

22 What was Ptolemy's big idea?

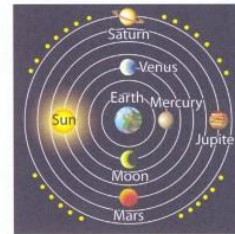
- The Earth was once thought to be at the centre of the Universe.
- Many famous scientists had ideas that Ptolemy used in this model.

Ptolemy was a famous Greek scientist who lived from 90 AD to 168 AD. He proposed a model of the solar system which was accepted as true until the Middle Ages. This model was changed when other scientists like Galileo and Copernicus made observations that didn't fit with Ptolemy's ideas.

What was Ptolemy's model of planets and stars?

Ptolemy had a **geocentric** view of the solar system. He thought that:

- The Earth is at the centre of the Universe.
- The Earth is stationary and does not move.
- Eight spheres surround the Earth.
- The spheres contain the Moon, Mercury, Venus, the Sun, Mars, Jupiter, Saturn, and the stars.
- They move in complicated patterns around the sky.



The theory was backed up by two key observations.

- As you look into the sky it appears that the stars, Sun, and planets move across the sky.
- The Earth is solid and you cannot feel it moving. Since it is still, other bodies must move around it.

Who else held this view?

Alhazen was a Muslim scientist who lived in Egypt. He wrote his book *The Model of the Motions of Each of the Seven Planets* in about 1038 AD.

He said, 'The earth as a whole is a round sphere whose centre is the centre of the world. It is stationary in its [the world's] middle, fixed in it and not moving in any direction nor moving with any of the varieties of motion, but always at rest.'

He was the first person to use mathematics to describe the motions of the planets.

Geocentric

Having the Earth as a centre of our solar system. 'Geo' means Earth.

Celestial

Relating to the sky or heavens.



On track

- 1 Mr Hills gave his class some statements about what scientists now think our solar system looks like. He asked them to compare these with the ideas of Ptolemy.

What scientists now know	Was Ptolemy correct?
A The Sun is at the centre of our solar system	
B The Earth orbits the Sun	
C The Moon orbits the Earth	
D The Sun, Earth and Moon spin on their axis	
E The planets have elliptical orbits	
F Our solar system contains eight planets	
G The solar system is not at the centre of the Universe	
H The solar system also contains meteors, asteroids and comets	

- (a) Copy out the table. Complete the second column by writing 'He was right', 'He was wrong' or 'He didn't mention it' to show if Ptolemy agreed or disagreed with the views of modern scientists.
- (b) Explain in your own words what the main difference was between Ptolemy's idea and the modern one.



Aiming higher

- 2 Leopard class researched some other early scientists. They each had an important idea about the Earth, planets and stars.

Scientist	Date	Country	Big idea
Anaximenes	560 BC	Greek	Stars are fixed inside a sphere
Pythagoras	550 BC	Greek	The Earth is a star
Aristarchus	300 BC	Greek	The Sun is the centre of the solar system
Aryabhata	499 AD	Indian	The Earth spins once a day

- (a) How did each scientist agree or disagree with what we know now?
- (b) Make a timeline to show these scientists and Ptolemy.



How well am I doing?

On track

I can describe the geocentric model of the Universe.

Aiming higher

I can tell you about some famous scientists who developed this model.