

Science - Physics - Key Stage 3
Light and Space

Lesson 16 - Review of Space

Miss Hindle



Gravity - key facts!

- Weight is a non-contact force caused by gravity
- Objects with more mass have a stronger gravitational field
- The closer you are to an object the more gravity you experience
- Mass is fixed - it does not change wherever you go.
- Mass is measured in kg or g
- Weight is the force needed to pull us back down to Earth
- Weight is measured in Newtons
- $\text{Weight (N)} = \text{mass (kg)} \times \text{gravitational field strength (N/kg)}$
- Gravitational field strength on Earth is 9.8N/kg



Gravity, Weight and Mass Questions

1. What is a non-contact force?
2. Why is weight a non-contact force?
3. Give another example of non-contact forces
4. In which direction does gravity cause weight to act?
5. Which two factors affect the size of the gravitational field?
6. What is the equation linking mass, weight and gravitational field strength?
7. If the mass of a person was 85 kg on Earth, what would their mass be on the Moon?
8. If the weight of a person was 600N on Earth, what would their weight be on the Moon?



Universe - key facts!

- Distances in space are measured in light years.
- A light year is the distance that light is able to travel in a year.
- Light travels 9,460,000,000,000,000 metres in one year
- Light travels at 300,000,000 m/s through space (a vacuum)
- There are billions of galaxies in our universe that contain billions of stars which also have planets orbiting them.
- Stars are huge clouds of hydrogen
- Stars make new elements which releases a lot of energy



The Universe

Fill in the gaps...

Use the following keywords:
planets, star, solar system,
Universe, galaxies, Milky Way.

Earth is one of 8 in our

Earth orbits the Sun, which is one out of billions
in the galaxy. The milky way is just
one of billions of in the known , each
with billions of stars.



What is a star? (4 marks)

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Years, Seasons and Days - key facts

- The order of the planets is Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
- The closer a planet is to the Sun, the shorter the distance to orbit around the Sun
- The closer a planet is to the Sun, the faster it travels
- The closer a planet is to the Sun the shorter its year and the further away the planet from the Sun the longer the year.
- It takes one year or 365.25 days for our planet to fully orbit the Sun
- It takes the Earth one day or 24 hours to rotate once on its axis - this is why we have day and night
- A planet has seasons if it has a tilt on its axis
- The Earth has a tilt of 23 degrees
- When the North Pole tilts towards the Sun it is summer for the northern hemisphere, when it tilts away it is winter



Match the observation to the explanation

1. It is cold in winter and warm in summer

2. A ship going out to sea goes out of sight

3. It is dark at night and light in the day

4. A year on Earth is 365.25 days long

a) It takes one year/365.25 days for the Earth to orbit the Sun

c) The Earth is a sphere

d) Because the Earth is tilted

e) The Earth rotates on its axis.



Correct the Science - mixed questions

Incorrect statement	Correct statement
A star is a burning ball of gas	
There is no gravity in space	
There is no gravity on the Moon	
It is warmer in the summer in the northern hemisphere because the Earth is closer to the Sun	

