



A diagram of the geocentric model of the universe. Earth is at the center, with the Moon orbiting it. Concentric circles represent the orbits of other celestial bodies. From the innermost to the outermost, the orbits are labeled: Venus, Mercury, Earth, Sun, Mars, Jupiter, and Saturn.

Geocentric

Versus



A diagram of the heliocentric model of the universe. The Sun is at the center, with planets orbiting it. From the innermost to the outermost, the orbits are labeled: Mercury, Venus, Earth (with the Moon orbiting it), Mars, Jupiter, and Saturn.

Heliocentric



Learning Objectives

- We are learning about how the planets move in our solar system.
- We are learning to identify scientific evidence which does or does not provide evidence for an idea or argument.

Success Criteria

I will be successful if:

- I can explain how the planets orbit the Sun.
- I can distinguish between the heliocentric and geocentric ideas of planetary movement.
- I can explain theories of planetary movement in the solar system using evidence.

Orbit or Rotate

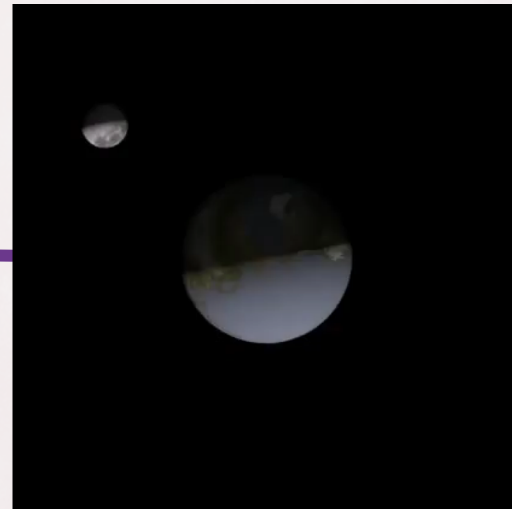
What is the difference between **orbiting** and **rotating**?

Rotate is when a planet spins on its own axis whereas **orbit** means where a planet moves in a determined path around a star (e.g. the Sun.)

rotate

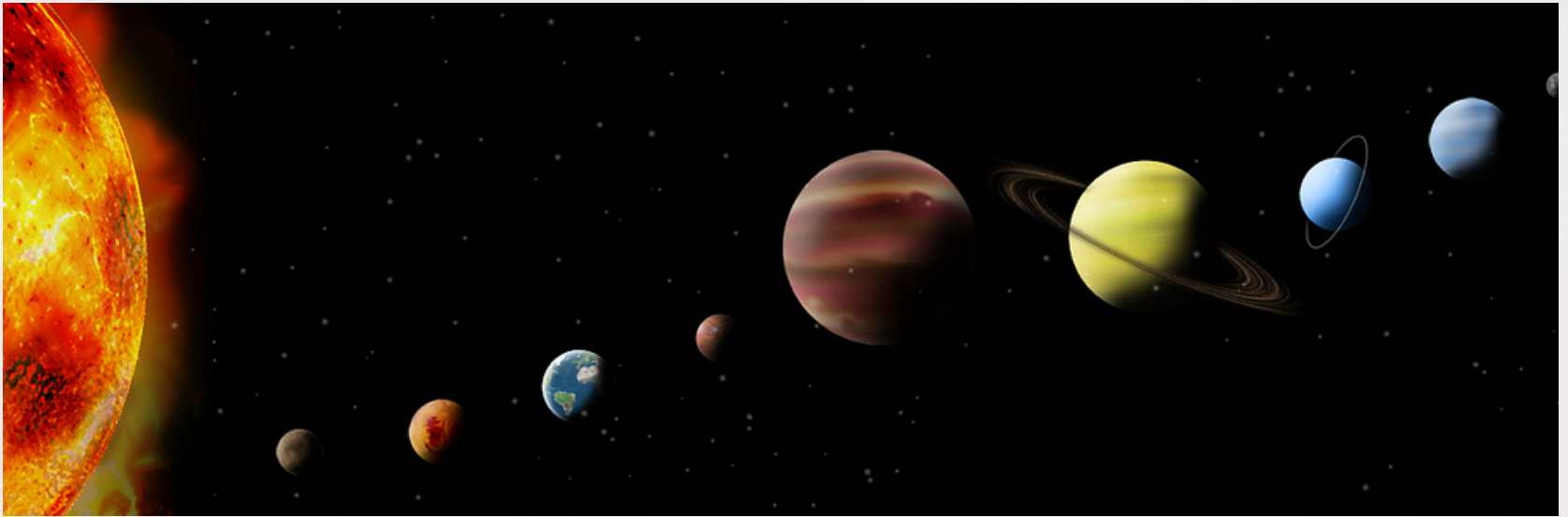


orbit



How Do Planets Move?

