Bitesize GCSE Science - Physics

Space

Astronomer at the Royal Observatory Greenwich, Tom Kerss on why humans weigh less on the Moon

Gravity depends on how massive, that is how much mass the object that fields it has. In the case of the Earth we have a planet which has a particular mass so it has a particular strength of gravity and we feel that strength of gravity as weight when we are on the planet.

If we were to go to another planet which had a different mass to the Earth we would feel a different force of gravity. For example Mars is lighter than the Earth, it is a lighter planet and if we were to go there the gravity on Mars is only about three eights of what we experience on the surface of the Earth.

If we were to go somewhere like Jupiter which is a very massive planet we would experience about three times the gravity that we experience here on Earth.

The mass of the planet itself and also its size determines how much gravity you feel at the surface of that planet.

We sent astronauts to the Moon and they experienced about of sixth of the gravity that we experience here on the Earth. The Moon is much lighter than the Earth but it is also a little bit smaller so the effect is not quite so drastic as we might imagine but with the Moon being a lighter body it does generate less gravitational force. So, therefore astronauts on the Moon were able to jump six times higher, throw things six times further - which is a lot of fun.