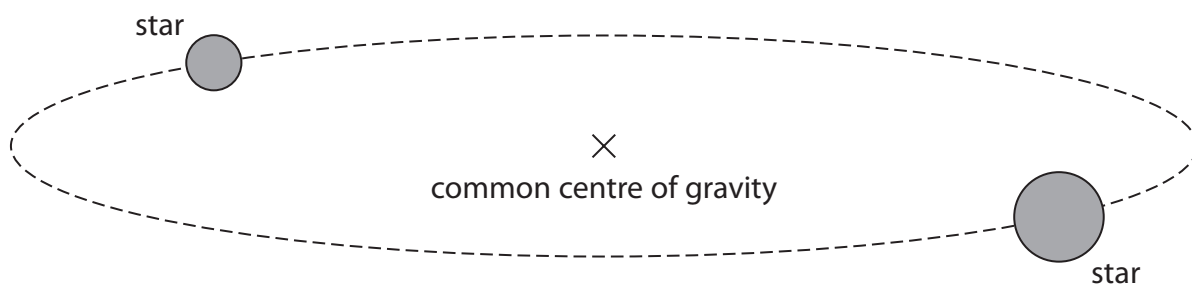
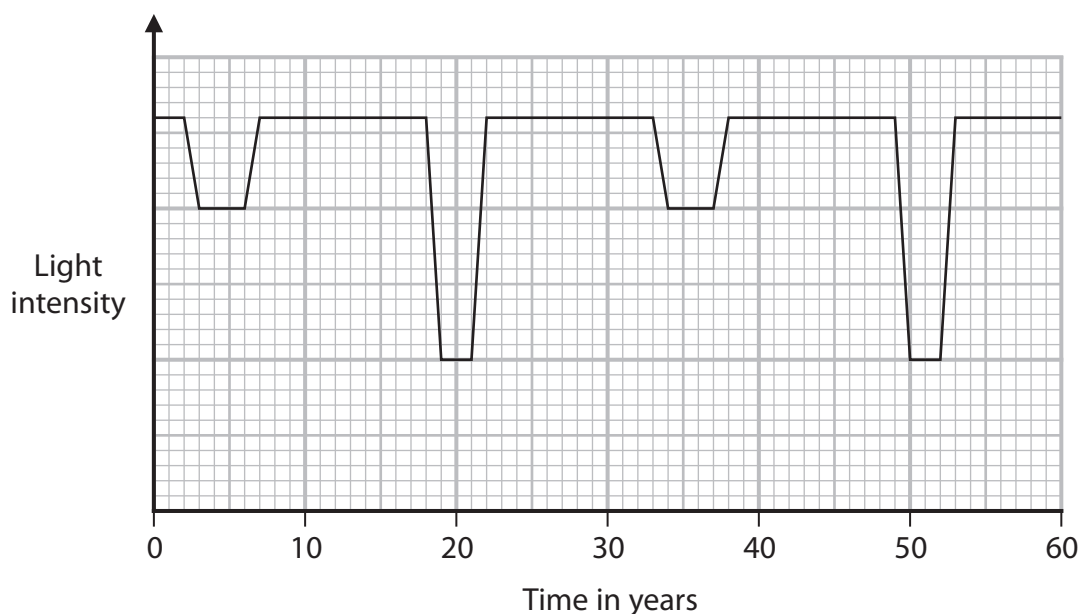


- 8 A binary star system has two nearby stars, which orbit each other in a circular path around a common centre of gravity.



- (a) In an eclipsing binary system, one star passes behind the other star in its orbit. This causes a decrease in the light intensity of the binary star system when viewed from Earth.

The graph shows how the light intensity of the binary star system changes with time.



- (i) Suggest why the decreases in light intensity are not all the same.

(1)

- (ii) Use the graph to determine the time period of the binary star system.

(1)

time period = ..... years



(iii) One of the stars in this binary system has an orbital speed of 19 km/s.

Calculate the orbital radius of this star.

(4)

orbital radius = ..... km

(b) A different binary star system is in a distant galaxy.

When observed from the Earth, light from this galaxy has a longer wavelength than the wavelength of the light when it is emitted from the galaxy.

Explain why this gives evidence for the Big Bang theory.

(3)

(Total for Question 8 = 9 marks)

**TOTAL FOR PAPER = 70 MARKS**

