

## Mathematics

In mathematics, we start Year 5 by recapping and building on the key skills of understanding place value, addition and subtraction and multiplication and division.

### Place Value

We start off this unit by exploring Roman numerals to 1,000, and introducing the symbols D (500) and M (1,000). Children explore further the similarities and differences between the Roman number system and our number system, learning that the Roman system does not have a zero and does not use placeholders,

We then move on to read, write, compare and explore numbers to 1,000,000 in our number system, looking at different ways these numbers can be presented. E.g.

Match the representations to the numbers.



We will revisit rounding to the nearest ten, hundred and thousand and will be learning how to use rounding to help us estimate the value of calculations. The 'approximately equal to' sign,  $\approx$ , is used to show that values have been rounded.

e.g.  $17 + 19 \approx 40$ , because both 17 and 19 round to 20.

### Addition and subtraction

Children will revise formal methods for addition and subtraction of 4 and 5-digit numbers with regrouping in one or more columns. They will have opportunities also to apply these skills to solving worded problems and reasoning problems to challenge their thinking. We will be reminding the children to use the RUCSAC method

when solving worded problems: **RUCSAC** Read, Understand, Choose (a method you will use to solve the question), Solve, Answer and Check.

### Try these websites:

What is Column Addition? (BBC Bitesize) <https://www.bbc.co.uk/bitesize/topics/zy2mn39/articles/z3kmrwx>

Column Subtraction (BBC Bitesize) <https://www.bbc.co.uk/bitesize/topics/zy2mn39/articles/zc78srd>

Guardians, Defenders of Mathematica: <https://www.bbc.co.uk/games/embed/guardians-mathematica?exitGameUrl=https%3A%2F%2Fbbc.com%2Fbitesize%2Farticles%2Fzn2y7nb>

### Multiplication and division

During the course of this topic, the children will investigate multiples, common multiples, factor and common factors, prime, square and cube numbers. They will also recap multiplying by 10, 100 and 1,000.

**Multiples** - the result of multiplying a number by a positive integer. E.g.  $5 \times 4 = 20$ , so 20 is a multiple of 5 and 4.

**Factors** - factor pairs can be multiplied together to produce a given multiple. e.g. 1, 2, 4, 5, 10 and 20 are factors of 20 because  $1 \times 20$ ,  $2 \times 10$  and  $4 \times 5 = 20$

**Common factors** - factors that are shared by two or more numbers.

Prime numbers - numbers with exactly two factors e.g. 11 only has 1 and 11 as its factors, as only  $1 \times 11 = 11$

### Square numbers –

9 is a square number as 9 counters can be arranged to form a square array.



$$3 \times 3 = 9$$

**Cube numbers** - the result of multiplying a whole number by itself and then by itself again, for example  $6 \times 6 \times 6$ .

**Useful website:** Square and cube numbers <https://www.bbc.co.uk/bitesize/topics/zyhs7p3/articles/z2ndsrd>

## English

In English our three main writing genres will be *Report writing*, *creative writing* and *a balanced argument*.

Writing Genre:	Report writing (Non-fiction)	Creative writing	Balanced argument
Work:	The pupils will be completing research on the important events in space history, such as the first man on the moon. They will then be writing a formal report explaining these key events in detail.	The pupils will be creating their own planet and will make a leaflet advertising why aliens should come and visit their world!	The pupils will be writing a 'balanced' argument on whether or not aliens exist. It will be balanced because they will evenly explore points on each side of the argument.
Main skills covered	The pupils will practice writing factually and will use formal conjunctions to support their writing i.e. although, however, in addition etc.	Descriptive writing skills will be our focus, looking at expanded noun phrases and emotive language, for example, breath-taking, rocky mountains.	The children will work on using vocabulary/phrases which will allow them to explore two sides of an argument, for example: on the other hand... it is also considered that... some people believe... etc.
Ways to help at home:	Ask your child what key events they have chosen to write about and support them in researching this area together.	You could work together with your child collecting some imaginative vocabulary that they could use to describe the planet they have created.	Watch the following link together which explores writing a balanced argument. Discuss the video together: <a href="https://www.bbc.co.uk/bitesize/clips/zxbs34j">https://www.bbc.co.uk/bitesize/clips/zxbs34j</a>

