

Y7 Physics - Earth and Space Knowledge Organiser

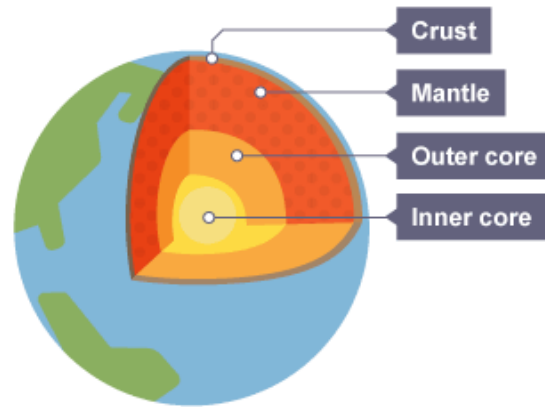
Structure of the Earth

Crust – solid, made from rock

Mantle – semi-solid, molten rock

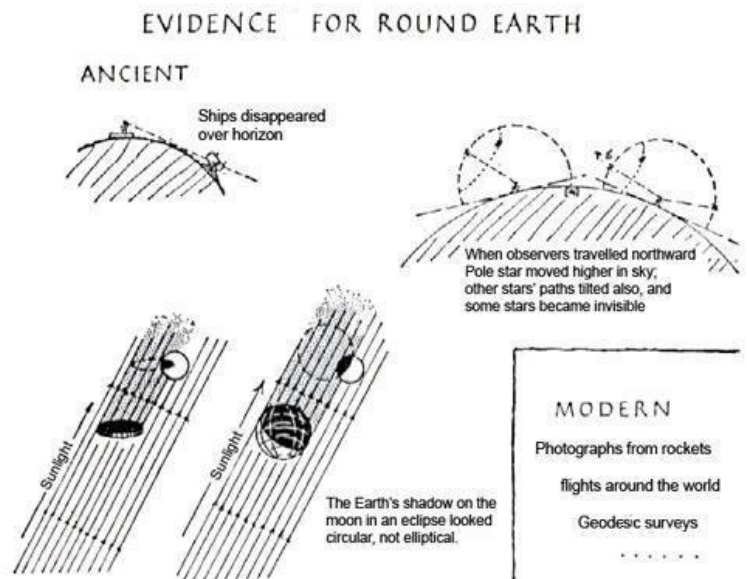
Outer core – liquid, iron and nickel

Inner core – solid, iron and nickel



Evidence for the shape of the Earth

1. Ships disappear over the horizon, from the bottom-up
2. The shadow of the Earth during a lunar eclipse is round
3. When you travel further North the Pole star (Polaris) moves higher in the sky and some stars cannot be seen, due to the curvature of the Earth
4. Photographs taken from space and the moon show the Earth to be a sphere.



Day and night

A day is **24 hours** long. This is because it takes 24 hours for the Earth to spin once on its axis. The half of the Earth facing the Sun is in daylight. The half facing away from the Sun has no sunlight and so becomes night-time.

Years

A year is how long it takes to travel once around the Sun. It takes Earth 365 days.

Seasons

The Earth's axis is tilted as it travels around the Sun, so some parts of the Earth receive more sunlight each day than others.

This changes during the year because the Earth moves around the Sun, which gives rise to the seasons.

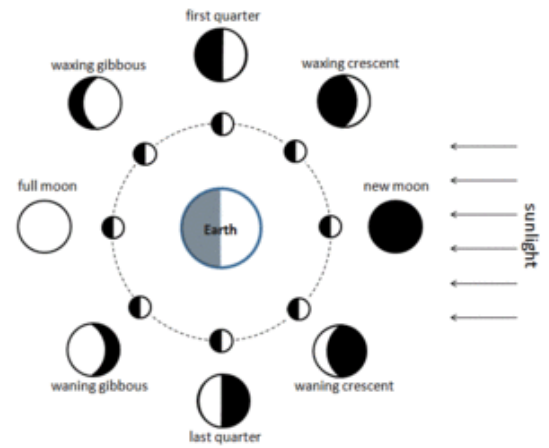


The Moon

Moon is the Earth's only natural satellite.

