

OCR (B) Physics GCSE

Topic 6.5 - How can scientific models help us understand the Big Bang?

(physics only)

Flashcards

This work by [PMT Education](https://www.pmt.education) is licensed under [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)



What does heliocentric mean?



What does heliocentric mean?

Centred around the sun.

The sun is found at the centre of our solar system.



How many planets are there in our solar system?



How many planets are there in our solar system?

Eight



Name the eight planets in order of their distance from the sun



Name the eight planets in order of their distance from the sun

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.



What effect does gravitational force have
on planets? **(Higher)**



What effect does gravitational forces have on planets? (**Higher**)

It causes them to constantly accelerate towards the sun, keeping them moving in a (rough) circle.



How does distance from sun affect orbital speed? **(Higher)**



How does distance from sun affect orbital speed?

(Higher)

As distance decreases, gravitational attraction increases, causing increased force and therefore acceleration, resulting in increased orbital speed.



What happens if an orbiting body slows
down? (Higher)



What happens if an orbiting body slows down?

(Higher)

It will be pulled into a smaller orbit.



How did the solar system form?



How did the solar system form?

From clouds of gases and dust drawn together by the force of gravity.



When happens when force is used to compress a gas?



What happens when force is used to compress a gas?

Work is done on the gas, leading to an increase in temperature.



Explain the formation of a star like the
sun



Explain the formation of a star like the sun

A cloud of gas is pulled together by gravity. Work done on the gas causes an increase in temperature, until hydrogen nuclei in the gas have sufficient energy to fuse and form helium nuclei, releasing more energy.



Describe the life cycle of a star



Describe the formation of a stable star

- A cloud of gas is drawn together by gravity.
- Temperature and pressure increase until fusion occurs.
- This creates a large amount of outward pressure, which opposes the force of gravity trying to collapse the star.
- Equilibrium is reached (Main Sequence period).



How does the life cycle of a star end?



How does the life cycle of a star end?

- Eventually, the star runs out of fuel.
- There is no longer a force to oppose gravity.
- The core of the star collapses inwards.



Give the equation for work done in increasing pressure (**Higher**)



Give the equation for work done in increasing pressure (**Higher**)

Work done (J) = pressure (Pa) x volume (m^3)



What is red shift?



What is red shift?

The perceived increase in wavelength of light due to the source of light moving away from the observer.



How does red shift provide evidence that the universe is expanding?



How does red shift provide evidence that the universe is expanding?

Light from distant galaxies in all directions is red shifted, showing that they are moving away from us (so the universe must be expanding).



What does CMBR stand for?



What does CMBR stand for?

Cosmic Microwave Background
Radiation.



What caused CMBR?



What caused CMBR?

Short wavelength radiation released after the creation of the universe due to heat.

Over time, this cooled and the wavelength increased to become microwaves.



How does CMBR provide evidence for the Big Bang?



How does CMBR provide evidence for the Big Bang?

It is present in all directions, indicating that the universe expanded from a single point.

