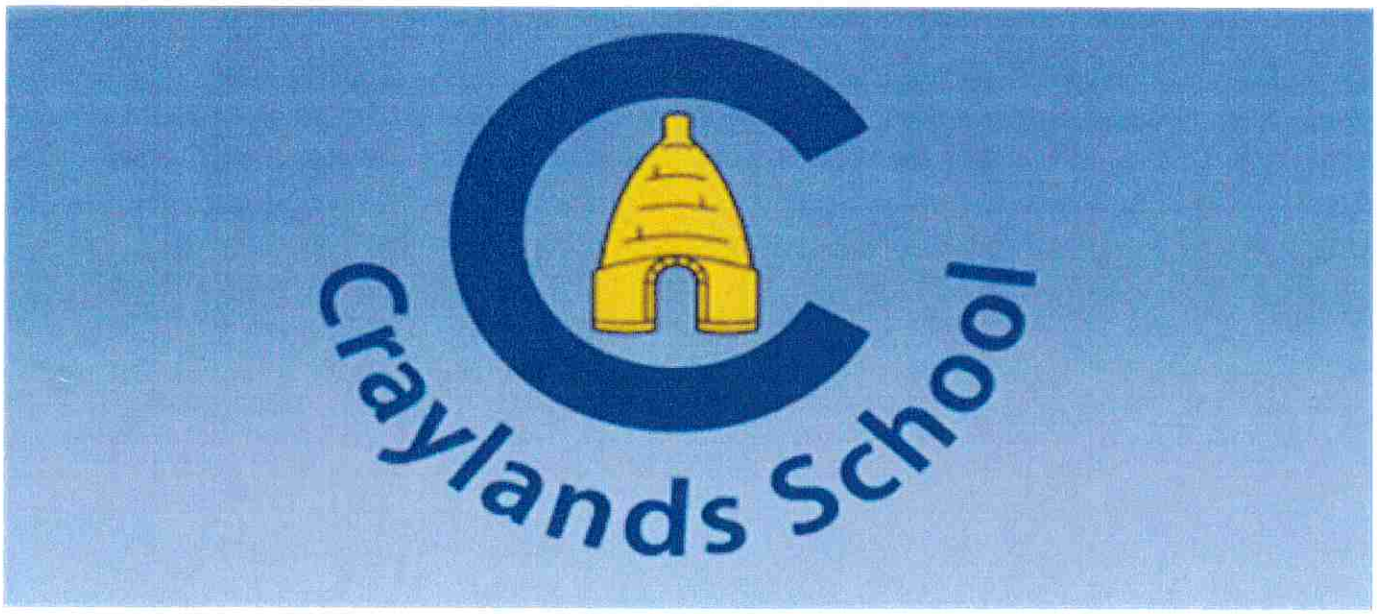
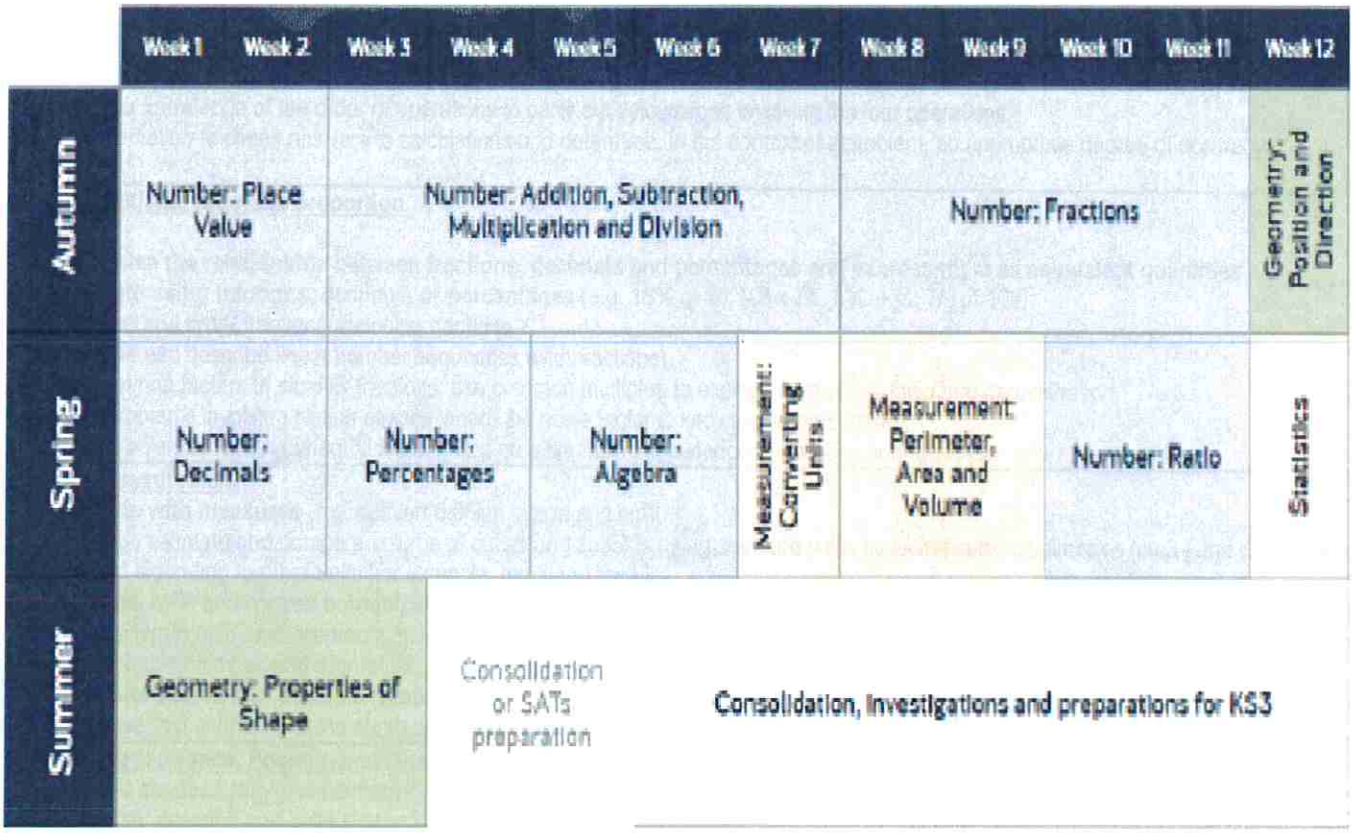