**Spelling:** This term we will be covering 5 spelling from the year 3&4 spelling list, alongside 5 spellings with the following rules each week: W1 'ou' spelling for the sound 'u'. W2 'y' instead of 'i'. W3 'ch' spelling instead of 'k'. W4 words ending in 'gue' and 'que'. W5 prefix 'mis'. W6 prefix 'dis'.

**Guided Reading:** Our guided reading book this term will be the *Astronaut's Handbook* by Lowie Stowell. This is a fantastic book which really works well alongside our Space topic. It explores the journey that astronauts take to train and then hopefully get selected to become an astronaut. While reading the book, the children will participate in a variety of different question styles which develop their understanding of the text and enhance their use of vocabulary. Each week, the children have a list of new words within the text which they discreetly learn about and then see how the words are used in context. Hopefully, we'll have some astronauts in the making after we finish this book!



**Other Subjects:** In RE will be answering the question – 'Why do some people believe God exists?' In PHSE we are learning about who we are and why we all have our own identity. In PE we will be completing fitness lessons, focusing on circuits and in RE we will be learning some basic vocabulary, such as the colours, months and body

## Year 5 - Drawing

collagraphy	A printmaking process that uses textures to create interesting surfaces within a print.
decision	After taking different things into account you come to a conclusion.
futuristic	An object or image that looks like it is from the future.
imagery	A collection of visual images.
propaganda	Information, that may be misleading, to promote an often political cause.
purpose	The reason for something being created.
retrofuturism	A vision of what the future might look like created in the pre-1960s.
technique	Applying a particular method of making something.

### Impact of the Space Race on art and design



### Retrofuturism



Art produced between 1950-1960 that depicted what people imagined the future would look like.

Credit: Look and Learn / Bridgeman Images

### What was the space race?



During the 1950s and 1960s, the United States of America and the Soviet Union were competing for supremacy in many areas, including competing to explore space.

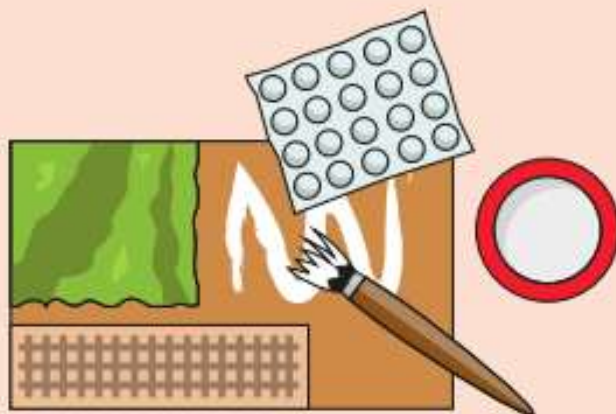


## Making a collagraph printing plate

### Step 1

Glue the different textures to your flat cardboard plate.

**Top tip!**  
It must be allowed to dry completely before you use it.



### Step 2

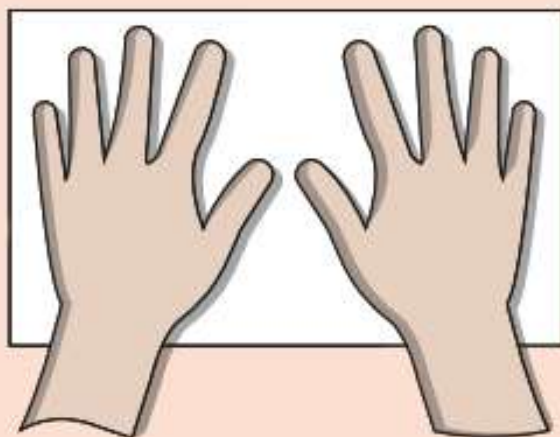
Completely cover your plate with printing ink. Use a thick brush to get into all the gaps. Make sure the ink is evenly applied.



