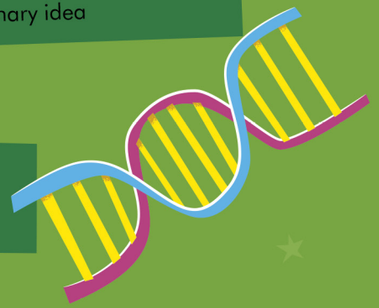
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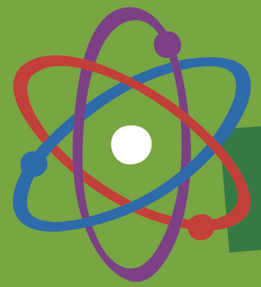


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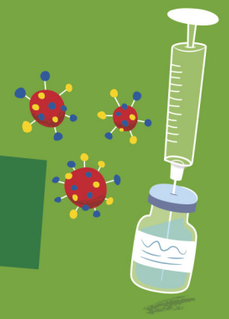


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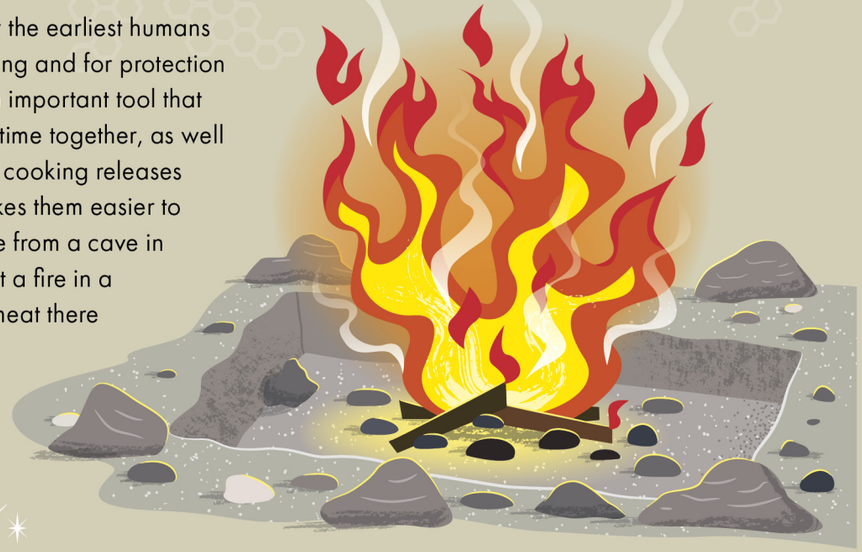


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A BURNING DISCOVERY

Fire was a crucial part of life for the earliest humans who used it for heat, light, cooking and for protection against predators. It became an important tool that changed the way people spent time together, as well as changing how they ate since cooking releases nutrients in some foods and makes them easier to digest. Archaeological evidence from a cave in modern-day Israel indicates that a fire in a **hearth** was used for cooking meat there 300,000 years ago.

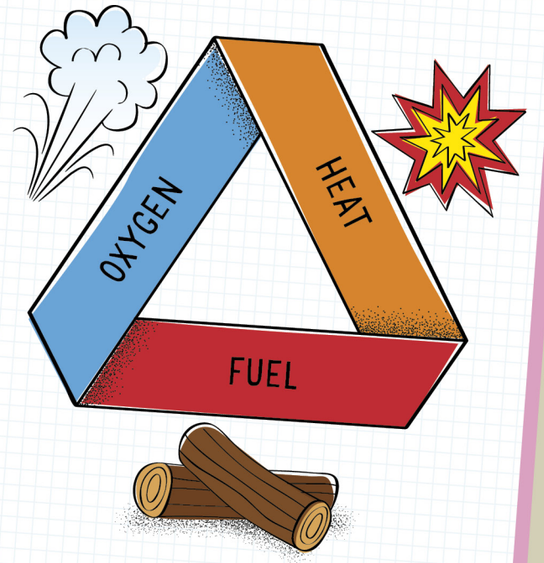




We don't know exactly when humans worked out how to start fire. Their first interactions with it were probably through lightning strikes and other accidental **ignitions**. Eventually flints were used to create sparks that started flames, which could be used in a controlled way.

