

# Student / Parent user guide to Kerboodle



**Step 1:** Type in [www.kerboodle.com/users/login](http://www.kerboodle.com/users/login)

## Step 2: Type in your username, password and the institution code

Username/Email  
csmith

Password  
\*\*\*\*\*

Institution Code  
qrj3

**Log in**

[What is Kerboodle?](#)

[Trouble logging in?](#)

Username AND Password is the first letter of your first name, then your full last name.

Eg If your name is **Carol Smith**

Username = **csmith**

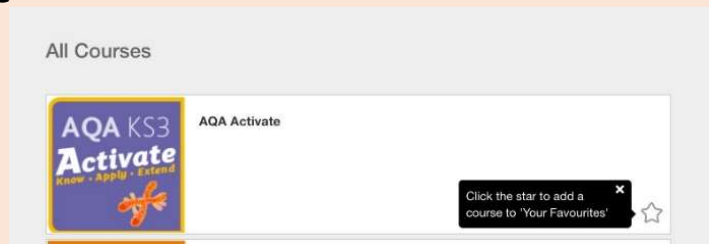
Password = **csmith**

Institution code = **qrj3**

**Once you have logged in you will be asked straight away to change your password**

## Step 3: On the home page log into the course you are.

Year 7 and Year 8 – AQA Activate



Years 9 to 11 – AQA GCSE Sciences (9-1)



# 7.2.4 The Moon and changing ideas

## Learning objectives

- After this section you will be able to
- name some phases of the Moon
- describe the appearance of the Moon and planets from diagrams
- explain why you see phases of the Moon.



There is a side of the Moon that you never see from Earth.

## Key Words

phases of the Moon, geocentric model, heliocentric model

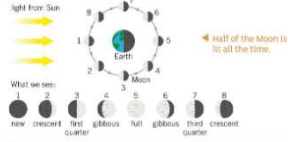
## Farewell, Moon

The Moon is 38 000 000 000 cm away and is moving away from the Earth at a rate of about 3.8 cm per year. Work out how much closer to the Earth it was when you were born.

Many years ago, people used to have different ideas about space. The Ancient Chinese thought a solar eclipse was a demon eating the Sun. In other civilisations, people linked the changing appearance of the Moon with strange changes in behaviour.

## Why does the Moon look different?

The Moon takes 27 days and 7 hours to orbit the Earth once.



List the phases of the Moon, starting with a full moon.

Half the Moon is lit up by the Sun all the time. As the Moon moves around the Earth it looks different from the Earth. The changing shapes are called **phases of the Moon**. When the Moon is in position 1 you see a new moon. You see the side of the Moon that is in shadow. The Moon moves around the Earth to position 2 and you see a crescent moon. In position 3, the Sun lights up the whole of the side that you can see from the Earth and you see a full moon. The Moon spins once each month so we only see one side of it, its orbit is slightly tilted.

State how much of the Moon's surface is lit up by the Sun during a new moon.

## Fantastic Fact!

A blue moon happens when there are two full moons in one calendar month. It happens quite often, about once every 3 years.

## Making models

Thousands of years ago people told each other stories about a flat Earth supported by pillars, or surrounded by oceans. These ideas were not scientific because they were not supported by evidence. Scientists made observations of planets and stars and tried to explain the patterns by making models.

## Early models of the Universe

Some people believed that the Earth did not move. This was the **geocentric model**. In this model the Sun, Moon, planets, and stars moved around the Earth. This model was very accurate. It explained lots of the observations that people saw every day.

- The ground did not seem to move.
- The Sun and Moon did appear to move.
- The stars also appeared to move.

Name the model of the Universe with the Earth at the centre.

There was a problem. Sometimes, the planets appeared to go backwards. It was difficult to explain these observations simply using the geocentric model. A scientist called Ptolemy changed the model so that the planets went in complicated orbits.

## A better model

Not everyone believed in the geocentric model. In 1609, an Italian scientist called Galileo used a new invention called a telescope to make astronomical observations. He saw moons in orbit around Jupiter, not the Earth. He also saw that the planet Venus had phases, just like the Moon. You could explain these observations, and the motion of the planets, very simply if both the Earth and Venus were orbiting the Sun.

The model with the planets orbiting the Sun is the **heliocentric model**. This is the model we use today.

Name the model of the solar system with the Sun at the centre.

## Fantastic Fact!

You can see one of Galileo's fingers in a museum in Florence, Italy. They were cut off his body 95 years after his death and then lost for nearly 300 years.



A model of the Universe with the Earth at the centre.

## Summary Questions

- Copy and complete the sentences below.  
You see a \_\_\_\_\_ moon when the Sun lights up the whole of the side that you can see. When the side of the Moon that you can see is in shadow you see a \_\_\_\_\_ moon. The \_\_\_\_\_ model did not explain backward motion in a simple way. It took observations by Galileo to provide evidence for the \_\_\_\_\_ model that we use today. (4 marks)
- Explain why Galileo's observations could not be explained simply using the geocentric model. (2 marks)
- Explain why you see phases of Venus from Earth, but you do not see phases of other planets. (2 marks)  
Suggest two reasons why some people found it difficult to believe that the Sun was at the centre of the Solar System. (2 marks)

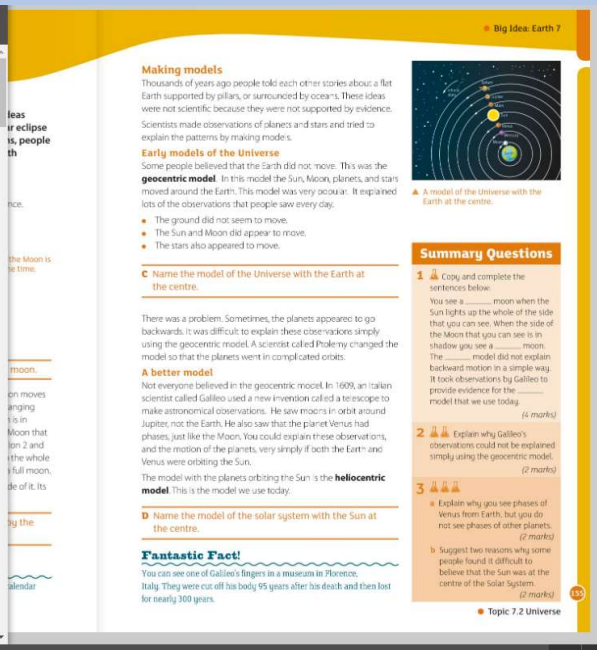
Topic 7.2 Universe



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