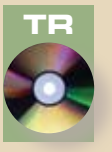
SPACE: REVIEW QUESTIONS



Key verb scaffolds
Sample answers and marking criteria

Working with the HSC verbs

1. Define Newton's law of universal gravitational attraction.
2. State one consequence of the theory of special relativity.
3. Einstein proposed his special theory of relativity in 1905, but it was not until a few decades later that the theory was backed up with experimental results. Explain the reasons for this.
4. Compare 'weight' and 'mass'.
5. Outline the factors that influence the size of gravitational acceleration on Earth.
6. The launch of satellites is nearly always carried out in an easterly direction and at sites near the equator. Account for this.
7. Evaluate the role of scientific experiments and evidence on scientific theories.
8. The special theory of relativity is based on thought experiments. Compare and contrast thought experiments and real scientific experiments.
9. Discuss the need for strictly meeting the re-entry angle if a manned spacecraft is to return to Earth safely.
10. Assess the reliability and accuracy of a first-hand investigation that allowed you to determine the value of gravitational acceleration.
11. A space mission is carried out that launches a spacecraft to land on the Moon and then return to the Earth. Analyse the forces experienced by an astronaut during this space mission.
12. The null results of Michelson–Morley's experiment meant that the experiment failed to provide evidence for the aether. Evaluate the impact of the null results of this experiment.
13. During your study, you have researched the contributions made to rocketry and space exploration by one of the following scientists:
    - Konstantin Tsiolkovsky
    - Robert H. Goddard
    - Hermann Oberth
    - Wernher von Braun
    - Robert Esnault-Pelterie

    (a) Choose one scientist from the list, and describe his contributions to rocketry and space exploration.

    (b) Assess the reliability of your researched information.