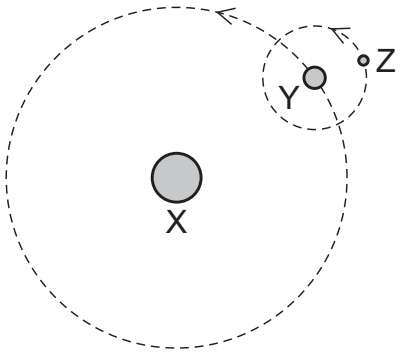
Name: IGCSE Physics: **w25 11**

1 The diagram represents three objects, X, Y and Z, in space.

Object Y orbits object X.

Object Z orbits object Y.



Which types of object are X, Y and Z?

	object X	object Y	object Z
A	planet	moon	star
B	planet	star	moon
C	star	planet	moon
D	star	moon	planet

IGCSE Physics: **w25 12**

2 What causes the phases of the Moon?

A the Earth orbiting the Sun

B the Earth turning on its axis

C the Moon orbiting the Earth

D the Moon orbiting the Sun

IGCSE Physics: **w25 13**

3 Four rocky planets orbit the Sun.

Which list shows these planets in order of increasing distance from the Sun?

A Earth → Mars → Mercury → Venus

B Venus → Earth → Mars → Mercury

C Mercury → Venus → Earth → Mars

D Mars → Mercury → Venus → Earth

4 **(a)** Each box in the left column shows a description of a unit of time.

Each box in the right column shows the name of a unit of time.

Draw a line to connect each description to the appropriate unit.

description	**name**
The time taken for the Earth to rotate once on its axis.	one day
The time taken for the Earth to orbit the Sun once.	one week
The time taken for the Moon to orbit the Earth once.	one month
	one year

[3]

(b) **(i)** The Sun consists mostly of **two** elements.

State the names of the **two** elements.

..... and ..... [2]

(ii) The Sun radiates energy mostly in three regions of the electromagnetic spectrum. One of these regions is visible light.

State the name for each of the other **two** regions.

..... and ..... [2]

[Total: 7]

5 Fig. 11.1 represents the Solar System. The Sun and five of the eight planets are labelled.

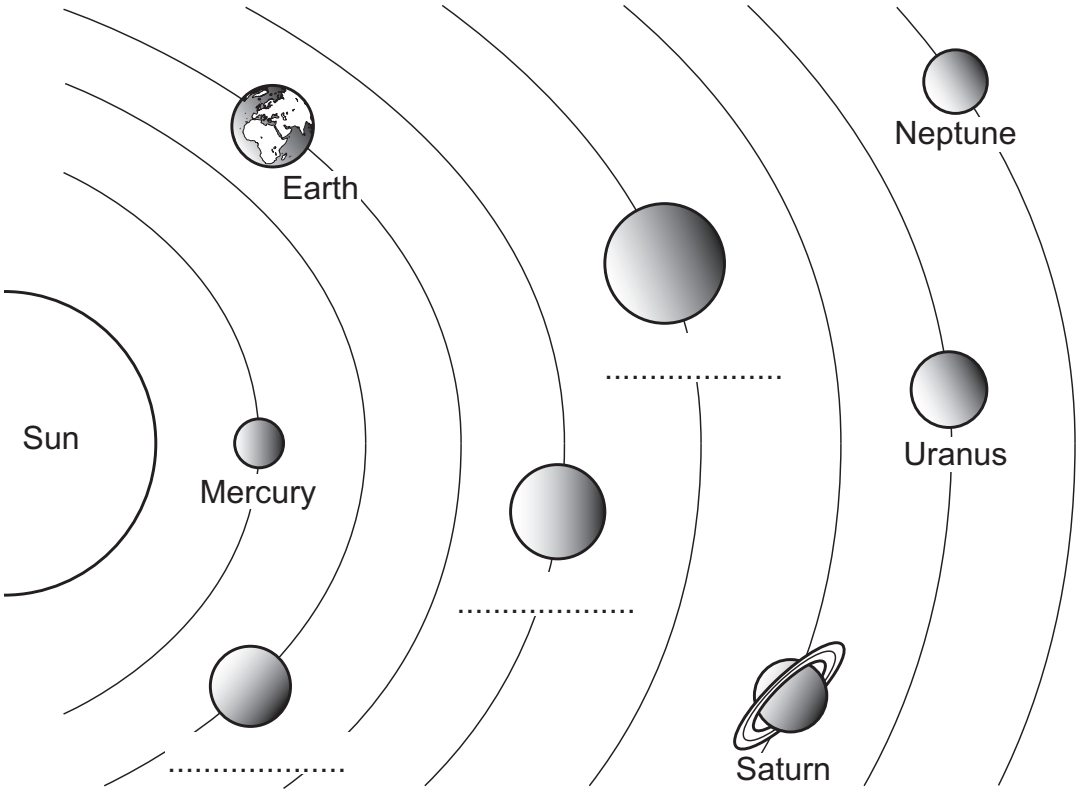


Fig. 11.1 (not to scale)

(a) Complete the **three** missing labels on Fig. 11.1 by writing the name of each planet on its dotted line. [2]

(b) **(i)** The Sun consists mainly of two elements.

