ORMISTON SWB ACADEMY

Knowledge Organiser

Autumn Term 2026 – Year 8

Name: _____

Form: _____

Please remember to bring this into school everyday

Regular retrieval throughout a scheme of learning (daily, weekly and monthly) has been proven to reduce the rate of forgetting, supporting you to **retain more in long term memory**- making assessments/ exams way easier! The challenge for you as a student is to **make sure you use your knowledge organiser for each subject properly** to help you to know more and remember more over time. **We've created this walk through to support you** in using your knowledge organiser- for more support speak to your subject teachers

Using your Knowledge Organiser

You will use your knowledge organisers during lessons to engage and support with securing essential knowledge.
We expect you to use your knowledge organisers at home to support with independent study. Below you will find a step-by-step guide of 4 different revision strategies you can use at home. QR codes can be found at the back of this booklet which will link you to videos of these strategies in action.

Strategy 1- Look, cover, write, check – A really simple but effective way to use your knowledge organiser. Focus on a specific area of your knowledge organiser

1	2	3	4	5
Look	**Cover**	**Write**	**Check**	**Repeat**
Start with a **small section of knowledge** that you want to remember e.g *Henry VIII's wives in History.* Read through this section of the knowledge organiser (a couple of times if it helps)	Now **cover up this section** of your knowledge organiser with a post it note or scrap paper.	**Self quiz- what can you remember** and rewrite? Make sure you do this without looking back at your knowledge organiser.	**Remove the post it and check for accuracy**- did you get the key terminology? Was it spelt correctly? Was the order correct? If you drew a diagram, how much of this did you get correct? Most importantly- what did you miss out? Make your corrections in green pen.	After a short break away from your knowledge organiser repeat the look, cover, write, check **until you can recall all of the facts correctly without prompts.** This process can be used for any new knowledge that you want to acquire. It is good idea to do this on a regular basis, once a week.

Strategy 2-Self-Quizzing – You might try this after a few weeks of using your knowledge organiser. Get someone (or yourself) to set you 10 questions using your knowledge orgainser. These could be spellings, key words, equations etc to see how much you can remember! Record your score and see if you can beat your personal best each half term

1	2	3	4	5
Select topic	**Prepare the quiz**	**Answer it**	**Self check**	**Repeat**
Decide **which area you want to be quizzed** on (this might build up over time)	**Create 9 questions on that topic** or, ask somebody else to prepare 10 random questions for you.	**Set a time limit** (depending on the number of questions) and answer the questions without looking at your KO.	Now look at your KO to **self-check**- make a note of your score. Celebrate your successes and make a note of anything you missed or got incorrect.	**Return to this section** in 2/3 weeks- see if you can improve your score! Re-do those questions that you missed or got incorrect.

Using your Knowledge Organiser

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Strategy 3 – Blurting : A form of active recall whereby you retrieve knowledge from memory and 'blurt' it onto the paper before checking it

1	2	3	4	5
Select topic	**Write**	**Check**	**Self- Assess**	**Repeat**
Select a topic and write this in the centre of your page	**Write down (blurt) everything** you can remember onto your page. You **do not have to worry about getting information into the right order** at this point.	Use your knowledge organiser to **check that the information you have recorded is correct.**	**Amend** any information which is inaccurate and **add any missing information**	**Repeat this method with the same topic until you can confidently recall the essential knowledge** from memory recall.

Contents Page

Pages	Subject
5 – 6	English
7 – 21	Maths
22 – 30	Science
31 – 36	Computing
37 – 42	Geography
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47	PRE
48 – 52	Spanish
53	Art
54	Design Technology
55 – 56	Food Technology
57 – 58	Music

Year 8 – English – The Adventures of Sherlock Holmes

Characters

Sherlock Holmes – A fictional detective. He is known for his intelligence, introspection and dual nature. He is described as an 'observing machine' because of his ability to capture the essence of people with seemingly very little evidence.

Dr Watson – Holmes' former flatmate, a doctor and his closest companion. The stories are told from his perspective, working as Holmes' assistant.

Irene Adler – 'The woman'

King of Bohemia -

Jabez Wilson -

Vincent Spaulding/John Clay -

James Ryder -

Plot Summaries

Scandal in Bohemia

Holmes is visited by a mysterious character who is seeking Holmes' help. Holmes quickly deduces that the character is actually the _____ _____ _____. He needs Holmes's help as a woman is blackmailing him following a brief relationship some time ago. Now he wants to marry, he needs to ensure the woman's silence.

The Red-Headed League

Holmes is visited by a man who was given a job due to his fiery red hair! The job was well paid but ended suddenly and unexpectedly. He wants Holmes to investigate why this happened.

The Blue Carbuncle

Holmes investigates the mysterious disappearance of a rare and very valuable jewel. He starts his investigation by examining a hat and finding its owner.

Keywords

Deduction -

Scandal -

Periodical -

Introspective -

Dual Nature -

Fallible -

Infallible -

Background information

Sir Arthur Conan Doyle was the author of the Sherlock Holmes stories.

Sherlock Holmes' fictional home was 221B Baker Street, which is now a museum of Doyle's life and work.

Doyle's short stories were published individually in *The Strand Magazine* **periodical** and then collected to form *The Adventures of Sherlock Holmes* short story collection in 1892.

Before he became a writer, Doyle studied medicine.

The stories were written when the police force had just been set up and they reflect this change

Year 8 English Knowledge Organiser – Grammar

Grammar Focus	Key Knowledge	Example	My Example
Sentence	A complete sentence must contain a subject and a verb. Sentence length does not matter.	**She ran.**	
Fragment	A fragment is an incomplete sentence. It is missing a subject or a verb.	~~Running quickly.~~ **He was running quickly.**	
Subject	The subject is the person, place, thing, or idea doing the action. It can be one word or a phrase.	The **brave soldier** fought.	
Pronouns	A pronoun is a word that replaces a specific noun (person, place, or thing) to avoid repetition and make sentences clearer.	I, you, he, she, we, they, my, yours, his, hers, ours, theirs	
Verbs	A verb tells us what the subject is doing or being.	The brave soldier **fought**.	
Nouns	Common nouns name general things. Proper nouns name specific things and use capital letters.	The **assessment** will be on **Tuesday**.	
Adjectives	Adjectives describe nouns and add detail.	The **brave** soldier fought.	
Adverbs	Adjectives describe how, when, where, or how often something happens. They often describe verbs.	He ran **quickly**.	
Prepositions	Prepositions show position, movement, or time. They usually come before a noun.	**Under** the table. **After** the battle.	
Conjunctions	Conjunctions join words, phrases, or clauses together.	And, but, because, so	

Year 8 – Maths – Unit A2 – Manipulating and simplifying expressions 1

This tile represents the number 1:

This tile represents any number:

We can think of it as representing an *unknown number that can change its value*.
We call this a variable number or variable for short.