### Step 3

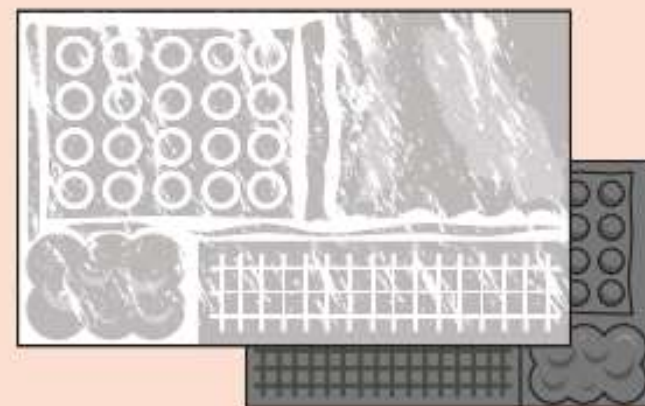
Place your inked plate onto your paper and press firmly all over. You can use a dry roller to do this.

**Top tip!**  
Work from top to bottom to smooth over the entire plate.



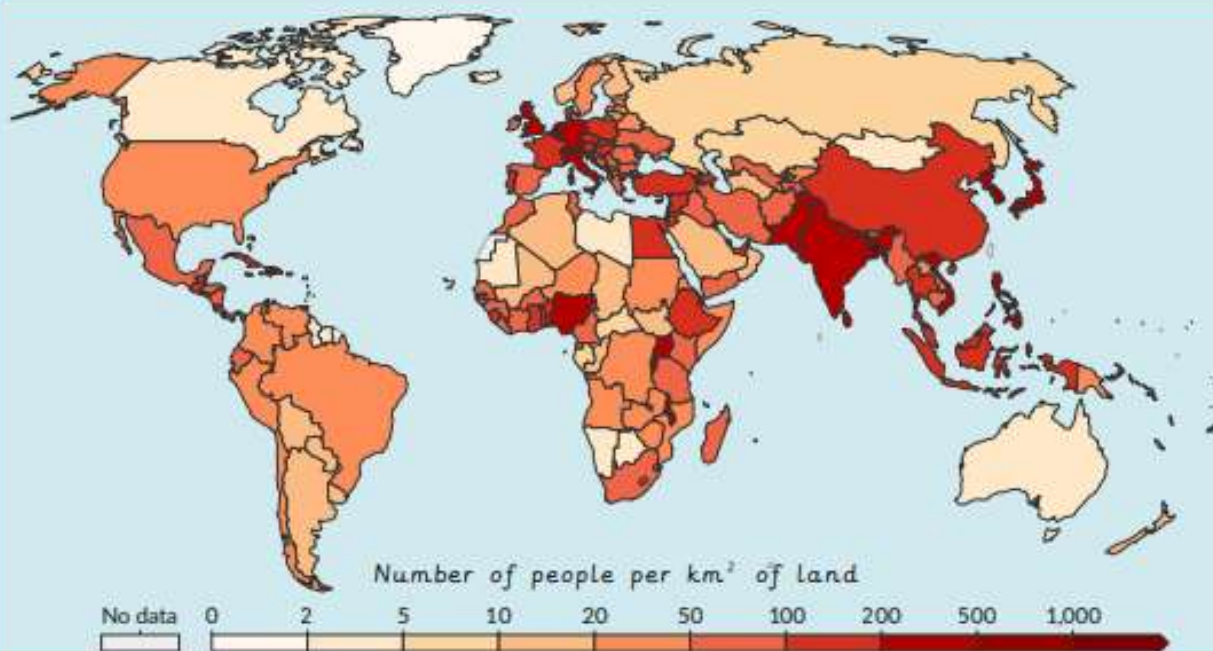
### Step 4

Peel the paper away from the printing plate to reveal your print!