The Moon orbits the Earth every 27.3 days

The Moon rotates on its axis in around the same length of time it takes to orbit the Earth. So we always see the same side.

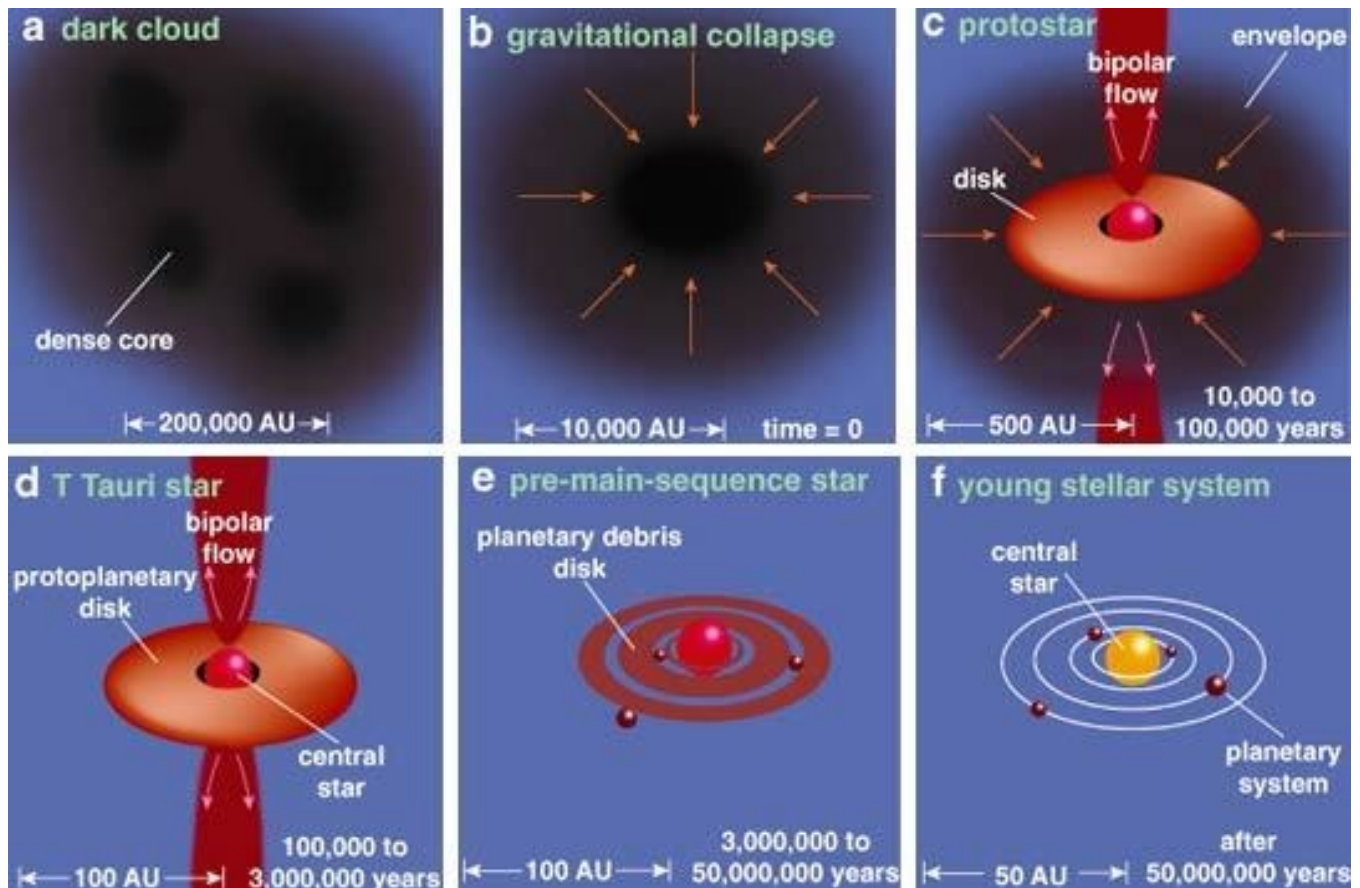


Star formation

Stars are formed from massive clouds of dust and gas in space.

