

# Edexcel GCSE Physics

## Topic 7.1P-7.7P - The Universe

### Flashcards

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Why does your weight vary across planets?



## Why does your weight vary across planets?

- Your weight is dependant on  $g$ , since  $\text{weight} = \text{mass} \times g$
- The gravitational field strength ( $g$ ) of a planet varies depending on the size of the planet
- This means that your weight will also vary



# What is gravitational field strength on Earth?



What is gravitational field strength on Earth?

Approximately 10 N/kg.



# What does our solar system consist of?



## What does our solar system consist of?

- The sun (our star)
- 8 Planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune)
- The planet's natural satellites (ie. the moon)
  - Dwarf planets
  - Comets and asteroids



Name the planets in order, starting with the closest to the sun.





Name the planets in order, starting with the closest to the sun.

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



# What did Ptolemy suggest about the universe?



What did Ptolemy suggest about the universe?

That the earth was at the centre.



# What did Copernicus suggest about the universe?



What did Copernicus suggest about the universe?

That the sun is at the centre and the planets orbit it.



What did Galileo contribute to theories about the universe?



What did Galileo contribute to theories about the universe?

He used telescopes to support Copernicus' suggestions about the sun, and suggested that moons orbit planets.



Describe the orbits of moons, planets, comets and artificial satellites.





Describe the orbits of moons, planets, comets and artificial satellites.

They orbit in an elliptical shape.



Explain why for a stable orbit, the radius of orbit must change if the speed changes.



Explain why for a stable orbit, the radius of orbit must change if the speed changes.

- At higher speeds, the object requires a greater centripetal force
- For a greater centripetal force, the gravitational force must increase
- This is achieved by the radius of the orbit being reduced



Explain how the force of gravity acting on a satellite affects its speed and velocity.



Explain how the force of gravity acting on a satellite affects its speed and velocity.

- The force can alter its velocity since the direction is continually changing
- It can't cause a change of speed since there is no force component in the direction of motion