Discuss the following questions with a family member or simply reflect yourself:



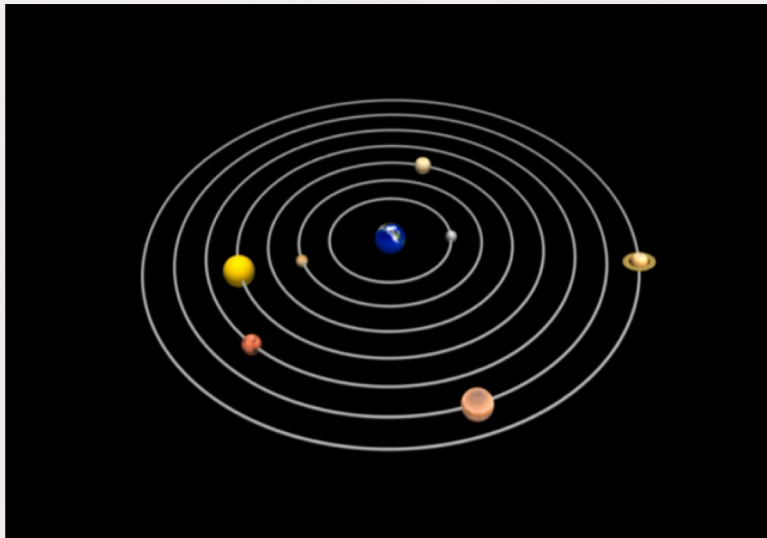
How do the planets in the solar system move?

Where is your evidence?

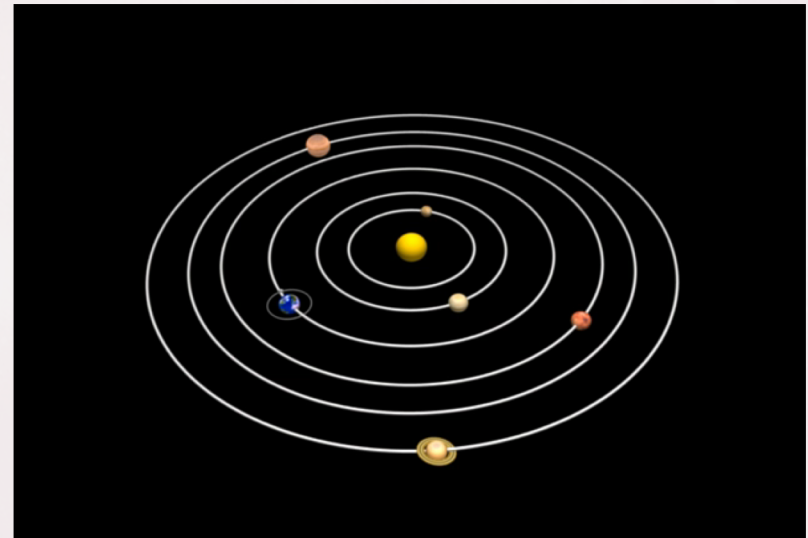
How do you know?

Geocentric Versus Heliocentric

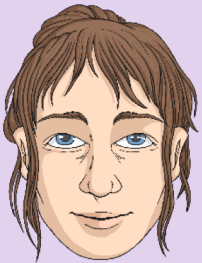
From ancient times many people believed that the solar system was Geocentric. This means they believed that the Earth was the centre of the solar system and all the other planets and Sun orbited it.



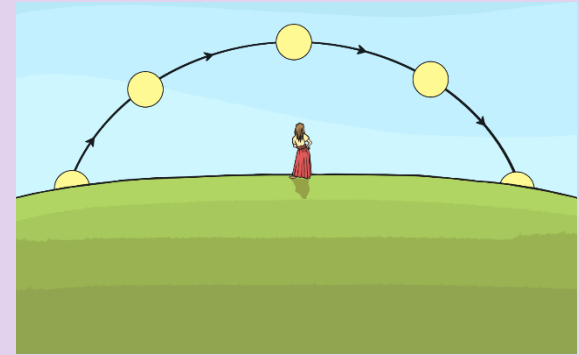
Slowly over time ideas changed to what we now believe, which is the Heliocentric Model. This means that the Sun is the centre of the solar system and it is orbited by the other planets.