When we hold the tile, or work with it on-screen, it won't change size, but we know that its value can change.

My mathematical journey

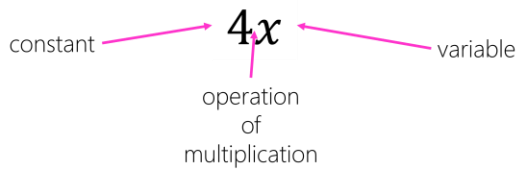
What do I need to remember from before?
- Exponents (NP4)
- Directed numbers (NP6)
- Expressions (A1)

What will I learn about in this unit?
- Adding and subtracting expressions
- Multiplying and dividing expressions
- Index laws
- Forming expressions

Where does this lead?
- Expanding and factorising brackets (A3)
- Solving equations (A4)
- Quadratic expressions (A11)

Information to recall from unit A1

We learnt about expressions, which contain variables, constants and operations.



Remember, $4x$ means "4 lots of a number", so we could write $4 \times x$ or $4 \cdot x$ but we don't write any symbol.

Everyone in mathematics knows not to write the multiplication symbol when working in algebra, so it doesn't get confusing.

We learnt about terms.

$6x + 8y$

These are terms.

They are separated by the + operator.

$\frac{a}{2} - 3$

These are terms.

They are separated by the − operator.

$6x + 8y$

These are both positive terms.

The terms are $6x$ and $8y$.

We learnt about like terms and unlike terms.

$4x + 3y + 2x + 5 + 6y + 2$

is like

is like

is like

is unlike

is unlike

is unlike

$\frac{a}{2} - 3$

$\frac{a}{2}$ is a positive term.

3 is a negative term, because subtracting 3 is the same as adding $^{-}3$.

The terms are $\frac{a}{2}$ and -3.

Adding and subtracting expressions

We can add expressions.

$2x + 3y$ + $7y + x$ = $3x + 10y$

If you see a bracket around an expression, it can help you to think of it separately to everything else.

$$(2x + 3y) + (7y + x) = 3x + 10y$$

Expression 1 + Expression 2 = their sum

We can subtract expressions.

$(2x + 3y)$ − $(7y + x)$

Remember that subtraction is the same as adding the inverse.

$(2x + 3y)$ + $(-7y - x)$

$= x - 4y$

Keyword/ Skill	Definition/Tips
Variable	A number that can change its value, represented by a letter such as x or a green tile when we do not know its value.
Constant	A number that does not change, is fixed.
Operation	Something that takes input numbers and turns them into output numbers, such as +,-,x and ÷
Expression	A collection of constants, variables and operations.
Term	The parts of an expression separated by + or -.
Exponent	Is a count of how many variables to multiply together. Usually, they are written as x^n.

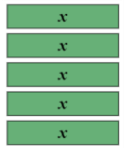
Year 8 – Maths – Unit A2 – Manipulating and simplifying expressions 1

Multiplying expressions:

We can multiply variables by constants.

$5 \times x$

$5 \cdot x$

5 lots of x →  → $5x$

$$5 \times x = 5x$$

Multiplication is commutative.

$$x \times 5 = 5 \times x$$

$$5x$$

We always write the constant before the variable.

$5 \times x \times 2$

$= 10x$



$3y \times 4$

$= 12y$

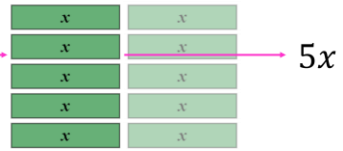


Dividing Expressions:

We can divide variables by constants.

$10x \div 2$

$\frac{10x}{2}$

Half of $10x$ →  → $5x$

$$\frac{10x}{2} = 5x$$

Repeated multiplication and index notation (exponents):

We learnt in NP4 that we can use index notation to write repeated multiplication. $2 \times 2 \times 2 \times 2 \times 2 = 2^5$

We can also use index notation with variables. $x \cdot x \cdot x \cdot x \cdot x = x^5$

Multiplication index law

$x^2 \times x^3 = x^5$ means we have a total count of 5 xs multiplied together.

$y^4 \times y^5 = y^9$ means we have a total count of 9 xs multiplied together.

When we multiply powers with the same base, we can add their exponents.

Repeated multiplication

$(x^3)^6 = x^{18}$ means we had a count of three xs multiplied together and we repeated six times, to give a count of eighteen xs multiplied together.

$(y^4)^3 = y^{12}$ means we had a count of four ys multiplied together and we repeated three times, to give a count of twelve ys multiplied together.

When we find a power of a power, we can multiply the exponents together.

Division index law

$\frac{x^3}{x^2} = x$ means we had a count of three xs multiplied together, but we 'undid' two of them, leaving only one.

$\frac{y^7}{y^4} = y^3$ means we had a count of seven ys multiplied together, but we 'undid' four of them, leaving three.

When we divide powers with the same base, we can subtract their exponents.

Simplifying expressions with more complex terms

Now we can multiply two expressions together.

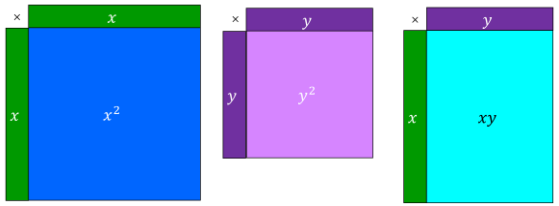
$$2x \times 3y = 2 \cdot x \cdot 3 \cdot y = 6xy$$

$$2x \times 3x = 2 \cdot x \cdot 3 \cdot x = 6x^2$$

$$2x \times 3x \times y = 2 \cdot x \cdot 3 \cdot x \cdot y = 6x^2y$$

Simplifying more complex expressions:

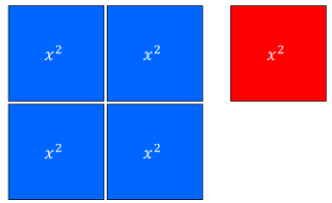
We can use algebra tiles to see other expressions.



All of these expressions, x^2, y^2 and xy are unlike and cannot be collected.

Zero pairs still work.