Year 6 Learning Guide

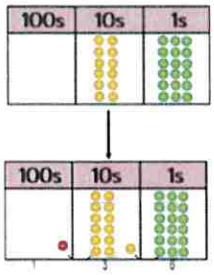
Maths



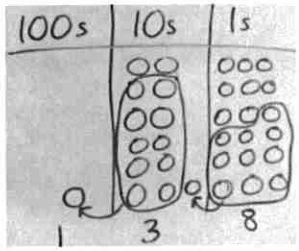
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value		Number: Addition, Subtraction, Multiplication and Division					Number: Fractions				Geometry: Position and Direction
Spring	Number: Decimals		Number: Percentages		Number: Algebra		Measurement: Converting Units	Measurement: Perimeter, Area and Volume		Number: Ratio		Statistics
Summer	Geometry: Properties of Shape				Consolidation or SATs preparation		Consolidation, investigations and preparations for KS3					

Multiplication

Formal column method with place value counters.
6 x 23



Children to represent the counters/base 10, pictorially e.g. the image below.



Formal written method

$$6 \times 23 =$$

$$\begin{array}{r} 23 \\ \times\ 6 \\ \hline 138 \\ \hline 1\ 1 \end{array}$$

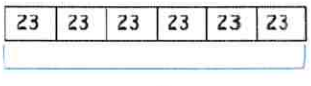
When children start to multiply 3d × 3d and 4d × 2d etc., they should be confident with the abstract:

To get 744 children have solved 6 × 124.
To get 2480 they have solved 20 × 124.

$$\begin{array}{r} 1\ 2\ 4 \\ \times\ \ 2\ 6 \\ \hline 7\ 4\ 4 \\ 2\ 4\ 8\ 0 \\ \hline 3\ 2\ 2\ 4 \\ 1\ 1 \end{array}$$

Answer: 3224

Conceptual variation; different ways to ask children to solve 6 × 23



Mai had to swim 23 lengths, 6 times a week.
How many lengths did she swim in one week?