Gravity pulls the dust and gas together.

As the gases come together, they get hot. A star forms when it is hot enough for nuclear reactions to start. This releases energy, and keeps the star hot.



Planet formation

Gravity pulls smaller amounts of dust and gas together, which form planets in orbit around the star.

Galaxies

Our Sun is a star. It seems much bigger than other stars in the sky because it is much closer to Earth. Stars form immense groups called galaxies. A galaxy is a collection of stars held together by the force of gravity.

The Milky way

Our Sun is in a spiral galaxy called the Milky Way. The Sun is about half-way from the centre of the galaxy, on one of the arms.

The universe contains at least one billion galaxies.



The Solar system

The Sun is a star at the centre of our solar system.

The Earth is one of eight planets that travel around the Sun.

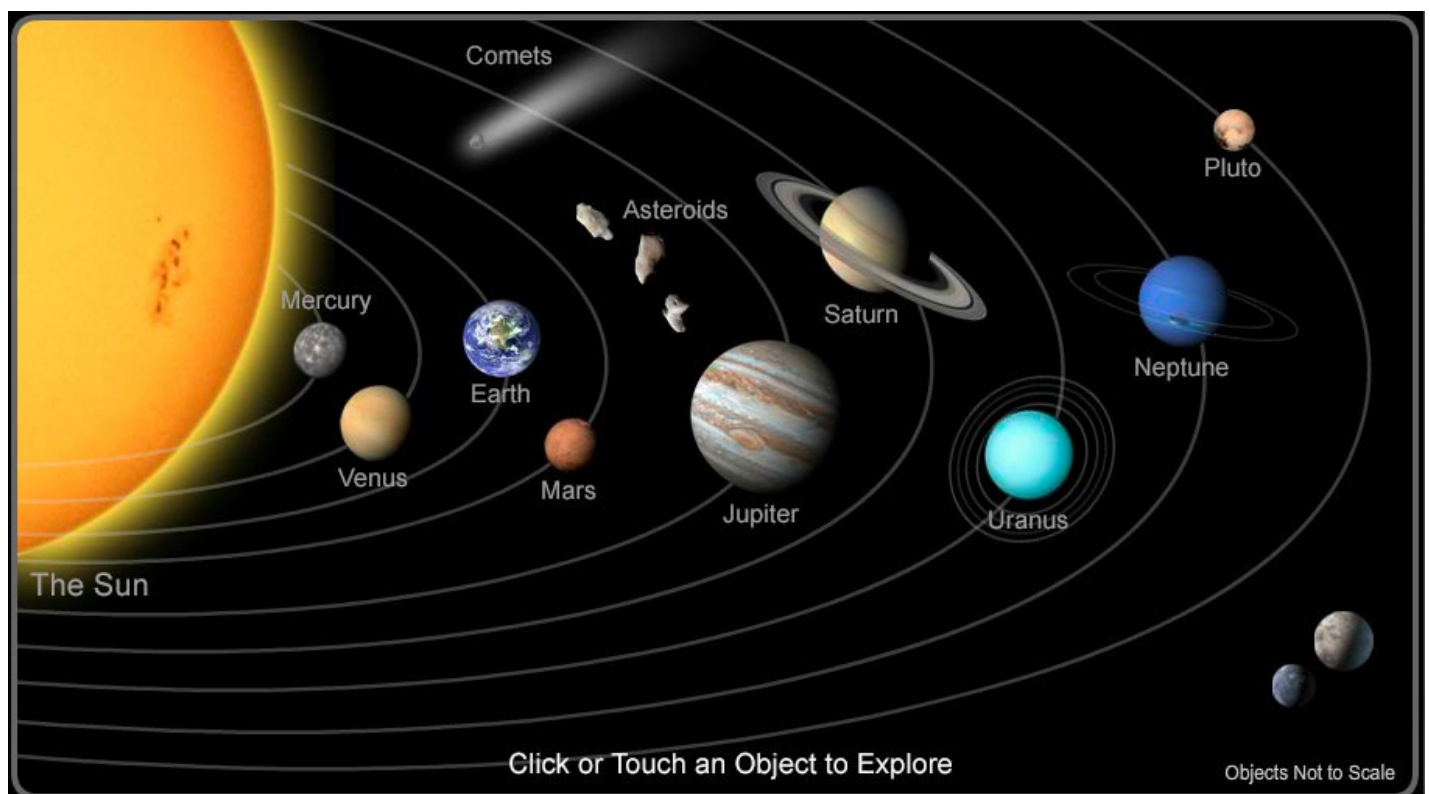
The planets are called Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