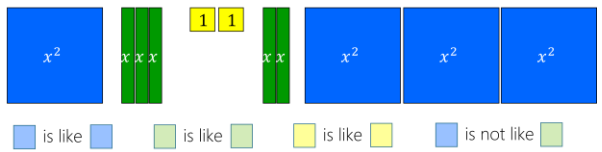
$4x^2 - x^2 = 3x^2$



We can use the x^2 tile to help us simplify more complex expressions.

We know that we can only add together like terms.

$x^2 + 3x + 2 + 2x + 3x^2 = 4x^2 + 5x + 2$



Forming expressions:

Whenever we do not know the value of a number, we can write a letter in its place.

We call this letter an unknown.

Writing unknowns works in the same way as writing numbers.

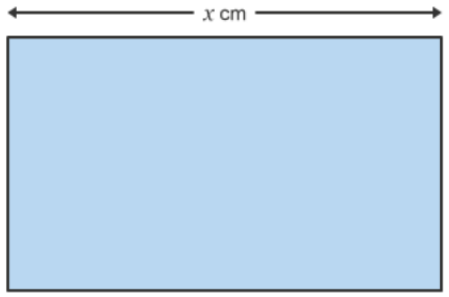
Example 1

Pens are sold in packs of 6 and rulers are sold in boxes of 10.
A teacher buys *p* packs of pens and *r* boxes of rulers.
Write an expression for the total number of pens and rulers bought.

There are 6 pens in each pack, so the number of pens bought is $6\times p$ which is $6p$.
There are 10 rulers in each box, so the number of rulers bought is $10\times r$ which is $10r$.
The number of pens and rulers bought is $6p + 10r$

Example 2

A rectangle has a width of x cm.
The height is 3 cm less than the width.
Write an expression for the perimeter of the rectangle.



The perimeter is found by adding together the lengths of the sides of a shape.
The width of the rectangle is given as x cm.
The height of the rectangle is 3 less than the width: $x-3$ cm
Perimeter = $x+x+(x-3)+(x-3)$
Perimeter = $(4x-6)$ cm

Example 3

Abi is x years old.
Bob is twice as old as Abi.
Cam is 3 years older than Bob.
Form an expression for Bob and Cam's ages in terms of x.

Bob → $2 \times x$
$2x$

Cam → Bob $+3$
$2x + 3$

Year 8 – Maths – Unit A3 – Expanding & Factorising

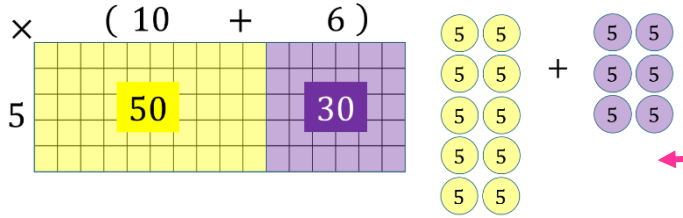
My mathematical journey

What do I need to remember from before?	What will I learn about in this unit?	Where does this lead?
Area models for multiplication (NP3)	Expanding expressions with brackets	Solving equations (A4)
Collecting like terms (A2)	Factorising expressions as the opposite of expanding	Formulae (A5)
	Expanding two brackets	Inequalities (A8)
		Quadratic expressions (A11)

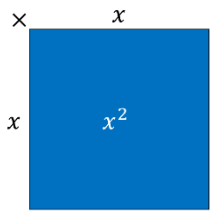
Distributive Property

$5 \times 16 = 5 \times (10 + 6) = 5 \times 10 + 5 \times 6$

We have learnt about the distributive property in NP3.



We can use the distributive property with **constants** and with **variables**.



When terms are multiplied, they become squared. We show this with a power/index of 2:

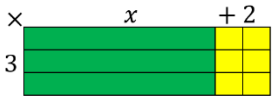
$$x \times x = x^2$$

Expanding brackets

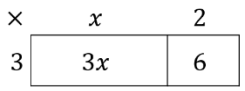
We can use the **distributive property** to expand brackets.

Here is $3(x + 2) = 3x + 6$.

Tiles

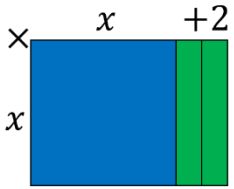


Area model

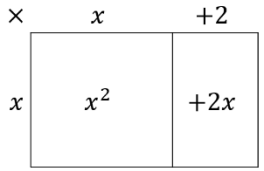


×	x	2
3	$3x$	6

Tiles

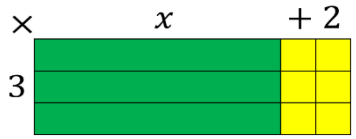


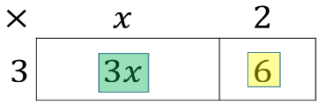
Area model



×	x	2
x	x^2	$2x$

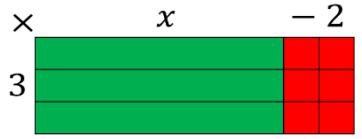
We see that $x(x + 2) = x^2 + 2x$

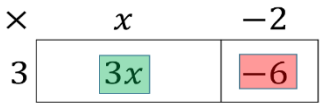




Factorised form: $3(x + 2) = 3x + 6$ Expanded form.

Factorising is the **inverse** of expanding





Factorised form: $3(x - 2) = 3x - 6$ Expanded form.

Keyword/ Skill	**Definition/Tips**
Variable	A number we do not know yet, it is usually represented by a letter or a green tile.
Constant	A fixed value, a number that does not change.
Term	Either a single number or a **variable,** such as 4 or n or 3a or 6y.
Expression	A mathematical statement written using **symbols**, **numbers** or **letters**.
Simplifying Expressions	**Collecting 'like terms'.** Be careful with negatives. x^2 and x are not like terms.
Expand	When we **multiply** a **term** across a bracket, e.g. 3(a + 2) = 3a + 6
Factorise	The **inverse** of **expand**. When we divide an **expression** by all **common factors** or **terms**, e.g. 6g + 4 = 2(3g + 2) and $a^2 - 2a = a(a - 2)$

Year 8 – Maths – Unit A3 – Expanding & Factorising

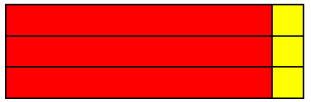
Expanding 2 sets of single brackets

We can expand 2 sets of brackets and then simplify the result.

$$2(x+3)-3(x-1)$$

Remember: subtraction is adding the inverse, so $x-1$ is multiplied by 3 *and* flipped so that we can add it in.





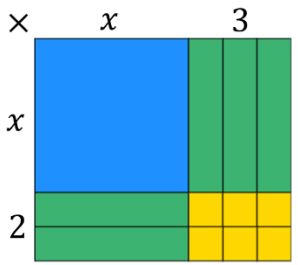
Be very careful when there is a subtraction between multiplications.

