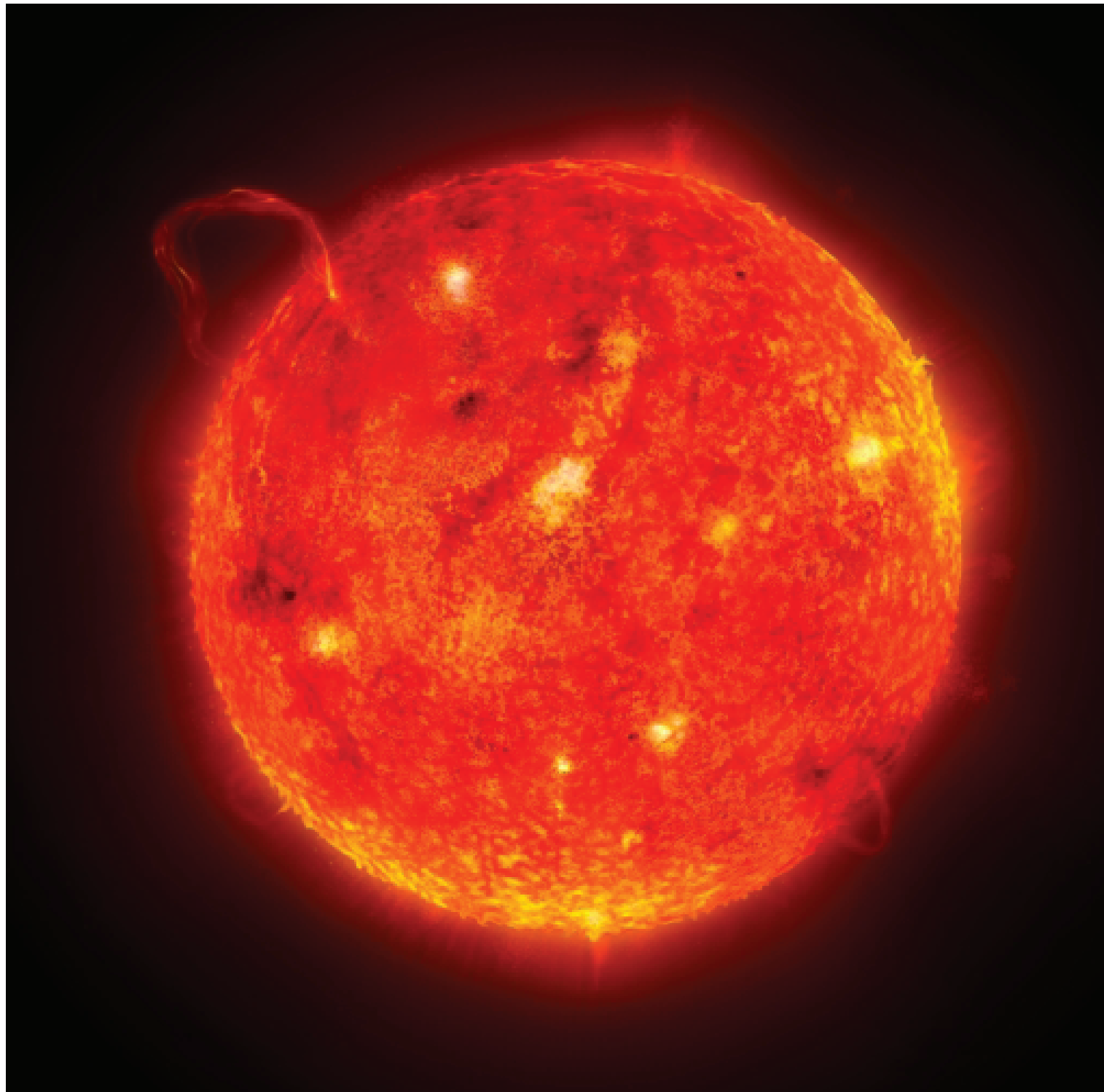


# The Sun

Study*ladder*

# What is the Sun made of?

The Sun is the largest mass in our solar system. It is a fiery ball of gas that consists of about 75% hydrogen, 25% helium. The Sun also contains trace elements such as oxygen, carbon, nitrogen, silicon, magnesium, neon, iron and sulfur (which make up less than 0.1% of its total mass.)



