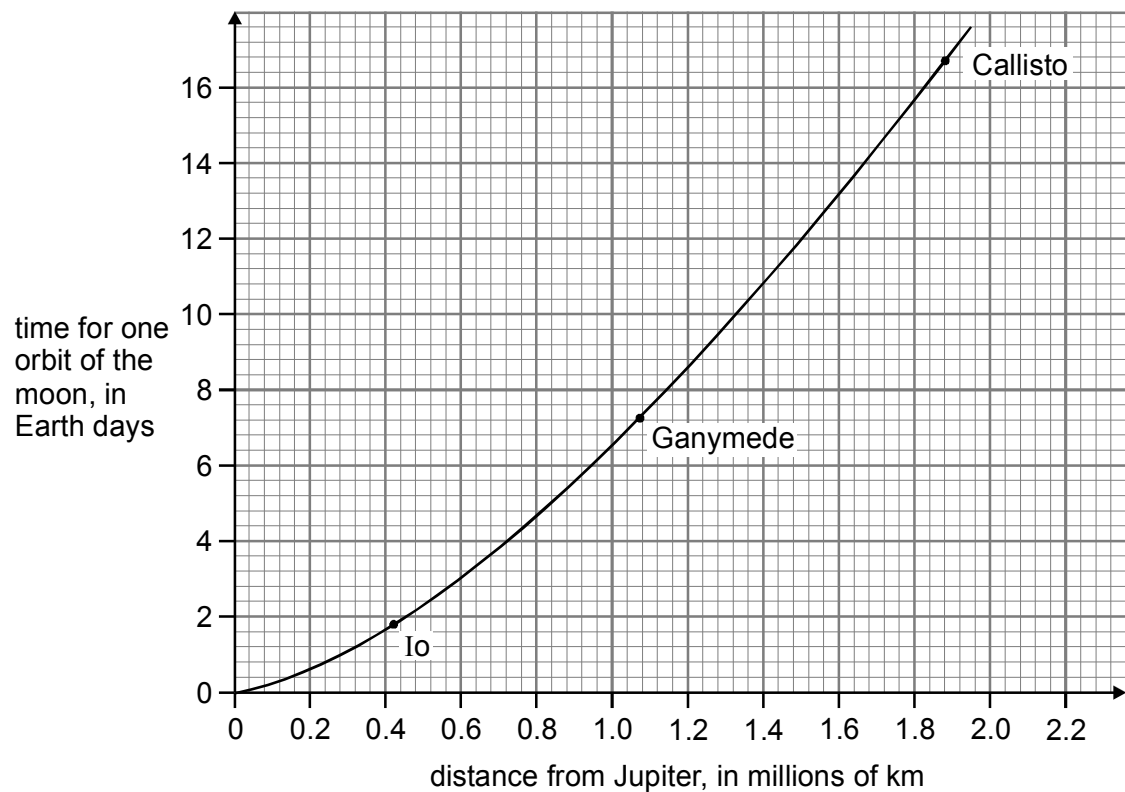
.....  
.....

1 mark

(b) The table shows the distances of the four moons from the centre of Jupiter, and the times of their orbits. Europa's distance has been left out.

<b>name of moon</b>	<b>distance from Jupiter, in millions of km</b>	<b>time for one orbit, in Earth days</b>
Io	0.42	1.8
Europa		3.6
Ganymede	1.07	7.2
Callisto	1.88	16.7

The graph was plotted using the information in the table.



Use the graph to estimate Europa's distance from Jupiter.

..... millions of km

1 mark

(c) Galileo realised that Jupiter and its moons formed a model of our Solar System. In this model:

what did Jupiter represent? .....

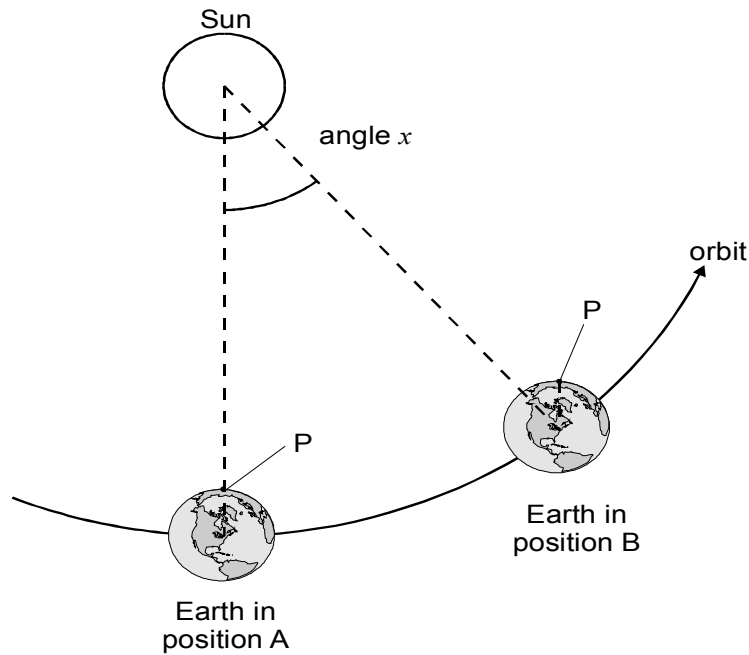
what did the moons represent? .....

1 mark

Maximum 5 marks

**Question 5:**

The diagram shows the Earth in two positions in its orbit round the Sun, one day apart. The diagram is **not** to scale.



At position A, the Sun is vertically above the point P on the Earth. At position B, the Earth has rotated a full  $360^\circ$  on its axis. It has to rotate a little further before the Sun is again vertically above point P.

(a) The diagram is **not** drawn to scale, and the angle  $x$  has been drawn too large. Through what angle  $x$ , to the nearest degree, does the Earth move in its orbit in one day?

.....

1 mark

(b) For the Sun to be in the same place in the sky (vertically above point P) the Earth has to rotate  $(360 + x)^\circ$ . This takes exactly 24 hours. How long does it take for the Earth to rotate through  $360^\circ$ ? Give the unit.

.....

1 mark

(c) One year is approximately 365.25 Earth days. Calculate how many times the Earth actually rotates during one year.

.....  
 .....  
 .....

1 mark

Maximum 3 marks