We have $2x+6-3x+3$ which simplifies to $9-x$

Expanding double brackets

We can expand double brackets and then simplify the result.

$$(x+2)(x+3)$$

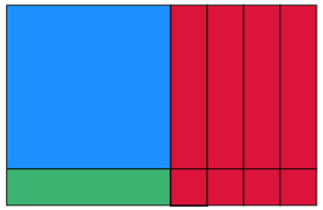


×	x	3
x		
2		

Factorised form (multiplication)

$$(x+1)(x-4)$$

Tiles



Area model/grid

×	x	-4
x	x^2	$-4x$
1	x	-4

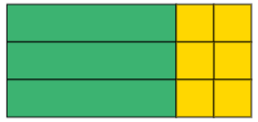
Expanded form (sum)

$$x^2-3x-4$$

Factorising

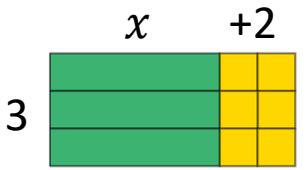
If we have an expression arranged in a rectangle, we can see what multiplication might have produced it.

Here is the expression $3x+6$ in tiles and an area model.



×	$3x$	6

We can see that the expression $x+2$ has been multiplied by the constant 3.



×	x	+2
3	$3x$	6

The factorised form of $3x+6$ is $3(x+2)$

$4x+8=1(4x+8)$ ← Not very interesting. We can do this with any expression.



$4x+8=2(2x+4)$ ← Factorised. We have found that $4x$ and 8 have a *common factor* of 2.



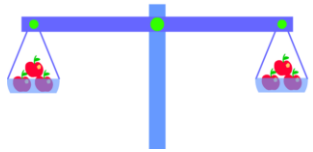
$4x+8=4(x+2)$ ← Fully factorised. We have found the *highest common factor* of $4x$ and 8, which is 4.



Year 8 – Maths – Unit A4 – Linear Equations

Solving Equations

When we are solving equations, we need to figure out the value of the variable (usually a letter) in the equation.



Variable

$4x - 7 = 5$

Equations work like a weighing scale; it must always be balanced/equal. If I add or remove something from one side of the equals, I need to do the same to the other side to keep it balanced/equal.

Balancing Equations

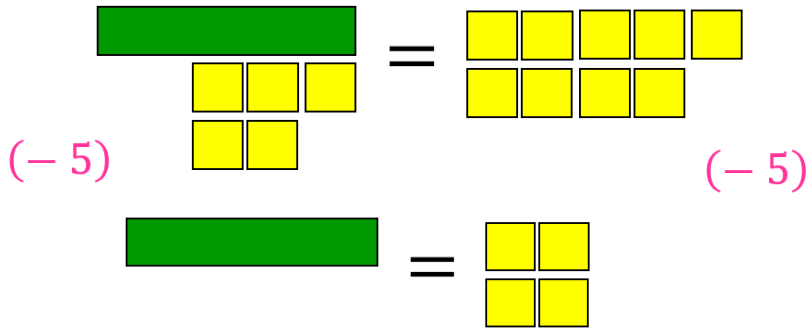
This equation has remained balanced, because both sides of the equals have been changed in the same way each time.

$$6 + 2 = 9 - 1$$

$(+1)$ $6 + 2 + 1 = 9 - 1 + 1$ $(+1)$

$(\div 2)$ $\frac{6+2+1}{2} = \frac{9-1+1}{2}$ $(\div 2)$

We can do the same with pictorial representations of equations



And using algebraic symbols

$x + 5 = 9$

(-5) (-5)

$x = 4$

My mathematical journey

What do I need to remember from before?	What will I learn about in this unit?	Where does this lead?
Equality & inverse operations (NP2, NP3, NP4)	Mathematical equality	Rearranging formulae (A5)
Solving equations (A1)	Balancing an equation	Equations of a line (A6)
Simplifying expressions (A2)	Solving all types of linear equations	Quadratic equations (A12)
Expanding brackets (A3)		Using equations to solve geometry and probability problems (GM2 – GM11, SP7)

Keyword/Skill	**Definition/Tips**
Variable	A symbol for a number we do not know yet, it is usually a letter.
Term	Either a single number or a **variable**, such as 4 or n or 3a or 6y.
Expression	A mathematical statement written using **symbols**, **numbers** or **letters**.
Equation	A statement showing that **two expressions are equal.**
Formula	Shows the **relationship** between **two or more variables.**
Simplifying Expressions	**Collect 'like terms'.** Be careful with negatives. x^2 and x are not like terms.
Expand	When we **multiply** a **term** across a bracket, e.g. 3(a + 2) = 3a + 6

Year 8 – Maths – Unit A4 – Linear Equations

Solving Equations

We can sometimes solve some equations using our knowledge of number facts and calculations.

E.g. $3 + x = 10$

What would you need to add to 3 to get 10?

$x = 7$

E.g. $3y = 15$

What number, when multiplied by 3 equals 15?

$y = 5$

E.g. $z - 9 = 20$

What number, when you subtract 9 from it equals 20?

$z = 29$

However, with more complex equations, we need to use **balancing** to solve them.

e.g. $2x + 12 = 28$

-12 → $2x = 16$ → ÷2 → $x = 8$

We identify the operations that can be applied to both sides of the equals to get the unknown value on its own.

e.g $10x - 5 = 33$

+5 → $10x = 38$ → ÷10 → $x = 3.8$

Unknown values don't have to be integers.

Unknowns on both sides

$3x - 4 = 7x + 7$

$-3x$ → $-4 = 4x + 7$ → -7 → $-11 = 4x$ → ÷4 → $-\frac{11}{4} = x$

Solving Equations with fractions and brackets

If your unknown value is the denominator of a fraction, your first step to maintain balance is to multiply by the denominator.

$\frac{12}{y} = 2$

× y → $12 = 2y$ → ÷2 → $6 = y$

If there are brackets, expand them first

$2(x + 4) = 2$

$2x + 8 = 2$

Then continue to solve using balancing.

