36 Which list correctly shows the planets in decreasing order of distance from the Sun?

A Jupiter → Saturn → Neptune → Uranus

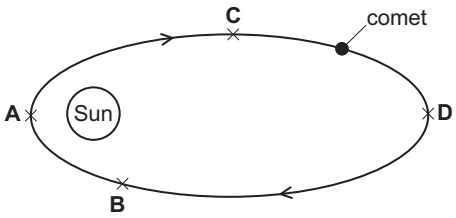
B Jupiter → Saturn → Uranus → Neptune

C Neptune → Uranus → Saturn → Jupiter

D Uranus → Neptune → Saturn → Jupiter

38 The diagram shows a comet moving in an elliptical orbit around the Sun.

At which position is the comet moving with the greatest speed?



40 The table gives data about four planets in our Solar System.

	Uranus	Earth	planet X	planet Y
mean surface temperature / °C	–195	15	–65	–140

What are planets X and Y?

	planet X	planet Y
A	Mars	Saturn
B	Mars	Neptune
C	Mercury	Saturn
D	Mercury	Neptune

10 **(a)** Fig. 10.1 represents different positions A–H of the Moon as it rotates around the Earth.

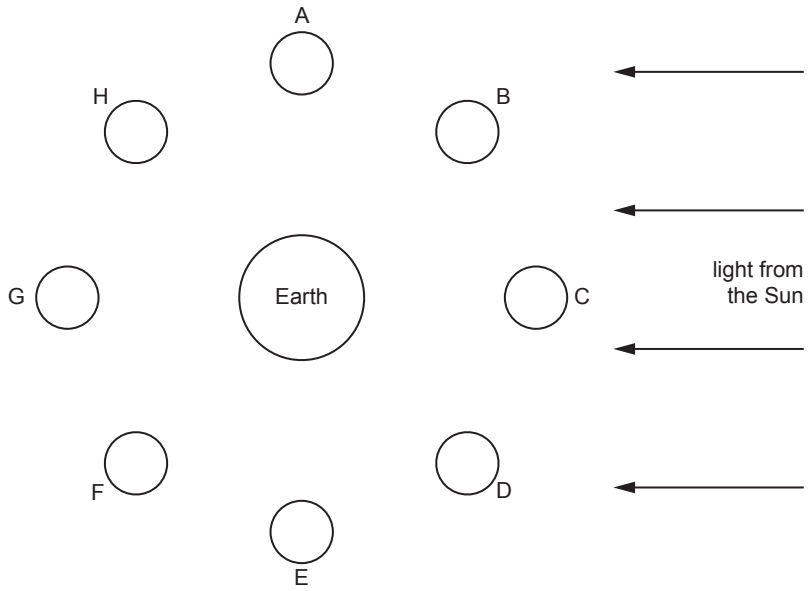


Fig. 10.1

(i) State a position of the Moon where an observer on Earth sees:

1. there is a quarter Moon  .....

2. there is a full Moon  .....

[2]

(ii) State the approximate time taken for the Moon to orbit the Earth.

time = ... [1]

(b) The average distance of the Earth from the Sun is 1.5×10^8 km.

(i) Calculate the average orbital speed of the Earth in km / h.

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

(ii) The speed of light in a vacuum is 3.0×10^8 m / s. Calculate the time taken for light from the Sun to reach the Earth.

time = ... [2]

[Total: 8]

10 **(a)** The time taken for Mars to orbit the Sun is 690 Earth days. The average orbital radius of Mars is 2.28×10^8 km. An Earth day is 24 h.

Calculate the average orbital speed of Mars in km / s.

average speed = ... [3]

(b) State the shape of the orbits of the planets.

..... [1]

(c) Light from a distant galaxy is redshifted.

(i) Explain what is meant by redshift.

.....

..... [2]

(ii) State the quantity that the redshift of a galaxy is used to calculate.

..... [1]

[Total: 7]