Name the **two** elements.

..... and ..... [2]

(ii) The Sun radiates energy mainly in three regions of the electromagnetic spectrum. Ultraviolet is one of the three regions.

State the name of **one** of the other two regions.

..... [1]

(c) (i) Scientists use the Big Bang Theory to explain the way the Universe began.

State **one** piece of evidence that supports the Big Bang Theory.

.....

..... [1]

(ii) Scientists use the accretion model to explain the formation of the Solar System.

Complete the following sentences about the accretion model.

In space, there are clouds of dust and ..... .

The material spins around and moves closer together due to the force of ..... .

This forms an accretion ..... .

[3]

[Total: 9]

6 **(a)** Describe the structure of an atom of helium-4, $^{4}_{2}He$.

.....

.....

.....

..... [3]

(b) The Sun is a medium-sized star powered by nuclear fusion reactions which release energy.

(i) State what happens during nuclear fusion reactions which form helium.

.....

.....

..... [2]

(ii) State **two** regions of the electromagnetic spectrum by which the Sun radiates most of its energy.

..... [2]

(c) Describe what happens to a star when most of the fuel in its centre has been converted to helium.

.....

.....

..... [2]

[Total: 9]

7 **(a)** The Solar System includes the Sun and eight planets.

(i) State the name of the force that keeps the planets in orbit around the Sun.

..... [1]

(ii) State the name of the galaxy that includes the Solar System.

..... [1]

(b) State the meaning of the term light-year.

.....

..... [1]

(c) Describe the evidence for an expanding Universe.

.....

.....

.....

.....

..... [3]

[Total: 6]

8 **(a)** Cosmic microwave background radiation (CMBR) can be observed in every direction in space around us.

(i) State when CMBR was produced.

..... [1]

(ii) State and explain how the wavelength of this radiation has changed since it was formed.

.....

.....

..... [2]

(b) Table 9.1 shows data about planets in our solar system.

Table 9.1

planet	average radius of orbit around the Sun / 10^6 km	time for one orbit / Earth years	average surface temperature / °C
Venus	108	0.62	460
Earth	150	1.00	15
Mars	228	1.90	–65
Jupiter	778	12.00	–110
Saturn	1430	29.00	–140

(i) The orbit of Venus is approximately circular.

Calculate the average orbital speed v of Venus. Give your answer in km / h.

orbital speed = ... km / h [3]

(ii) State how the average surface temperature of a planet changes as its distance from the Sun increases.

..... [1]

[Total: 7]

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9 Fig. 10.1 shows the orbit of the Earth and the orbit of a comet around the Sun.

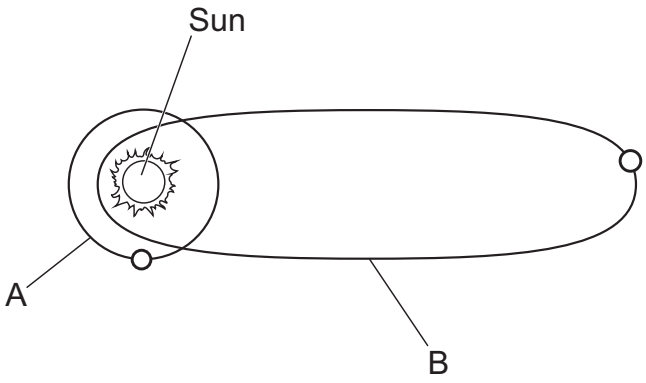


Fig. 10.1

(a) State which orbit, A or B, is the orbit of the comet.
Explain your answer.

orbit of comet is .....

explanation .....

.....

[1]

(b) Describe and explain how the motion of the comet changes as it orbits the Sun.

.....

.....

..... [2]

(c) At one position in its orbit, the comet is 6.6×10^{-6} light-years away from the Earth.

(i) State the meaning of light-year.

.....

..... [1]

(ii) Determine the distance in metres between the comet and the Earth.

distance = ... m [2]

[Total: 6]