Keyword/Skill	Definition/Tips
Variable	A symbol for a number we do not know yet, it is usually a letter.
Term	Either a single number or a **variable,** such as 4 or n or 3a or 6y.
Expression	A mathematical statement written using **symbols**, **numbers** or **letters**.
Equation	A statement showing that **two expressions are equal.**
Formula	Shows the **relationship** between **two or more variables.**
Simplifying Expressions	**Collect 'like terms'.** Be careful with negatives. x^2 and x are not like terms.
Expand	When we **multiply** a **term** across a bracket, e.g. 3(a + 2) = 3a + 6

Year 8 – Maths – Unit NP8 – Fractions, Decimals, & Percentages

Terminating & Recurring Decimals

Some fractions have equivalent decimals with a fixed, or finite, number of decimal places. These are called terminating decimals.
Example:

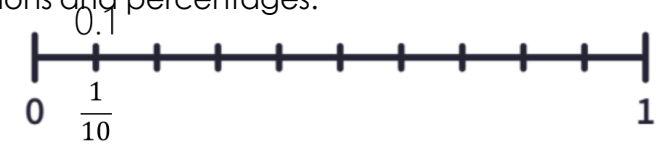
$\frac{1}{5} = 0.2$ $\frac{7}{100} = 0.07$

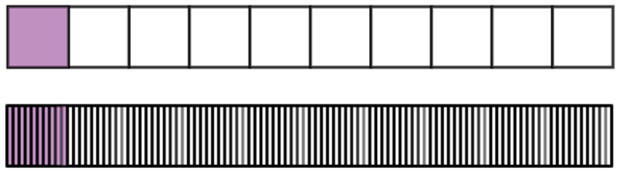
Other fractions have equivalent decimals with an infinite number of decimal places.
Example:

$\frac{1}{3} = 0.333333\ldots$ $\frac{4}{33} = 0.12121212\ldots$

Fractions, Decimals, Percentages

We can think about parts of a whole in four different ways: fractions, decimals, divisions and percentages.



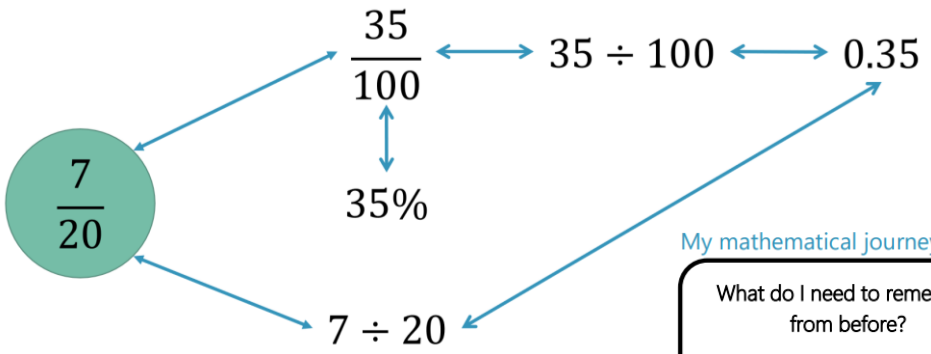


$\frac{1}{10} = 1 \div 10 = 0.1$

$\frac{1}{10} = \frac{10}{100} = 10\%$

0.1, $\frac{1}{10}$, 10%, $1 \div 10$ are all equivalent.

Here is $\frac{7}{20}$ represented in the four different ways:



My mathematical journey

What do I need to remember from before?

- Number lines (NP1, 2, 3, and 6)
- Decimals (NP1, 2, and 3)
- Fractions (NP7)
- Finding a fraction of a number (NP7)

What will I learn about in this unit?

- Equivalent fractions, decimals and percentages
- Terminating and recurring decimals
- Working with percentages

Where does this lead?

- Proportional reasoning (NP10)
- Contextual graphs (A9)
- Percentage change (NP10, NP13)
- Recurring decimals to fractions (NP14)

Keyword/Skill	Definition/Tips
Decimal	"Decimal number" is a number that uses a decimal point followed by digits that show a value smaller than one.
Percentage	Parts per 100. The symbol is %. Example: 25% means 25 per 100.
Inverse	Opposite in effect. The reverse of. The inverse of adding 9 is subtracting 9.
Fractions	The top number (the numerator) says how many parts we have. The bottom number (the denominator) says how many equal parts the whole is divided into.
Mixed	A whole number and a fraction combined into one "mixed" number.
Increase	Make something bigger in size.
Decrease	Make something smaller in size.
Improper	A fraction where the numerator (the top number) is greater than the denominator (the bottom number).
Recurring	A decimal number with a digit (or group of digits) that repeats forever.
Integer	A number with no fractional part (no decimals). A whole number.
Terminating	A decimal number that has digits that end. Example: 0.25 (it has two decimal digits)
VAT	**Value-added tax** (**VAT**) is a tax added onto the cost of goods by the government.
Multiplier	The number that you are multiplying by.
Profit	Income minus all expenses.
Loss	A loss occurs when an item is sold for less than it cost.
Tenths	One part in ten equal parts. Example: one tenth of 50 is 5
Hundredths	One part in a hundred equal parts. Example: 1 cent is a hundredth of 1 dollar
Thousandths	One part in a thousand equal parts: Example: 1 meter is a thousandth of 1 kilometre.

Year 8 – Maths – Unit NP8 – Fractions, Decimals, & Percentages

Percentages of Amounts

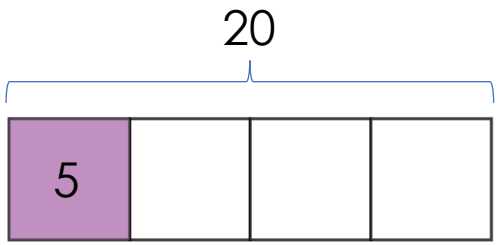
We have seen that percentages are numbers showing parts of a whole.

25% is the same as 0.25 or $\frac{1}{4}$

Percentages can also be operators.

We can find 25% of a number, just like finding $\frac{1}{4}$ of a number.

Example:
$\frac{1}{4}$ of 20 = 5



25% of 20 = 5

Decimal Multipliers

To find 10% of 500 we can split 500 into 10 parts: $500 \div 10 = 50$.

We could also write 10% as a decimal, 0.1, and multiply: $500 \times 0.1 = 50$.

0.1 is called a decimal multiplier.

Decimal multipliers are sometimes more useful for finding percentages.

e.g. Find 26% of 500.

