

Year 3 Knowledge Mat



George

Ferris

1859 - 1896

The Ferris Wheel



First Ferris Wheel

Non-Negotiable Knowledge

George Washington Gale Ferris Junior was an American **civil engineer**, who designed bridges and tunnels.

In Chicago, Illinois, the **World's Columbian Exposition** was being planned. It was going to be a huge fair and the planners wanted a big **attraction** so they set a challenge to the American engineers. The planners wanted something 'original, daring and unique' and needed to be better than the **Eiffel Tower**, Paris.

George Ferris proposed a wheel, modelled on a bicycle wheel, from which, the visitors would be able to view the entire fair.

The Ferris Wheel was finished in 1893. It was over 260 feet high and could hold 40 60 passengers. The passengers paid 50 cents for two **revolutions** lasting 20 minutes.

Vocabulary Expectations

End of Unit Quiz

Attraction

A place which draws visitors by providing something of interest or pleasure.

Civil Engineer

Designing and building large structures, like bridges, dams, buildings, and tunnels.

Chicago Columbian Exposition

A fair to celebrate the 400th anniversary of Christopher Columbus' arrival in the New World.

Eiffel Tower

A wrought iron lattice tower in Paris, France. It is named after the engineer Gustave Eiffel, whose company designed and built the tower.

Revolution

A single complete turn.

1. What occasion did George Ferris design the Ferris wheel for?

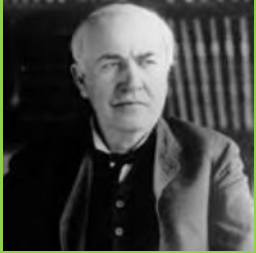
2. What three words did the planners want the attraction to be like?

3. What was the design of the Ferris wheel modelled on?

4. Can you name a London landmark which is very similar to the Ferris Wheel?

5. Name three facts about the first Ferris Wheel?

Year 4 Knowledge Mat



Thomas Edison

1841 - 1931

Inventions



Thomas Edison with his phonograph



Incandescent electric light bulb



Thomas Edison with his carbon transmitter

Non-Negotiable Knowledge

Thomas Edison's first invention was the phonograph. This machine could record and replay sound. Edison recorded himself saying the nursery rhyme. 'Mary had a little lamb' and was amazed when his invention played it back to him.

Edison began to try to invent a light that didn't need oil or gas to be lit. The light bulb had already been invented, but it burnt out quickly. Other inventors had made early versions of the electric lamps and they sold their ideas to Edison. He created a lightbulb that would stay lit using electricity for 13 ½ hours.

In 1879, he demonstrated the first incandescent electric lightbulb, to a group of people in **Menlo Park**, because of this, he became known as the 'Wizard of **Menlo Park**'.

In 1879, Joseph Swan, a British inventor was able to publically show a working lamp, the same year that Edison's lightbulb was **patented**. To avoid competing Edison and Swan joined companies in 1883 to form Edison and Swan Electric Light Company.

The car maker Henry Ford asked Thomas Edison to design a battery for a car to start itself. Edison did this and they became great friends.

Thomas Edison was an American inventor. His other inventions include the **Kinetograph** and the **Carbon Transmitter**.

Vocabulary Expectations

End of Unit Quiz

Carbon Transmitter This improved the sound quality heard down a telephone line.

Henry Ford The founder of the Ford Motor Company.

Incandescent light bulb A glowing wire filament heated to white hot by electrical resistance, to generate light.

Kinetograph A machine that could crush rocks that had been bought up from the mines.

Menlo Park Menlo Park is a laboratory for carrying out scientific experiments and research.

Patented An invention is not your own until it is patented, others can copy the idea.

1. Name two of Thomas Edison's inventions that we still use a version of today?

2. What was Thomas Edison also known as?

3. Who did Edison partner with to avoid competing?

4. What made Edison's incandescent light bulb successful?

5. Which nursery rhyme did Edison record himself reciting with his phonograph invention?

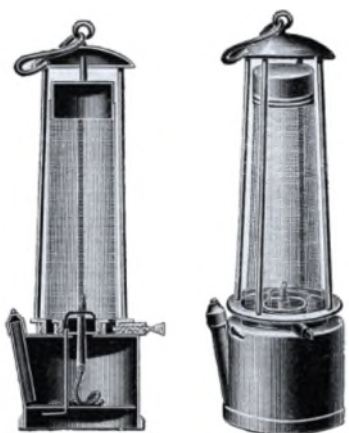
Year 5 Knowledge Mat



Sir Humphry Davy

1778 - 1826

Inventions and Discoveries



The Davy Lamp



Non-Negotiable Knowledge

Humphry Davy was a British chemist best known for his experiments in electro chemistry and his invention of a miner's safety lamp also known as The 'Davy' Lamp.