With the counters, prove that 6 x 23 = 138

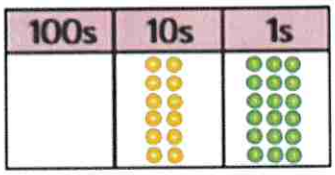
Find the product of 6 and 23

6 × 23 =

□ = 6 × 23

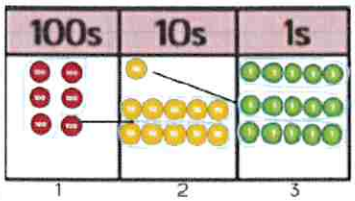
$$\begin{array}{rr} 6 & 23 \\ \times\ 23 & \times\ 6 \\ \hline & \end{array}$$

What is the calculation?
What is the product?



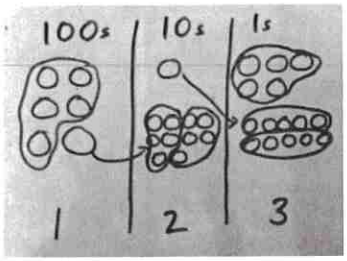
Division

Short division using place value counters to group.
615 ÷ 5



1. Make 615 with place value counters.
2. How many groups of 5 hundreds can you make with 6 hundred counters?
3. Exchange 1 hundred for 10 tens.
4. How many groups of 5 tens can you make with 11 ten counters?
5. Exchange 1 ten for 10 ones.
6. How many groups of 5 ones can you make with 15 ones?

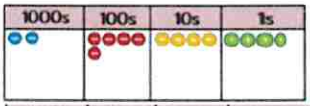
Represent the place value counters pictorially.



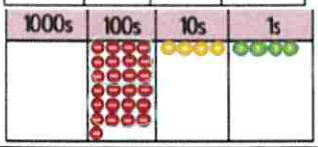
Children to the calculation using the short division scaffold.

$$\begin{array}{r} 123 \\ 5\overline{)\,6^{1}1^{1}5} \end{array}$$

Long division using place value counters
2544 ÷ 12

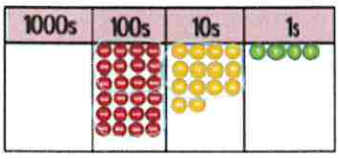


We can't group 2 thousands into groups of 12 so will exchange them.



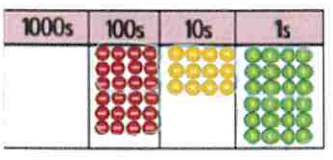
We can group 24 hundreds into groups of 12 which leaves with 1 hundred.

$$\begin{array}{r} 02 \\ 12\overline{)\,2544} \\ 24 \\ \hline 1 \end{array}$$



After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.

$$\begin{array}{r} 021 \\ 12\overline{)\,2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 2 \end{array}$$



After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remainder.

$$\begin{array}{r} 0212 \\ 12\overline{)\,2544} \\ 24 \\ \hline 14 \\ 12 \\ \hline 24 \\ 24 \end{array}$$

YEAR: 6

Evolution and inheritance

Lenny's words to learn	
evolution	Environment
evolve	offspring
natural	reproduction
selection	parents
survival	siblings
reproduction	variation
Darwin	fossils
ammonite	belemnites
micrasters	fossammonite

Lenny's facts to learn
I know how fossils were formed
I know living things have changed over time
I know living things' offspring normally vary and are not identical to their parents
I know animals and plants adapt to suite their environment

YEAR: 6

Electricty

Lenny's words to learn	
electricity	bulb
volts	circuit
component	battery
buzzer	crocodile
conductor	insulator
resistance	wires
switch	brighter
duller	movement
light	sound

Lenny's facts to learn
I know the number and voltage of cells affects the brightness of a lamp or the loudness of a buzzer
I can compare variations in components within a circuit
I can use symbols when creating circuit diagrams
I know the number and voltage of cells affects the brightness of a lamp or the loudness of a buzzer

YEAR: 6

Light

Lenny's words to learn	
dark	bright
opaque	translucent
shadow	transparent
mirror	reflection
bounce	shadow
absence	sunset
sunrise	position
brightest	brighter
dark	darkest

Lenny's facts to learn
Light appears to travel in straight lines
We see objects because they reflect light into the eye
We see objects because of light sources
Shadows have the same shape as the objects that cast them
Objects that let light through are transparent; those that partially let light through are translucent; those that do not let light through are opaque.