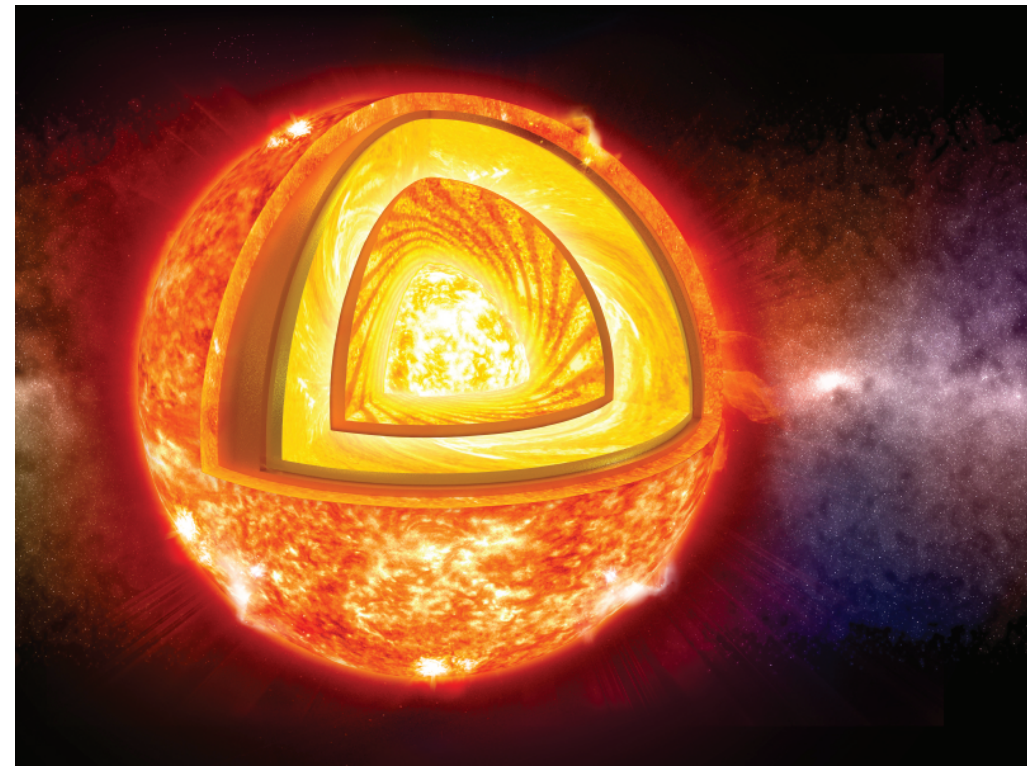


# Why is the Sun so hot?

The hydrogen in the core of the Sun is being converted to helium by nuclear fusion. This reaction releases an incredible amount of heat which transfers through to the outer layers of the Sun.

The outer layers of gas in the Sun circulate by convection. They are continuously heating and cooling. This constant movement causes the magnetic poles of the Sun. It also causes the sunspots that can be seen on the surface of the Sun.

Finally, energy is released as heat and light from the outer surface of the Sun into space. It takes about 8 minutes to reach us on Earth.