Coal mines are dangerous because of **flammable firedamp** gases like **methane**, which can accumulate (gather together). A lamp with an exposed flame might **ignite** these **flammable** gases causing an explosion.

In 1815, Sir Humphry Davy invented the 'Davy Lamp' also known as the Miner's Safety lamp after receiving a letter from the Newcastle miners which told him of the dangers of **methane** gas.

The Davy Lamp consisted of a wick lamp with the flame enclosed inside a **wire mesh**. The **flammable** gases did not **ignite** a shielded flame. The lamp also warned the miners of carbon dioxide and methane. The flame would burn higher with a blue tinge if these gases were present. George Stephenson also invented a safety lamp known as the 'Geordie Lamp' in 1815. Modern versions of the lamp are still used today to test mine gases, but the light is electric.

During his career as a chemist, Humphry Davy was able to **isolate substances** for the first time; potassium and sodium in 1807 and calcium, barium and magnesium in 1808. He also studied the forces involved in these separations, inventing the new field of **electrochemistry**. Now considered one of Britain's leading scientists and was knighted by King George III in 1812.

Vocabulary Expectations

End of Unit Quiz

electrochemistry	A kind of chemistry that studies chemical reactions that use or make electricity:
flammable	Something that can be set on fire easily.
firedamp	Flammable gas found in coal mines. It is the name given to a number of flammable gases, especially methane.
ignite	To set on fire.
isolate	To extract in a pure form.
methane	A colourless, odourless flammable gas
substances	Matter than contains only one type of atom or molecule
wire mesh	A barrier made of connected strands of metal

1. Why did Davy invent the safety lamp?
2. What is firedamp and why is it dangerous?
3. What else did the 'Davy' Lamp do to protect the Miners?
4. Who else invented a miners safety lamp?
5. What discoveries did Humphry Davy make as a chemist?

Year 6 Knowledge Mat



Elon Musk

1971 - Present Day

Inventions



Tesla's Model S



Non-Negotiable Knowledge

Elon Musk was born in Pretoria, South Africa and went to study science and economics in Canada and USA. From a young age, he was already an great **entrepreneur**.

By the time he was 28, Musk he had already sold his first successful company Zip 2 (a web software company) for millions! He went to start and sell X.com and PayPal (online financial services) which both sold for billions of dollars.

Musk wanted to successfully prove that electric cars and **renewable energy** for houses were even better than traditional engines and power sources, so the team at Tesla did just that. They developed a solar roof that can provide the whole house with power, as well as some of the world's best electric cars, which are not only kind to the environment, but also include some amazing technology that **radically** improves safety.

Tesla's Model S car includes an autopilot function that allows the car to steer, accelerate and brake automatically within its lane.

Musk founded Space X in 2002. His goal was to reduce the cost of **space transportation** to enable the **colonisation** of Mars. Space X has manufactured and launched advanced rockets and spacecraft, which have delivered satellites into space.

Vocabulary Expectations

colonisation	When one country takes control of another country or region, establishing a settlement, or permanent part of the colony, in order to control the area and gain riches.
entrepreneur	Someone who decides to create or run a business, even though he or she might lose some money. They are often creative, daring people, and the businesses they operate are very important to communities.
renewable energy	Energy that is made from resources that nature will replace, like wind, water and sun.
radically	In a thorough or fundamental way; completely.
space transportation	A spacecraft that is used to use to transport people and equipment to outer space.

End of Unit Quiz

1. Name three successful companies that Musk founded.
2. How and why did Elon Musk start Tesla?
3. What functions does the Tesla Model S car have?
4. What personality traits do you think Elon Musk has that has made him so successful?
5. What project do you think Musk will be involved in next?