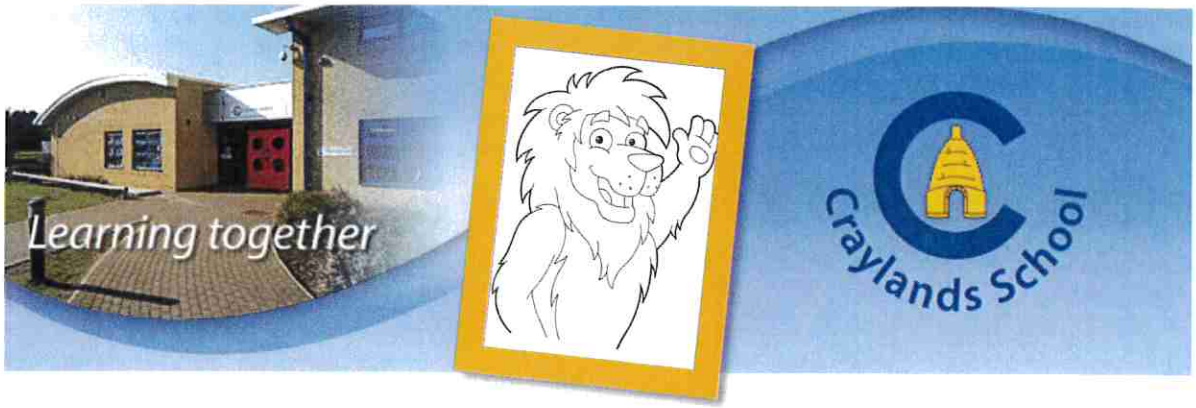
YEAR: 6

Animals including humans

Lenny's words to learn	
circulatory	arteries
system	heart
blood	veins
pulse	clotting
healthy	balanced
diet	minerals
carbohydrates	fats
sugar	protein
drugs	alcohol

Lenny's facts to learn
I can name the parts of the circulatory system
I know the function of the heart, blood vessels and blood
I know diet, exercise, drugs and lifestyle can affect how bodies function
I know how nutrients and water are transported within animals and humans

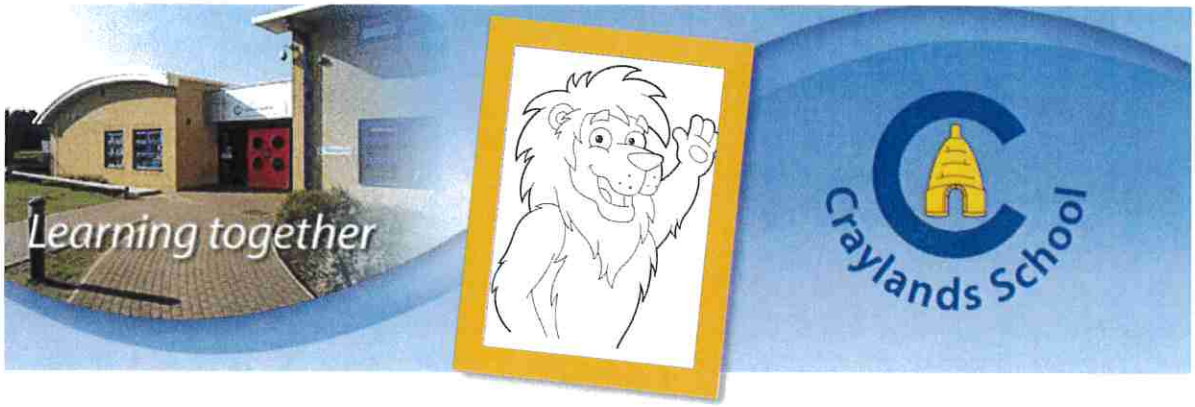
YEAR: 6 TOPIC: Rainforests



Lenny's words to learn	
rainforest	A dense forest rich in different plant and animal life, found in tropical areas with heavy rainfall.
canopy	The uppermost branches of the trees in the rainforest.
Amazon	The name of the river and rainforest in Brazil, South America.
cacao	A type of tree that produces cacao seeds, from which chocolate is made.
deforestation	The destruction of trees.
understorey	The section of trees between the canopy and ground.
equator	The imaginary line around the centre of the Earth where the climate is at its hottest.
epiphytes	a plant that grows on another plant, such as the numerous ferns, bromeliads, air plants, and orchids growing on tree trunks in tropical rainforest