## Geography - Why does population change?

Map showing global population density



Courtesy of the World Bank and subject to the Creative Commons Attribution 4.0 International License (CC BY 4.0)

Courtesy of the Gapfinder and subject to the Creative Commons Attribution 4.0 International License (CC BY 4.0)

population

The number of people living in a particular place.

densely populated

An area that contains many people relative to its size.

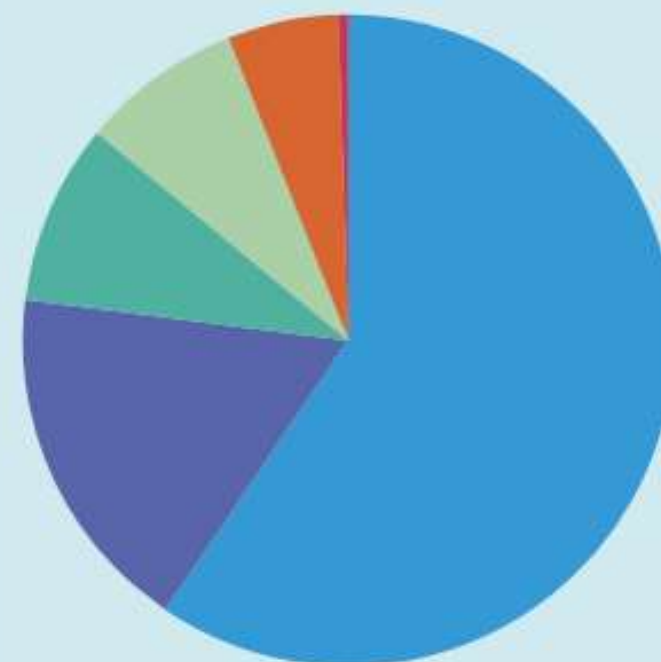
sparsely populated

An area that has few people relative to its size.

Global population distribution

population  
distribution

How people are spread across a specific area.



South America 5.5%

Europe 9%

Oceania 0.5%

North America 8%

Asia 59.9%

Antarctica 0%

Africa 17.5%



## Geography - Why does population change?

### Reasons for population growth

Increase in birth rate.



Decrease in death rate.

Increase in immigration.

Consistent access to food.



A stable job and income.



Clean, spacious housing.

### Reasons for population decline

Decrease in birth rate.

Increase in death rate.



Increase in emigration.

Little or no access to clean water.



Little access to hospitals and medicine.

War and conflict.

Natural disasters.



Spread of disease.



### birth rate

The average number of babies born per 1000 people every year.



### death rate

The average number of people dying per 1000 people every year.



push factors	Negative factors that push people away from a place.
pull factors	Positive factors that pull people towards a place.

### Push factors

- To escape conflict or war.
- To escape natural disasters.
- Poverty (little money).
- Little access to healthcare.
- Few jobs.
- High crime rate.
- Little food, crop failure.
- Harsh climate.
- Little or no access to education.
- Unhappy.

### Pull factors

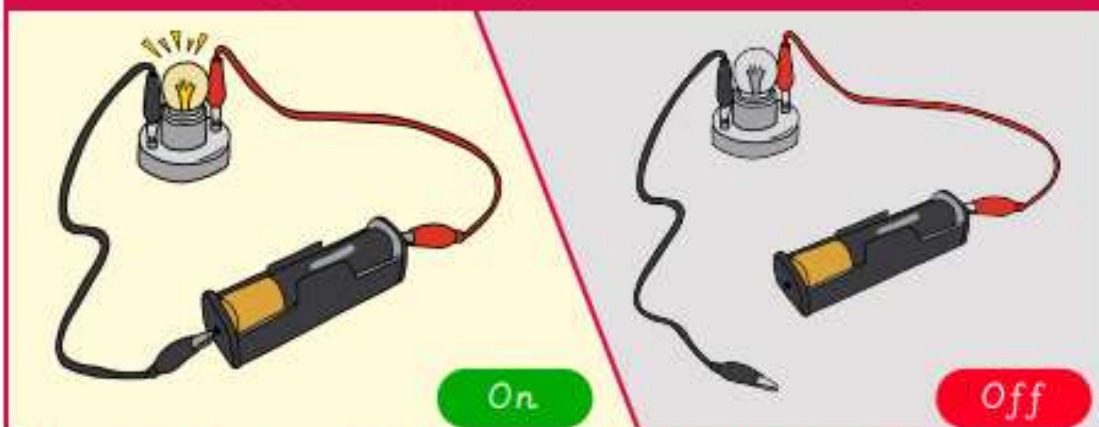
- To find a good job.
- To be closer to family and friends.
- Good access to healthcare.
- Safety (lack of war).
- Low crime rate.
- Access to good education.
- Pleasant climate and landscape.
- To find a better quality of life.
- Respect for different cultures, religions and beliefs.