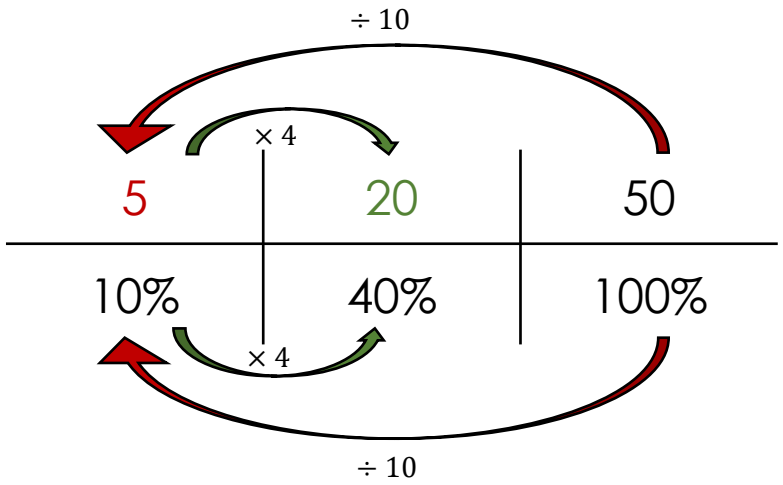
$0.26 \times 500 = 130$

Ratio Tables

When we find percentages of a number, we are multiplying (and dividing).
This means we are stretching (or scaling).

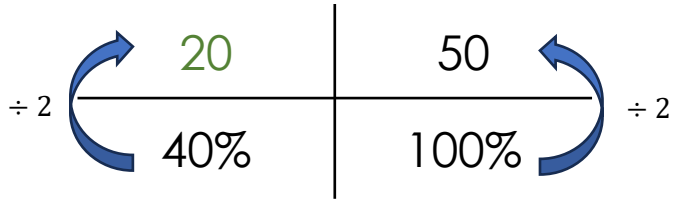
The best way to represent this is through a ratio table.

Find 40% of 50



You can also scale vertically using ratio tables which will sometimes be easier.

Find 40% of 50



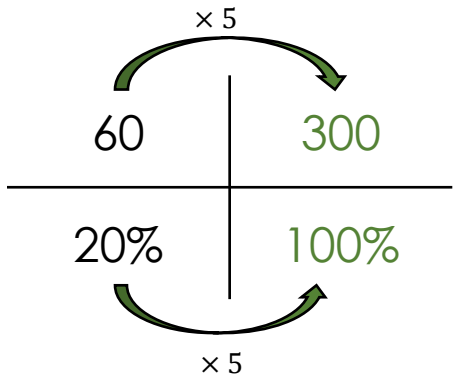
Keyword/Skill	Definition/Tips
Decimal	"Decimal number" is a number that uses a decimal point followed by digits that show a value smaller than one.
Percentage	Parts per 100. The symbol is %. Example: 25% means 25 per 100.
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Tenths	One part in ten equal parts. Example: one tenth of 50 is 5
Hundredths	One part in a hundred equal parts. Example: 1 cent is a hundredth of 1 dollar
Thousandths	One part in a thousand equal parts: Example: 1 meter is a thousandth of 1 kilometre

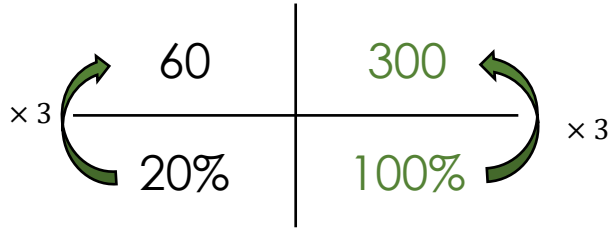
Year 8 – Maths – Unit NP8 – Fractions, Decimals, & Percentages

Finding a Number Given the Percentage

Using ratio tables can also help us to find the whole parts when given a percentage.

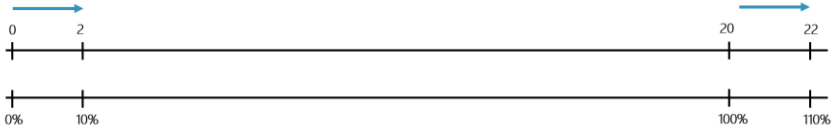
20% of a number is 60. We are trying to find 100%. The important thing here is realising we are not starting with 100%, we are trying to find 100%. There are multiple ways you can do this. We will look at this horizontally and vertically:





Percentage Increase/Decrease

Increase 20 by 10%
Look at this using a double number line:

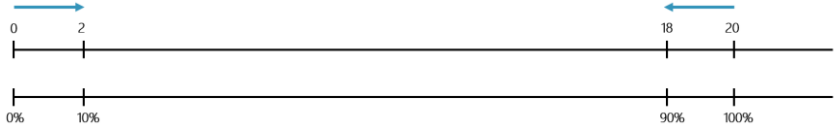


We can see that increasing 20 by 10% is the same as finding 110%.

Example: Increase 80 by 20%

16	80	96
20%	100%	120%

Decrease 20 by 10%
Look at this using a double number line:



We can see that decreasing 20 by 10% is the same as finding 90%

Example: Decrease 80 by 20%

16	80	64
20%	100%	80%

Keyword/Skill	Definition/Tips
Decimal	"Decimal number" is a number that uses a decimal point followed by digits that show a value smaller than one.
Percentage	Parts per 100. The symbol is %. Example: 25% means 25 per 100.
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Thousandths	One part in a thousand equal parts: Example: 1 meter is a thousandth of 1 kilometre

Year 8 – Maths – Unit NP9 – Estimation and Use of a Calculator

Press **SHIFT** to access the blue functions above buttons

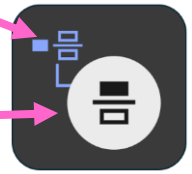


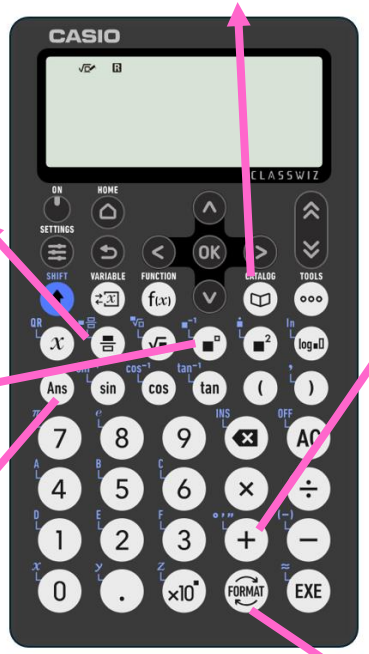
recurring decimals



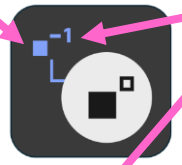
mixed numbers

proper/improper fractions





Reciprocal





ANS
Use your current answer in a new calculation – great for iteration

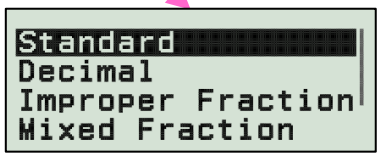
We can work with time on our calculator using this button.
We enter time in the form
HOURS° MINUTES° SECONDS°





Hours Minutes Seconds





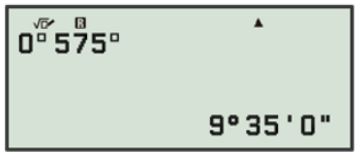
Convert 575 minutes to hours and minutes

Type 0 ⬆ + This represents 0 hours

Type 5 7 5 ⬆ + This represents 575 minutes

If there are 0 seconds you do not need to put these in.

