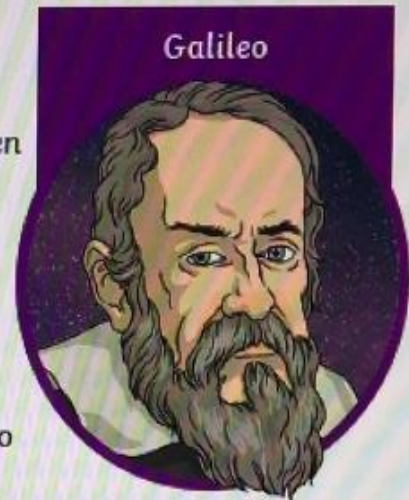


Stephen Hawking

Stephen Hawking was an English scientist, **cosmologist**, teacher and author. He is best known for discovering how the universe was formed and predicting what might happen to it in the future.

A Star Is Born

Born on 8th January 1942 in Oxford, England, Stephen William Hawking was born exactly 300 years after the death of the famous **astronomer** Galileo – a fact that Stephen was very proud of. He was born during the Second World War, which was a very dangerous time for London, so his parents, Frank Hawking and Isobel Walker, moved from their home in Highgate, London to Oxford to ensure Stephen's safety.



His parents went on to have three more children: two girls named Philippa and Mary and an adopted boy named Edward. They were a family who placed a high value on education and his parents studied at the University of Oxford; his father studied medicine and became a medical researcher while his mother studied **philosophy** and **politics**.

Childhood

Stephen's fascination with science, particularly space, began at an early age, when he would enjoy spending time with his mother; lying together on the grass in the garden to watch the stars.

When Stephen was a child of eight, the family moved to St Albans in Hertfordshire, a town about 20 miles north of London. At school, Stephen was often referred to as 'Einstein' by his classmates. After taking the eleven-plus exam a year early, Stephen attended St Albans School. He remained here throughout his secondary education, making close friends with whom he enjoyed playing board games and making model aeroplanes and boats. With the help of his maths teacher, Dikran Tahta, Stephen and his friends built a computer from clock parts, an old telephone switchboard and various other recycled objects.

University

Inspired by Mr Tahta, Stephen wanted to study maths at university, despite his father advising him to study medicine. Stephen compromised and chose to study **physics** and **chemistry** at the same college that his father had attended. He took the entry exams a year early, meaning that he was only 17 years old when he started university.

Stephen Hawking

Stephen became a lively, witty and popular member of his class, interested in classical music and science fiction. He also joined the college boat club, where he became **cox** for a rowing crew – he was said to be a daredevil because of the risks he took in the boat!

Following the completion of his first degree, Stephen was still passionate about space, so attended Cambridge University where he studied **cosmology** and made some incredible discoveries.

It was at Cambridge that Stephen first developed problems with his health. He became very clumsy, regularly falling or dropping things. His speech became slurred and hard to understand.

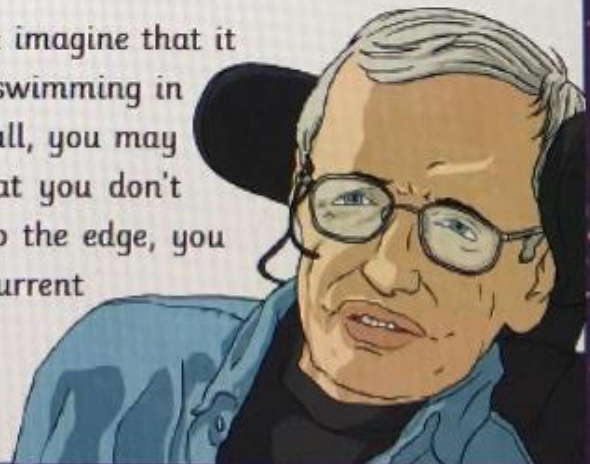
Doctors diagnosed Stephen with Amyotrophic Lateral Sclerosis, or **ALS**, and he was given just two years to live. However, his disease progressed more slowly than doctors had imagined, meaning he was able to return to his studies, marry his first wife, Jane Wilde, and start a family. In later years, his ALS meant that he used a wheelchair and communicated using voice synthesis technology.

Scientific Discoveries



While at Cambridge University, Stephen studied black holes. At the time, people thought that black holes were a place where gravity pulled so strongly that it pulled all matter down into it and even light couldn't escape. Stephen, however, discovered that a type of **radiation** was able to elude black holes. This particular type of radiation was named after him and, using what he had discovered about black holes, Stephen was able to show that Einstein's general **theory of relativity** implied that space and time began with the Big Bang and would end in black holes.

Stephen explained how black holes worked: imagine that it is like a river with a waterfall. If you are swimming in the river away from the top of the waterfall, you may be able to swim away fast enough so that you don't go over the edge, but as you get nearer to the edge, you cannot swim fast enough to escape the current of the water.



Stephen Hawking

You will be pulled over the edge of the waterfall. This is how matter is pulled into a black hole. The edge of a black hole is called the event horizon. Past the event horizon, nothing can travel fast enough to escape the black hole.

Stephen taught at university, gave many talks and wrote books which have been read in many countries around the world. Due to his amazing work and incredible sense of humour, he inspired millions of people to become interested in science.

Glossary

ALS – A motor neurone disease that causes muscle weakness, paralysis and respiratory failure. It is a degenerative disease, which means it gets worse over time. There is no cure.

astronomer – A person who studies the positions of the sun, moon, stars and planets.

chemistry – The branch of science concerned with the substances which make up everything.

cosmologist – A person who studies cosmology.

cosmology – The science of the origin and development of the universe.

cox – The person who directs the rowers in a boat.

philosophy – The study of how we exist and how we know things.

physics – The branch of science concerned with the properties of matter and energy.

politics – The study of how countries are led and what governments do.

radiation – Waves of energy that come out of or off something.

theory of relativity – The idea that as something approaches the speed of light, mass and energy change.



Questions

1. 'Stephen Hawking was an English scientist, cosmologist, teacher and author. He is best known for discovering how the universe was formed and predicting what might happen to it in the future.'

What does **predicting** mean? Tick one.

- describing
- speculating
- understanding
- knowing

2. Who helped Stephen to build a computer? Tick one.

- Frank Hawking
- Jane Wilde
- Isobel Walker
- Dikran Tahta

3. Find and copy a phrase from the text which shows that Stephen wasn't afraid of danger.

4. Find and copy **two** things that Stephen enjoyed doing as a child.

5. Why do you think people called Stephen 'Einstein' at school?

6. Find and copy **two** things that Stephen used to help him carry on with his career as his ALS progressed.

7. Summarise Stephen's discoveries about black holes in 50 words or fewer.

8. Why do you think Stephen was keen to teach and share his knowledge?

9. Why do you think Stephen tried to explain events in space using objects on earth (such as the waterfall)?

10. Which part of Stephen's life do you think was the most important? Give evidence to support your answer.