The four inner planets (Mercury, Venus, Earth and Mars) are made of rock and are relatively small.

The four outer planets (Jupiter, Saturn, Uranus and Neptune) are made from gas and are much larger. They are known as 'gas giants'.

The solar system is also home to lots of asteroids, moons, and dwarf planets such as Pluto.

Dwarf planets are small planets in the outer solar system (past Neptune), that are spherical and orbit a star, but they can't clear other material out of its own orbit because its gravitational field is too weak.

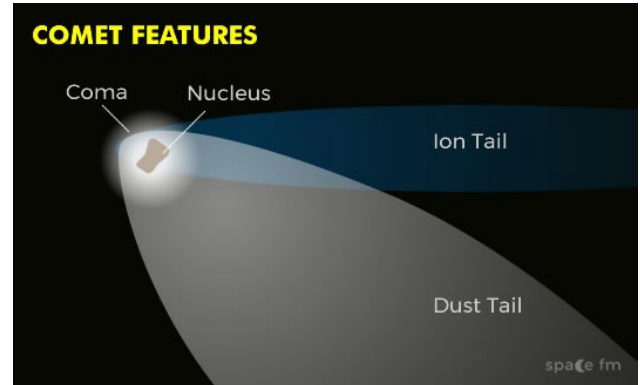
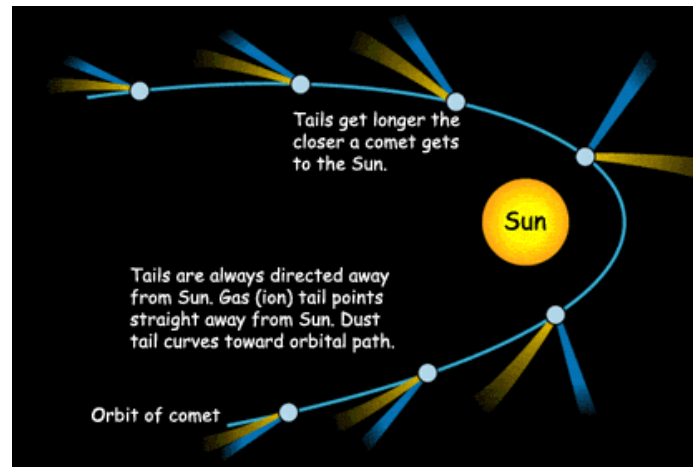


Comets

Comets orbit the Sun just like planets and asteroids do, except a comet usually has a very elongated orbit.

As the comet gets closer to the Sun, some of the ice starts to melt and boil off, along with particles of dust. These particles and gases make a cloud around the nucleus, called a coma.

The coma is lit by the Sun. The sunlight also pushes this material into the beautiful brightly lit ion tail of the comet. The ion tail and dust tail point away from the Sun.



Asteroids

Asteroids are small, rocky objects that orbit the Sun. Although asteroids orbit the Sun like planets, they are much smaller than planets.

There are lots of asteroids in our solar system. Most of them live in the main asteroid belt—a region between the orbits of Mars and Jupiter.

Some asteroids go in front of and behind Jupiter. They are called Trojans. Asteroids that come close to Earth are called Near Earth Objects, NEOs for short. NASA keeps close watch on these asteroids.

Asteroids are left over from the formation of our solar system.