Press EXE



This automatically changes the value to hours and minutes

The answer reads 9 hours, 35 minutes, 0 seconds

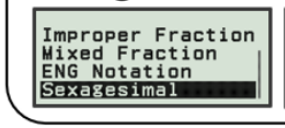
Convert $2\frac{1}{4}$ hours to hours and minutes

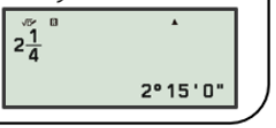
Type in mixed number and press EXE



Method 1

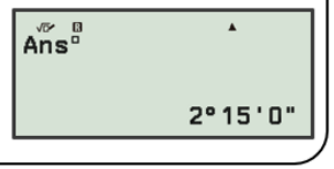
Press FORMAT and chose sexagesimal.





Method 2

Press ⬆ +



Both answers read 2 hours, 15 minutes, 0 seconds

My mathematical journey

What do I need to remember from before?	What will I learn about in this unit?	Where does this lead?
Number lines: single and double (NP1 – NP8)	Using my calculator accurately and efficiently	Solving complex problems using the calculator (all future units)
Approximating numbers (NP1 – NP7)	Approximating numbers	Checking answers by estimating (all future units)
Inequalities (NP1)	Estimating answers to calculations	Problems with bounds (NP14)
Fractions (NP7)	Error intervals for rounding	
Directed numbers (NP6)	Truncation	

Year 8 – Maths – Unit NP9 – Estimation and Use of a Calculator

Keyword/Skill	Definition/Tips
Bound (Upper or Lower)	The upper and lower limits within which a rounded or approximate number could lie.
Error interval	An inequality statement showing the range of values a number could be.
Surd	A root that does not have an integer or fraction answer, such as $\sqrt{2}$ or $\sqrt[3]{10}$
Recurring decimal	After the decimal point, values are repeated infinitely, sometimes all the same value, sometimes a pattern of values. We write a dot above these repeated values.

Estimating Calculations

When we estimate, we work something out roughly or approximately.

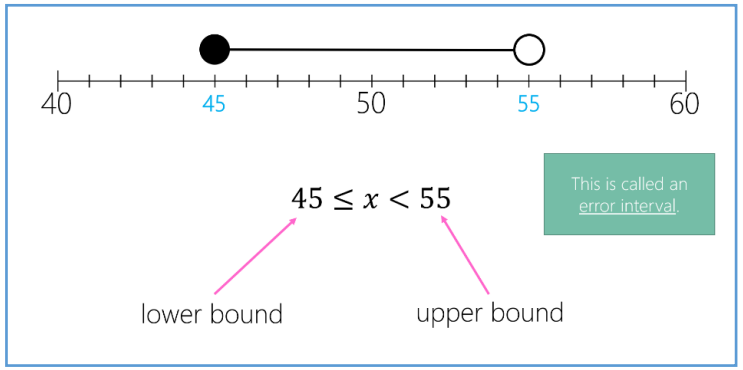
We can estimate the value of a calculation by approximating all the numbers in the calculation.

The simplest way to do this is to round all the numbers to 1 significant figure (s.f.).

Estimate $\frac{78+171.4}{42}$
78 rounds to 80
171.4 rounds to 200
42 rounds to 40
So our approximation is
$\frac{80+200}{40} = \frac{280}{40} = 7$

Sometimes we don't round to 1 significant figure because it doesn't make the calculations easier.
We also look for numbers close by that are easy to work with.

Estimate $\sqrt{46} + \sqrt{91}$
46 rounds to 50 to 1 s.f., but this doesn't help us.
So we round to $\sqrt{49}$ because we know this is 7.
Similarly, $\sqrt{91}$ rounds to $\sqrt{100}$
So our approximation is $7 + 10 = 17$



Here are some useful facts to help with division by decimals:

Decimal	Equivalent Fraction	Dividing by decimal	Equivalent multiplication
0.5	$\frac{1}{2}$	$\div 0.5$	$\times 2$
0.2	$\frac{1}{5}$	$\div 0.2$	$\times 5$
0.1	$\frac{1}{10}$	$\div 0.1$	$\times 10$
0.25	$\frac{1}{4}$	$\div 0.25$	$\times 4$
0.125	$\frac{1}{8}$	$\div 0.125$	$\times 8$

When we need to divide by a decimal, we can use an equivalent multiplication.

Estimate $\frac{1236+475}{0.53}$
1236 rounds to 1000
475 rounds to 500
0.53 rounds to 0.5
So our approximation is $\frac{1000+500}{0.5} = \frac{1500}{0.5} = 1500 \times 2 = 3000$

Symbol	$\approx$	$<$	$\leq$	$>$	$\geq$
How to read it	is approximately equal to	is less than	is less than or equal to	is greater than	is greater than or equal to

Year 8 – Maths – Unit NP10 – Proportional Reasoning

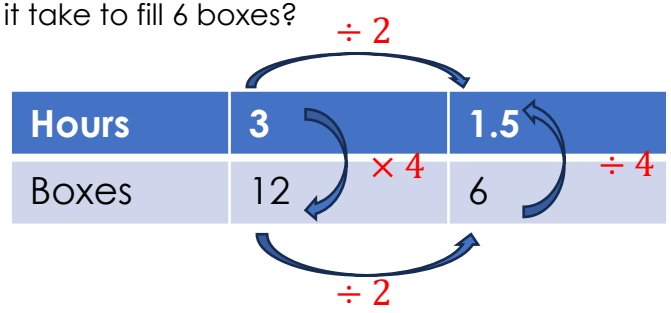
My mathematical journey

What do I need to remember from before?	What will I learn about in this unit?	Where does this lead?
Multiplicative reasoning (NP3)	Direct and inverse proportion	Ratio (NP11)
Fractions (NP7)	Proportional reasoning in various contexts	Advanced proportion and rates of change (NP13)
Double number lines and ratio tables (NP8)	Percentage changes and decimal multipliers	Contextual graphs (A9)
Percentages (NP8)		Probability (SP3)

Direct Proportion means as one quantity increases or decreases, so does the other one. Example: The more hours you work, the more you will earn.