migration	The act of people moving from one place to another.
refugee	People forced to leave their country to find safety because of conflict, violence or war.

## Year 5 - Doodlers

Circuit	A collection of components that make an electrical system.
Circuit component	One of several parts that complete a circuit (e.g. bulb).
Configuration	How different parts are put together to form an object.
Current	The flow of electricity.
Develop	Continue to work on something to make progress or improve it.
DIY	The acronym means 'Do it yourself' and represents various activities that someone chooses to do themselves at home, rather than through a service or professional.
Investigate	Research something by looking at it in greater detail.
Problem-solve	Develop and test solutions to an issue.
Product analysis	To look at an object and evaluate it based on certain criteria (e.g. function).
Stable	Object does not easily topple over.
Target user	A particular person at whom the product is aimed.

Series circuits only have one path for the electrical current to flow.

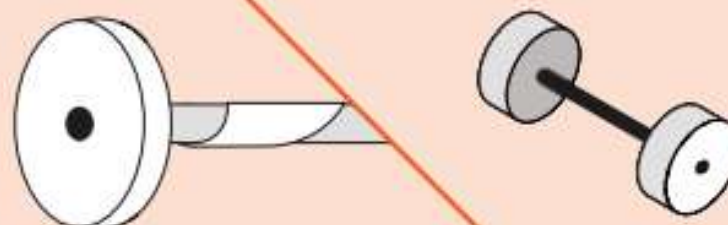


If there is a break in a series circuit, the electrical current will be cut and all the components will stop working. Causing a break in a series circuit can act as a switch to turn the circuit off.

## Key facts

Kapow  
Primary

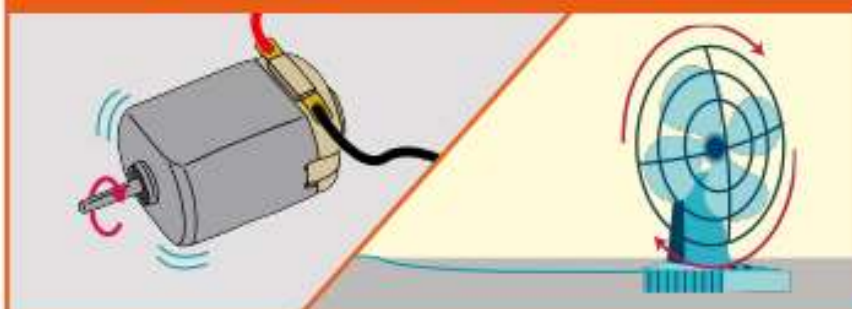
Axles form part of the wheel mechanism in wheeled products such as toy cars, wheelbarrows and bicycles.



For a bicycle to function we need to use our legs and feet to push the pedals that rotate the axle and spin the wheels.



An electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. Motors use electricity instead of human force to move the axle.



A motorised product is an object that uses a motor to function.



# Y5 – Earth and Space

Prior Learning - Whilst this is a new topic, pupils may benefit from recapping what they have learnt about light as this will help with some concepts

3 I can explain why we need light to see things and that dark is the absence of light.

I can notice that light is reflected from surfaces.