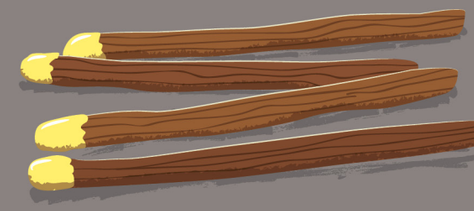
HOW TO MAKE FIRE

There are three things needed to make fire:



FIRE STARTERS

The control of fire continued to be important and new ways to start fires were invented. A lens could be used to focus sunlight on to a material that would burn and the heat would make it catch fire. Romans applied sulphur to the end of wooden sticks to make matches and this simple technology was recorded hundreds of years later in China and again in Europe in the nineteenth century. In 1826, a chemist called John Walker invented friction matches when he combined chemicals on the end of a stick and found that they caught fire when they were scraped.



300,000 years ago

Israel

Humans burned fires in hearths for cooking food, light and heating.



Recorded in the first century AD

Ancient Rome

Romans made matches from wooden sticks tipped with sulphur.



1781 – 1859 AD

John Walker

Stockton-on-Tees, England

Walker invented a type of match that could be lit by scraping the chemical-coated end against a hard surface.



TAKE IT FURTHER

Preventing and putting out fires is an important part of controlling them. Firefighters existed in ancient Rome and ancient Egypt.

What can you find out about the history of fighting fires?

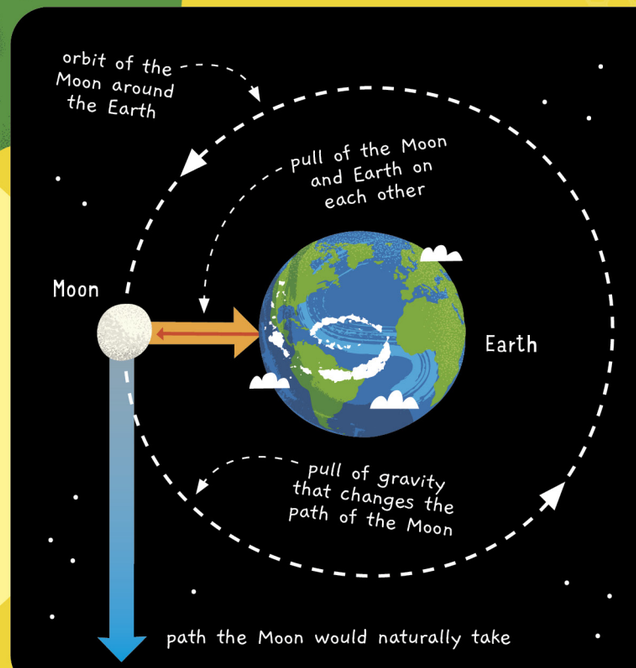
A WEIGHTY SUBJECT

When the seventeenth century mathematician Isaac Newton saw an apple fall from a tree, he realised that all objects in the universe were pulled together by an invisible **force**. He created a **mathematical equation** to show how the force pulling the two objects together is affected by their mass and the distance between them.

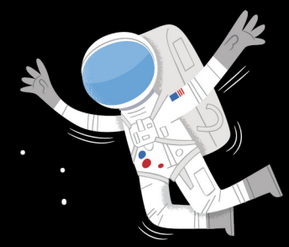


Before Newton's theory, the ancient Greeks thought that everything had its natural place in the universe and all objects would return to where they were meant to be. Newton was the first person to find a reason why things behaved in this way.





Newton's equation showed that this force kept the Moon in orbit around Earth and the other planets circling around the Sun. He called the force 'gravity'.



WEIGHTLESS IN SPACE

Weight is the force of gravity on an object. Astronauts become weightless in the microgravity of space.

1642 – 1727

Sir Isaac Newton

Grantham, England



After seeing an apple fall from a tree, Newton came up with a mathematical equation to explain the force that made it fall. That force was called 'gravity'.



1879 – 1955

Albert Einstein

Berlin, Germany



Einstein's theory of general relativity shows that gravity is caused by objects creating curves in **space-time**.



THE CURVE OF GENERAL RELATIVITY

In 1915, a physicist called Albert Einstein came up with the idea that objects bend the shape of space and time around them. He said that gravity is the result of **space-time** being curved towards an object.

TAKE IT FURTHER

Can you experiment with gravity? What happens when you throw an object into the air?

What happens when you jump?

How do you think it would feel to walk on the moon?