Lenny's facts to learn
Tropical **rainforests** are **found** between the Tropic of Cancer and Capricorn, near the equator due to the amount of rainfall and the amount of sunshine **these** areas receive.
The largest **rainforests** are in the Amazon River Basin (South America), the Congo River Basin (western Africa), and throughout much of southeast Asia. One third of the **world's** tropical **rainforests** are in Brazil.
The **Amazon Rainforest** is **located** in 9 different countries but the majority of it (around 60%) is **located** in Brazil. The rest of it can be **found** in Peru, Colombia, Ecuador, Bolivia, Venezuela, Guyana, Suriname and French Guiana (which is technically an overseas territory).
The rainforest has 4 layers: **Forest floor -** Jaguars, leopards, tigers, elephants and gorillas. Lots of insects live here. **Understory -** Birds, butterflies, frogs, snakes and lots of insects live here. **Canopy -** Birds, monkeys, frogs, sloths, lizards, snakes and many insects live here. This layer contains the most animal species. Some creatures never go to the forest floor. **The emergent layer -** Eagles, butterflies, small monkeys and bats all live here.

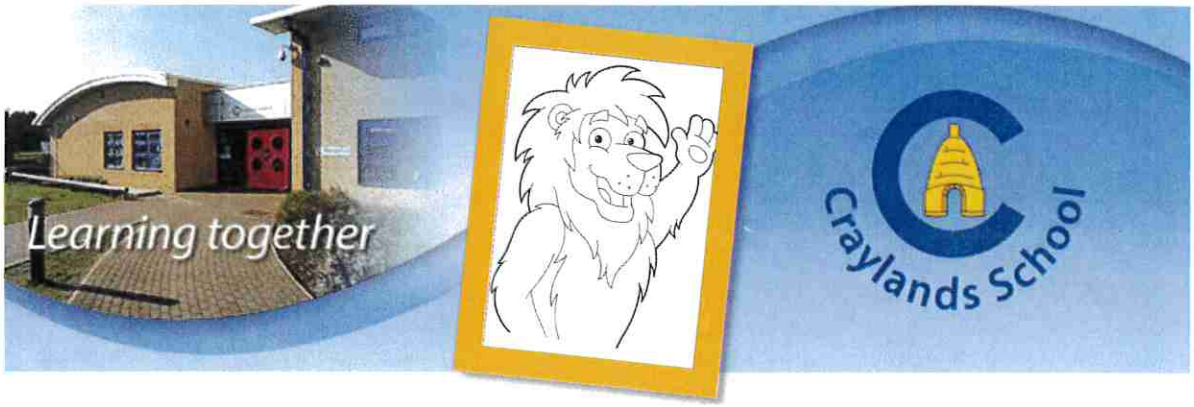
YEAR: 6 TOPIC: Mayans



Lenny's words to learn	
Mayans	A civilisation of indigenous people who lived in Mexico and Central America.
cacao	A type of tree that produces cacao seeds, from which chocolate is made.
glyph	A symbol from a language.
Quetzal	A brightly-coloured, crested bird found in Central America and Mexico
Yucatan Peninsula	A large mass of land projecting into a body of water in Central America.
Ahau or Ahaw	Among the ancient Maya people, a member of the leading class of nobles.

Lenny's facts to learn
The Mayans made their home in an area known as Mesoamerica (Mexico and Central America) 1000 years before Jesus was born and 1697 years after his birth.
Each Mayan city had its own noble ruler; the Kings were constantly at war with each other.
Many foods enjoyed by the world today came from the Mayan civilisation; one such food was chocolate from cocoa beans, used to make hot chocolate. Cocoa beans were valuable and used as currency by the rich.
The Mayans had a number of beliefs including sacrificing to Gods; hunting and fishing was important to them; they devised a calendar and a writing system.

YEAR: 6 TOPIC: Exploration; Tudors



Lenny's words to learn

Sir Francis Drake	English sailor and explorer. He was the first Englishman to circumnavigate the globe (1577–80), in his ship the Golden Hind. He played an important part in the defeat of the Spanish Armada.
colonisation	The action or process of settling among and establishing control over the indigenous people of an area.
Tudors	The English royal dynasty which held the throne from the accession of Henry VII in 1485 until the death of Elizabeth I in 1603.
Sir Walter Raleigh	An English explorer, courtier, and writer. A favourite of Elizabeth I, he organized several voyages of exploration and colonization to the Americas, and introduced potato and tobacco plants to England.
monarchy	The King or Queen.
Circumnavigate	sail or travel all the way around (something, especially the world).
Scurvy	a disease caused by a deficiency of vitamin C, characterized by swollen bleeding gums and the opening of previously healed wounds, which particularly affected poorly nourished sailors until the end of the 18th century.
Exploration	the action of exploring an unfamiliar area.
Christopher Columbus	Italian-born Spanish explorer, credited as being the first European to reach the Americas;

Lenny's facts to learn

The Tudor reign lasted from from 1485 to 1603.