I can recognise that light from the sun can be dangerous and that there are ways to protect my eyes and skin.

I can recognise that shadows are formed when light from a light source is blocked by an opaque object.

I can find patterns in the way the length of shadows change.

I can Earth and Space – Year 5

... describe the movement of the Earth, and other planets, relative to the Sun in the solar system

... describe the movement of the Moon relative to the Earth

... describe the Sun, Earth and Moon as approximately spherical bodies

... use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky



## The Sun

A star at the centre of our solar system. 15 million degrees hot at its centre. It is 1.3 million times bigger than earth.

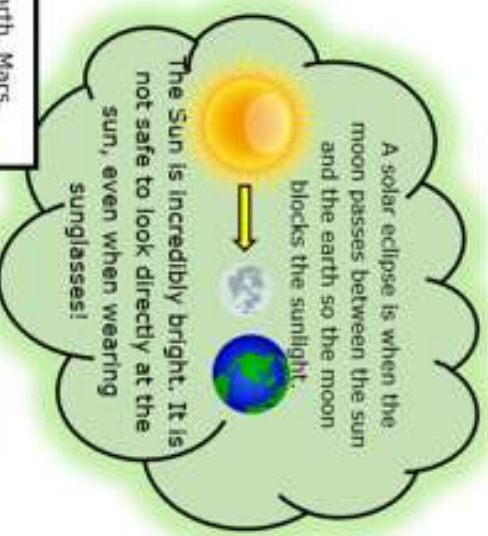


Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune (Pluto was reclassified as a dwarf planet in 2006)

## The Solar Eclipse

A solar eclipse is when the moon passes between the sun and the earth so the moon blocks the sunlight.

The Sun is incredibly bright. It is not safe to look directly at the sun, even when wearing sunglasses!



## Phases of the Moon



The Earth takes **24hours** to spin once on its axis.

(When the Earth faces the sun it is daylight and when it faces away from the sun it is night. It makes the sun appear to travel across the sky)

The moon takes **28 days** to orbit the Earth (A lunar month – see Phases of the Moon)

The Earth takes **365 days ¼ days** to orbit the sun

(Every 4 years there is a leap year due to the extra quarter – an extra day in February)

The Earth's tilt on its axis is what causes the 4 seasons. Sometimes it points towards the sun and other times it points away from the sun.



### Key Vocabulary

<b>Earth's Axis</b>	The imaginary line through the earth that extends from the North Pole to the South Pole
<b>Rotate</b>	To turn an object (e.g. Earth) around a centre point (e.g. Axis)
<b>Solar System</b>	The solar system consists of the Sun and everything that orbits, or travels around, the Sun.
<b>Star</b>	A star is an exploding ball of burning gas held together by gravity. Our sun is a star!
<b>Planets</b>	NASA say a planet must do three things: 1) It must orbit a star (in our cosmic neighborhood, the Sun). 2) It must be big enough to have enough gravity to force it into a spherical shape. 3) It must be big enough that its gravity cleared away any other objects of a similar size near its orbit around the Sun.
<b>Phases of the Moon</b>	The portion of the moon that we can see from Earth on any given night is called the moon's phase – these include: full moon, gibbous moon, half moon, crescent moon, new moon, waxing, waning
<b>Orbit</b>	An orbit is the path of an object around a particular point in space, for example the path the Moon takes around the Earth.
<b>Lunar Month</b>	A lunar month lasts around 29.5 days and starts with a new Moon – It takes the Moon 27.3 days to make a complete orbit around the Earth, but because the Earth is moving around the sun at the same time, it takes the moon 29.5 days to go through its eight different 'phases' of the lunar month.
<b>Satellite</b>	A satellite is a small object that orbits, or revolves around, a larger object in space.
<b>Revolve</b>	To move in a circular or curving course or orbit. The earth revolves around the sun.
<b>Spherical</b>	Shaped like a sphere.