

8.1 Star life cycles and orbits

Name: _____ Class: _____ Date: _____

Total: 17 marks

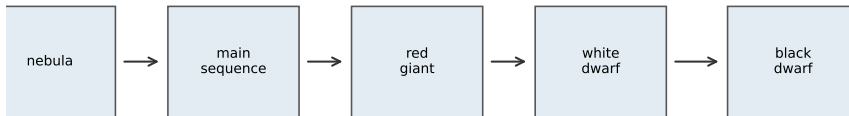
Objective

Cover the life cycle of stars and orbital motion (3.8.1–3.8.2): formation, the main sequence, mass-determined endings, element origins, the solar system, orbit types and gravity as centripetal force. Original OxfordAQA practice.

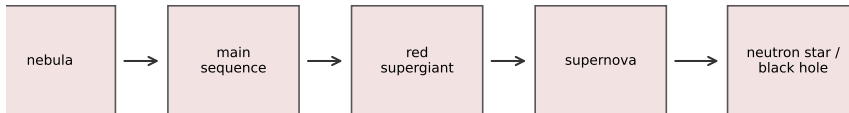
1 Key knowledge and worked examples

■ Two endings set by mass

star like the Sun

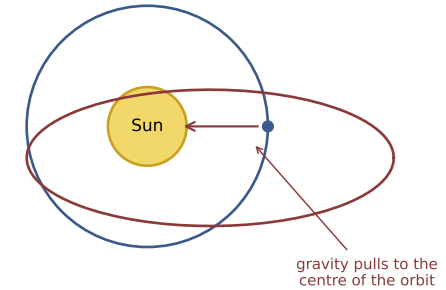


star much bigger than the Sun



Massive cores fuse heavier nuclei and end in supernovae; Sun-like cores end as white dwarfs.

■ Orbits and gravity



planet: near-circular; comet: eccentric, faster near the Sun (off-centre)

Gravity = centripetal force: it changes direction, not speed; weaker at greater separation, so higher orbits are slower orbits.

2 Practice

2.1 What force forms stars from dust and gas? [1]

2.2 What fusion happens in a main-sequence core? [1]

2.3 List the three stages a Sun-like star passes through after its main sequence. [3]

2.4 What follows a red supergiant? [1]

2.5 Name the two artificial orbit types. [2]

3 Exam-style questions

3.1 Explain how the elements are distributed through the universe. [3]

3.2 A satellite fires its engine to slow down. Explain what happens to its orbit. [3]

3.3 Compare the motion of a planet's orbit with a comet's. [3]