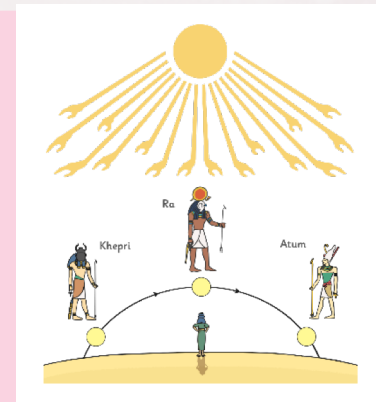
Solar System Story Map – Ancients 1



Early Humans – circa 12000 BC



Ancient Egyptians – circa 5000 BC



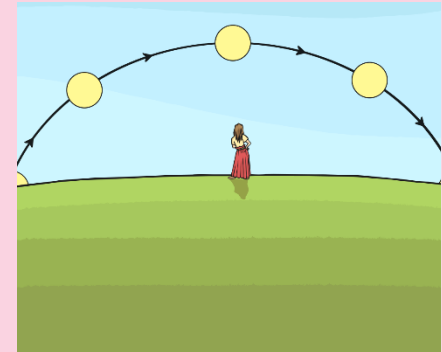
Solar System Story Map – Ancients 2



Ancient Indians – 1400 BC



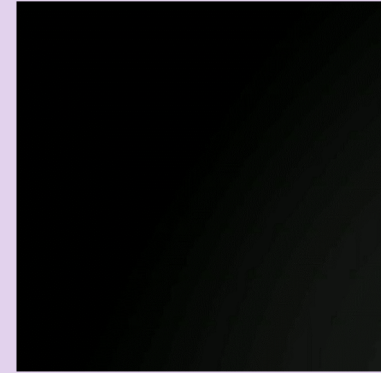
Ancient Babylonian/Sumerians – 700 BC



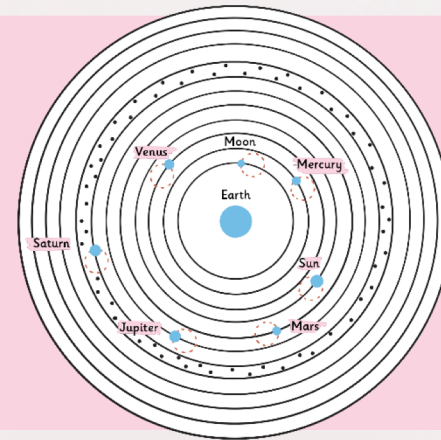
Solar System Story Map – Ancient Greeks



Aristotle - 384 - 322 BC



Ptolemy - AD 85 - 165



Solar System Story Map – Islamic Scholars



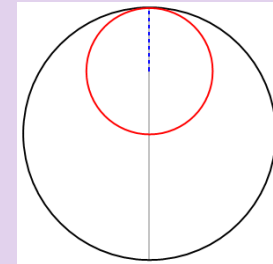
Alhazen - AD 1025 – 1028



Al Katabi – circa AD 1230 - 1240



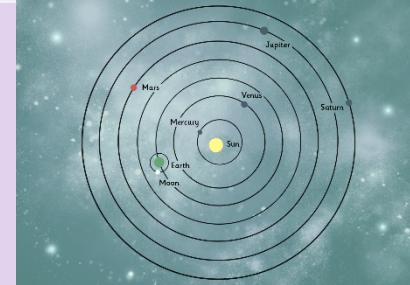
Tusi – AD 1247



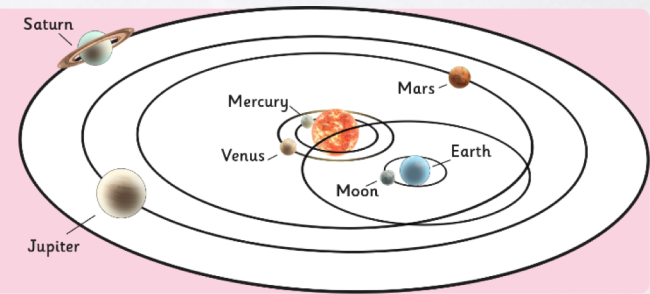
Solar System Story Map – Changing Europe



Copernicus – circa AD 1530



Tycho Brahe – circa AD 1587



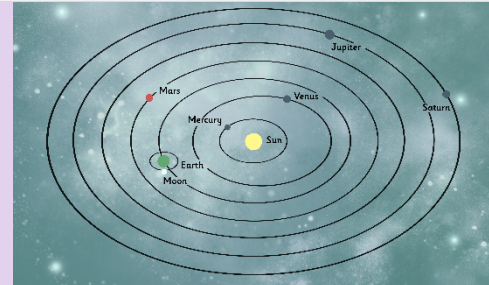
Galileo – AD 1615



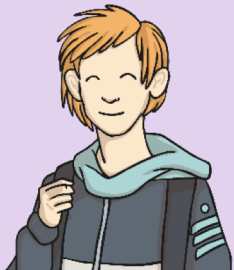
Solar System Story Map – Heliocentric Model



