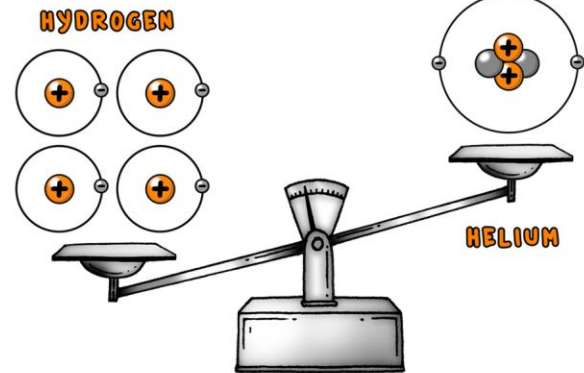
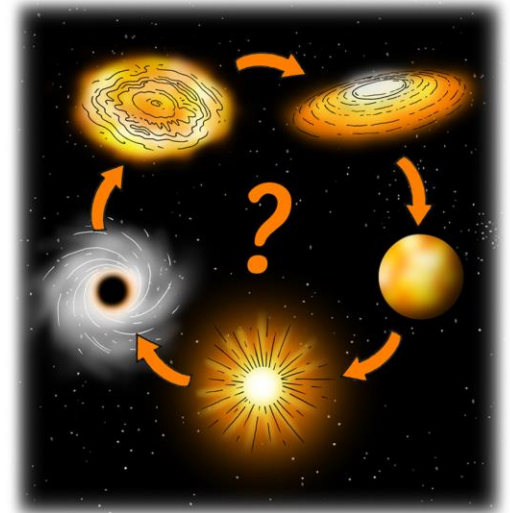


# AQA GCSE SPACE PHYSICS THINK IT!



$$E=mc^2$$

### Our Solar System:

- How far has the furthest space probe travelled in our solar system?
- Distances in the solar system are often measured in astronomical units. Investigate the size of this unit.
- Research the dates and techniques used to discover the planets.
- Why was Pluto downgraded from a planet to a minor planet?

### Life cycle of a star:

- Some descriptions of the life cycle of stars include a phase called “planetary nebula”. Where does this fit in the life cycle process?
- The end of the life cycle for a supergiant star can be a neutron star or a black hole: what is the difference?
- The different stages of stars in their life cycle can be seen on a Hertzsprung-Russell diagram. Draw a graph to show where these different stages are found on this diagram.

### Fusion in stars:

- What is the formula that links mass loss and energy which produces the energy released from stars?
- Discuss with a partner why scientists say we are all made from stardust.
- The triple alpha process produces carbon in stars. Try to find how this fusion reaction works.
- Why do scientists find it difficult to recreate fusion in the laboratory?

### Orbital motion, natural and artificial satellites:

- Try to find out the meaning of the term “escape velocity” as applied to launching satellites.
- Compare the difference in motion of a near Earth satellite and a more distant Earth satellite.
- Most orbits are elliptical. Kepler’s law of planetary motion describes the link between a planet’s distance and speed. Draw an annotated diagram to show this relationship.
- What is unique about a geostationary orbit?

# AQA GCSE Space physics

# ThinkIT!

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### Our Universe:

- How long after the Universe formed did the solar system come into existence?
- Why do you think we can not see to the end of the Universe? Hint: we only see things that give off light.
- Try to write your address ending in the Universe. There should be at least four stages after the solar system!
- Explore the meaning of the term “spacetime”

### Mysteries of the Universe:

- What shape do scientists think the Universe is?
- What evidence is there that dark matter and dark energy actually exist?
- Conflicting theories of the Universe say it will expand forever or gravity will pull it back to its origin. What are the names of these theories?
- Scientists talk about multiverses. What do you think this term means?

### Big bang theory:

- Investigate the stages of the first minute of the Universe following the big bang.
- An alternative theory to the Big Bang is the Steady State Universe. Try to find out the difference between these two theories.
- Scientists now favour the Big Bang theory after discovering the Cosmic Microwave Background (CMB). Why does this discovery support the Big Bang theory?