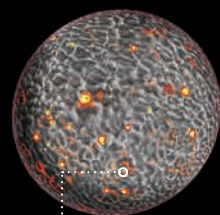




EVOLUTION OF THE MOON TIMELINE

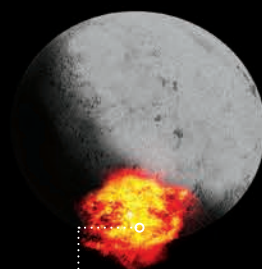
ABOUT 4.5 BILLION YEARS AGO

A giant collection of **tiny rocks** floating in space is captured by Earth's newly expanded **gravitational field** (the **force that causes objects to fall towards its centre**). These rocks form into a **ring structure** that looks a lot like **Saturn's rings**. It's thought that a **Mars-sized object** then **smashes** into **Earth**, sending more **debris** hurtling into space. This collects into a **spinning hot, liquid blob** – **our early Moon**.



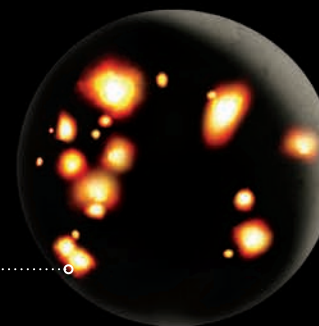
SOME 4.4 BILLION YEARS AGO

When this spinning blob slows down, it starts to **cool**, and its surface transforms into a **solid crust**. The Moon begins to take a slight **lemon-like shape**, with **bulges** pointing towards and away from Earth. (From Earth, the Moon deceptively looks like a perfectly round ball, like the one above, because of the angle we view it from.)



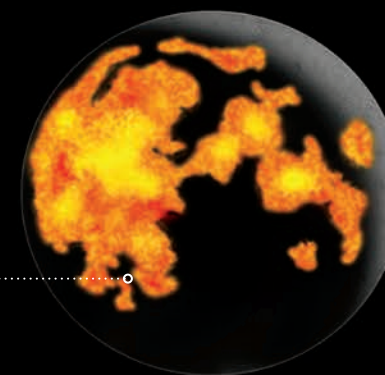
ROUGHLY 3.9 BILLION YEARS AGO

A massive **asteroid** about **200km in diameter** slams into the far side of the Moon, creating the **Aitken Basin** on the Moon's **South Pole**. Some **2,570km in diameter** and approximately **13km deep**, it's one of the largest known impact craters in the **entire solar system**.



ABOUT 3.8 BILLION YEARS AGO

Something – perhaps the **movements of the outer planets** – causes **rocky debris** to fly towards the Sun. These asteroids also **pound the surface of the Moon**.



ONE BILLION YEARS AGO

The **large asteroids** that are constantly hitting the Moon **temporarily end**. But the violent activity *isn't* over. The Moon's **near side** – the side facing Earth – breaks out into **volcanic activity**, sending out **vast oceans of molten lava**.



LESS THAN A BILLION YEARS AGO

New asteroids smash into the Moon's surface, forming many of the **small and medium-sized craters we see today**. These younger craters have **star-like patterns radiating** from their **centres**. They're created when huge impacts cause **light-coloured rock** lying **under the Moon's surface** to blast out, then gently settle back down onto the surface.



RECENT HISTORY

Early astronomers, philosophers and scientists, including **Leonardo da Vinci**, mistake solidified **lava beds** on the Moon's surface as **seas** because they look **blue** when viewed from Earth. They're later named **maria** – the Latin name for '**seas**'!

But while we now know that water doesn't flow on the Moon's surface, scientists *have* discovered **water molecules** in the Moon's **polar regions**!

ALL ABOUT THE

MOON

THINGS YOU NEVER KNEW ABOUT OUR MYSTERIOUS NEIGHBOUR IN THE SKY...



The Moon is Earth's closest celestial neighbour, covered with **huge craters**, **rugged mountains** and **flat, grey plains** formed from **lava** that flowed across its surface **billions of years ago**. But it wasn't until **50 years ago**, on **21 July 1969 [GMT]** that people finally walked on its surface – when astronaut **Neil Armstrong** became the first human to step on lunar soil. Now, scientists are anxious to go back. But why return when there are still so many **unexplored spots** to visit in our solar system?

Faced with threats such as **overpopulation** and the **climate crisis** on **Earth**, our easy-to-reach neighbour could help people

research how to survive in the faraway future. Many experts believe that the Moon is our next step in **learning how to live in space**. Missions to the Moon might even be possible in the next **decade**.

But before YOU pack your bags and sign up to go there yourself, check out the next four pages to learn more about what some scientists call '**Earth's sidekick**.' Discover when the Moon was formed, how it compares to Earth, and find out what living on a **moonless** planet would be like. Ready for lift-off? Then read on!