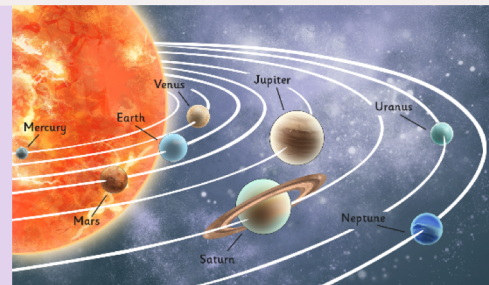
Kepler – AD 1617-1621



Newton – AD 1687



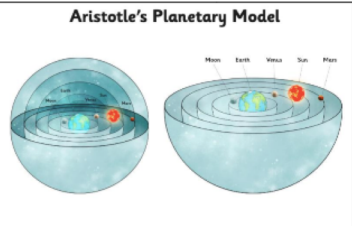
Present Day



Heliocentric vs Geocentric

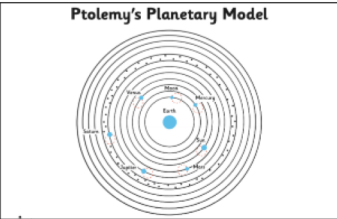
- Read through the planetary models descriptions sheet to discover more about the different heliocentric and geocentric theories of key philosophers and scientists throughout history.

Aristotle's Planetary Model



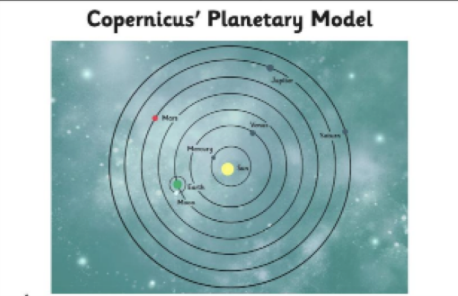
Aristotle: I'm Aristotle. I believe that the Earth is the centre of the Universe and that all planets move around it. I think quite rightly that the Earth is a sphere and it has transparent spheres surrounding it. The planets are attached to those spheres and move along them.

Ptolemy's Planetary Model



Ptolemy: I'm Ptolemy. Well I agree with Aristotle about some ideas. I also think that the Earth is in the centre of the Universe. It has to be because half the stars are above us and half are below us. So if we weren't in the centre of the Universe then we would not see all of the stars. Now in my model (called the Ptolemaic Model after me!) it shows that the other planets and the Sun move around the Earth in circles but also move in a circle on the circle as well. I know that's a bit complicated but you see it explains why the planets seem closer sometimes and further away at other times. Simple - great I managed to clear all that up!

Copernicus' Planetary Model



Copernicus: I'm Copernicus. I just didn't think Ptolemy's ideas about how the planets moved made sense!! It seemed that sometimes the planets looked like they were going backwards. I realised that it only made sense if the Earth was orbiting the Sun and so were the other planets. If the Earth was moving faster than the planet on its orbit then it makes sense that it might look like it's going backwards to us here on Earth.

Basically I used the "Tusi Couple" idea to help me form a new idea about how the planets move. I think:

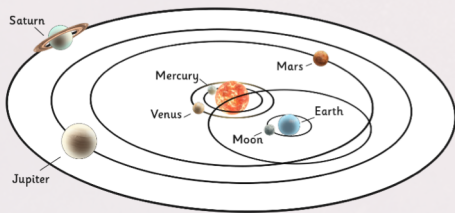
The Sun is not the centre of the universe but that it orbits around a point that is.

The moon orbits the Earth but the Earth orbits the Sun like all the other planets.

The Sun looks like its moving to us but actually it is the Earth that is rotating that makes this appear true.

Heliocentric vs Geocentric

- Complete the activity sheet to show the geocentric and heliocentric models of the universe.
- Use the planetary models sheet to draw and label two of the scientists who believed in either model of the universe
- Add a short description to explain what their belief was.



This is the _____ view of the universe.
Label and colour the sun, Earth, moon and planets on the diagram...

Who thought this?
Draw them here and add some labels explaining who they were...

This is the _____ view of the universe.
Label and colour the sun, Earth, moon and planets on the diagram...

Which 2 people thought this?
Draw them here and add some labels explaining who they were...

Two blank diagrams for drawing geocentric and heliocentric models. Each diagram consists of a central circle (representing the Sun or Earth) and several concentric circles (representing orbits). The top diagram is for a geocentric model, and the bottom diagram is for a heliocentric model. The text prompts the user to label and color the sun, Earth, moon, and planets, and to draw and label scientists who believed in each model.