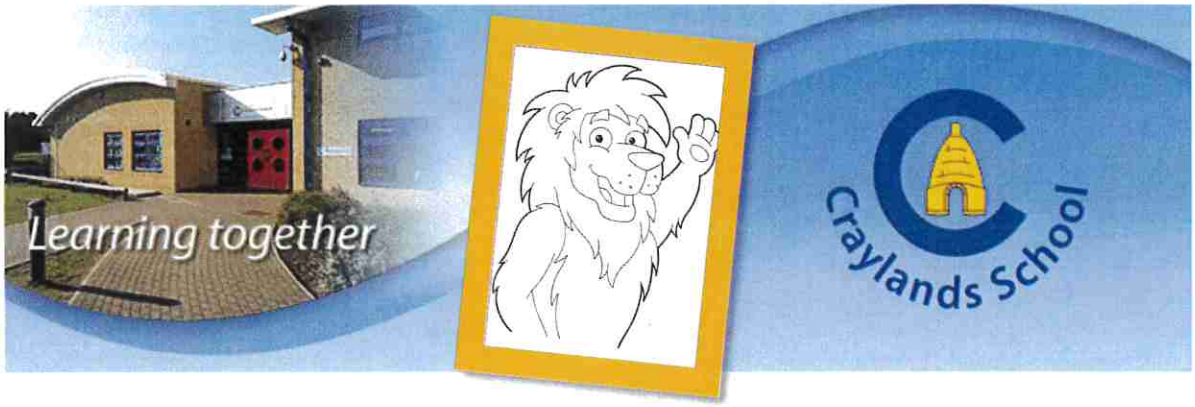
The first Tudor king was Henry VII. He became king after the battle of Bosworth field, which ended the War of the Roses. He was followed by his son, Henry VIII, who was famous for marrying six times and beheading two of his wives! His son, Edward VI ruled after him, followed by his daughters Mary I and Elizabeth I.

The golden age of exploration began in the 15th century and lasted more than 200 years. During the reign of Elizabeth 1, many sailors went in search of unknown lands. There were two main reasons: one was adventure and the other was money.

Sir Walter Raleigh led many expeditions to America and introduced tobacco and the potato into England.

Sir Francis Drake was the first Englishman to sail around the world, which he did (1577 - 1580) in his ship The Golden Hinde.

YEAR: 6 TOPIC: Exploration; Victorians



Lenny's words to learn

steam engine	A **steam engine** is an **engine** which uses **steam** from boiling water to make it move
Industrial revolution	During the **Industrial Revolution**, many factories were built. Laborers began making large numbers of things using machines powered by engines. England was the first country in which these changes took place.
monarchy	A government led by a King or Queen.
Great Exhibition	The **Great Exhibition**, also known as the Crystal Palace **Exhibition**, was an **international exhibition** held in Hyde Park, London, England, from 1 May to 15 October 1851 and the first in a series of World's Fair **exhibitions** of culture and industry that were to be a popular 19th century feature.
inventors	A person that makes a device for a specific function.
Victorians	The **Victorians** were the people who lived during the reign of Queen Victoria, from the 20 June 1837 until the date of her death on the 22 January 1901.

Lenny's facts to learn

there was no electricity, instead gas lamps or candles were used for light. There were no cars. People either walked, travelled by boat or train or used coach horses to move from place to place.

Britain became the most powerful and richest country in the world
Towns and cities got piped water, gas and, by the end of the century, electricity
Factories **and machines were built**
Railways, originally built to transport goods, meant people could travel easily around the country for the first time.
Many households had a servant or **servants**
Seaside holidays were 'invented' (became popular).
Police Force 'invented'.

The Industrial Revolution rapidly gained pace during Victoria's reign because of the **power of steam**. Victorian engineers developed bigger, faster and more powerful machines that could run whole factories.