## Will the Sun ever run out of power?

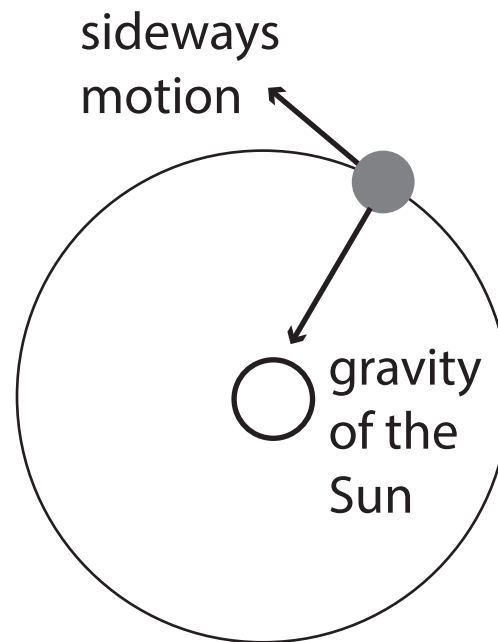
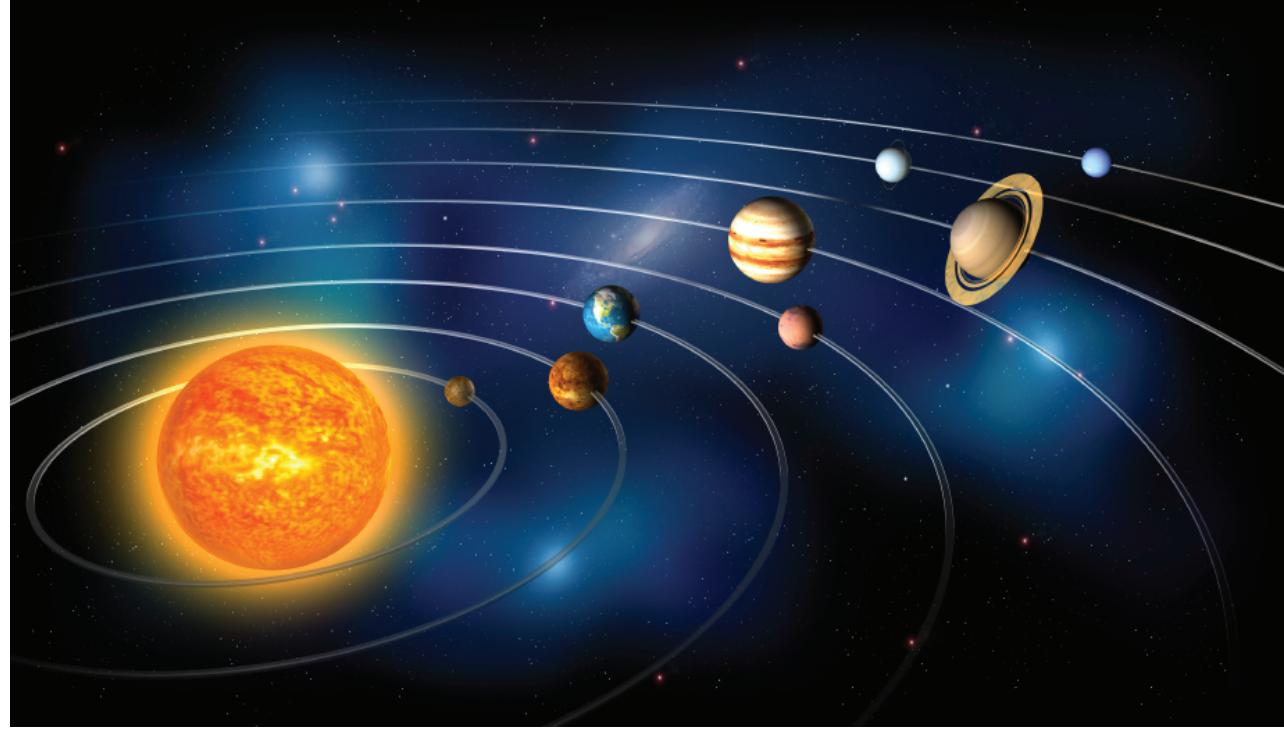
Scientists estimate that the Sun is about 4.5 billion years old. It has only used half of the hydrogen in its core. It will eventually run out of power. But don't worry, that won't happen for a few more billion years!

# Why do the planets stay in orbit around the Sun?

The Sun is the heaviest object in our solar system. Being the largest mass, it has the strongest gravitational pull of all the bodies in the solar system. Bodies that have a lighter mass tend to orbit around a larger mass.

The Sun's strong gravitational force pulls the planets towards it. At the same time, the planets have a sideways motion (centrifugal force) that moves them outward from the Sun.

The inward and outward forces equal each other, keeping the planets locked in their orbit around the Sun.



Imagine you are spinning a ball on a rope. If you let go of the rope the ball would fly off in a straight line.

The Sun's gravity is like the rope, stopping the planets from spiralling out into space.