Example 1 – solving numerically using ratio tables

It takes 3 hours to fill 12 boxes with food. How long does it take to fill 6 boxes?

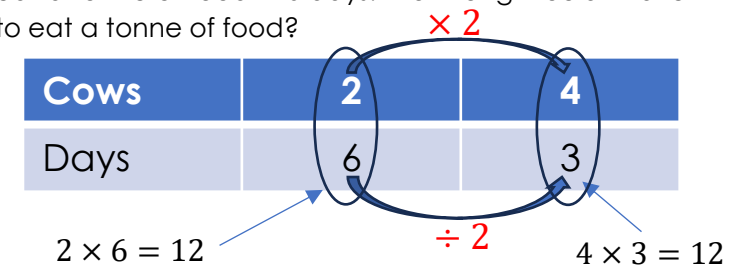


You can use any of the relationships shown in the table above to find the answer, 1.5 hours.

Inverse Proportion means as one quantity increases, the other decreases.
Example: If one quantity doubles the other is halved. If it takes 4 people 5 hours to dig a hole, it would take 8 people 2.5 hours.

Example 1 – solving numerically using ratio tables

2 cows eat a tonne of food in 6 days. How long would it take 4 cows to eat a tonne of food?



You can use any of the relationships shown in the table above to find the answer, 3 days.

Using proportion to scale up/down

In the table below is a recipe to make 10 flapjacks.

	10
Oats	80g
Butter	60g
Syrup	30ml
Sugar	36g

We can use proportion to scale this recipe up or down to make more or less flapjacks

To make 5

÷ 2

	10	5
Oats	80g	40g
Butter	60g	30g
Syrup	30ml	15ml
Sugar	36g	18g

To make 60

× 6

	10	60
Oats	80g	480g
Butter	60g	360g
Syrup	30ml	180ml
Sugar	36g	216g

To make 15

÷ 2 × 3

	10	5	15
Oats	80g	40g	120g
Butter	60g	30g	90g
Syrup	30ml	15ml	45ml
Sugar	36g	18g	54g

Year 8 – Maths – Unit NP10 – Proportional Reasoning

Best Buys

Proportional reasoning can be used to compare prices and work out which items are the best value for money.

Example

In the table below you can see two offers for footballs.

In order to compare these two deals, we need a common factor or multiple of items in each deal.

Offer A	Offer B
3 footballs	7 footballs
£12	£35

The only common factor of 3 and 7 is 1, so we can work out how much 1 football is worth in each deal

OR

A common multiple of 7 and 3 is 21, so we could work out how much it would cost to buy 21 footballs with each offer , and decide which one is the best value.

In both cases you can see that Offer A is the best value



Keyword/Skill	Definition/Tips
Best Buy	The cheapest price per item/unit OR the highest number of units/price .
Direct Proportion	2 variables change at the same rate
Unitary Method	Finding the cost of a single unit OR finding the amount of units per eg. £1
Exchange Rate	The price of one currency in terms of another currency. Eg. £1 = $1.25 For each pound I have to spend I can buy $1.25
Increase	To make something bigger in size or amount.
Decrease	To make something smaller in size or amount.

Exchange Rates and Currency Conversion

An **exchange rate** is the rate at which the money of one country can be exchanged for the money of another country.

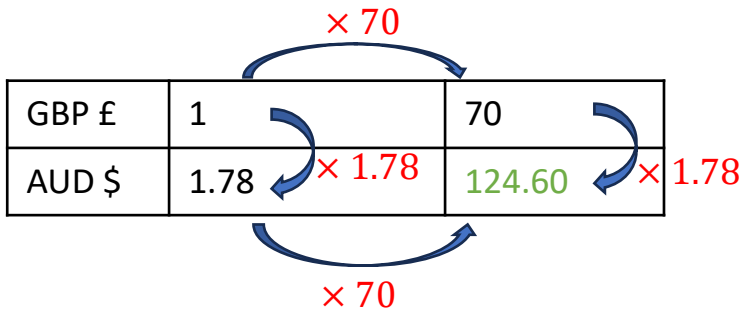
In the United Kingdom, our currency is the **British pound** and is referred to as **GBP.** The table below shows some other common abbreviations

Symbol	Country	Currency
USD	United States	Dollar
EUR	Euro Zone	Euro
GBP	Great Britain	Pound
JPY	Japan	Yen
CHF	Switzerland	Franc
AUD	Australia	Dollar
NZD	New Zealand	Dollar
CAD	Canada	Dollar

Again, we can use ratio tables to convert between currencies.

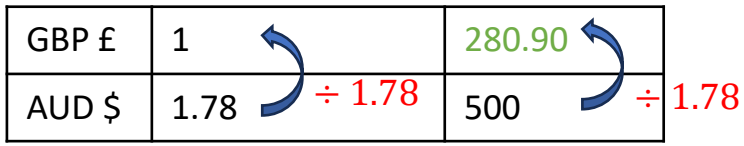
Example 1

Given the exchange rate between GBP and AUD is £1=$1.87, convert £70 into AUD.



Example 2

Given the exchange rate between GBP and AUD is £1=$1.87, convert $500 into GBP.



Answers rounded to 2 decimal places as it is currency.

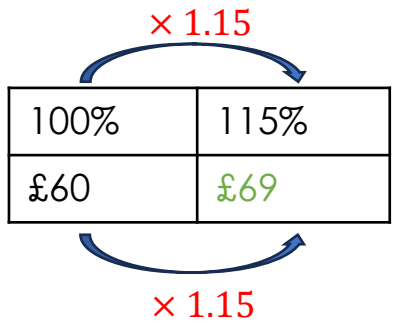
Year 8 – Maths – Unit NP10 – Proportional Reasoning

Percentage Increase and Decrease

Ratio tables can also be used to help calculate percentage increases and decreases.

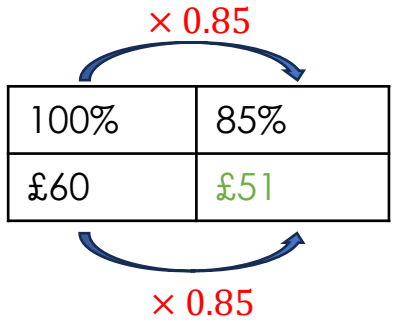
Example 1

Increase £60 by 15%



Example 2

Decrease £60 by 15%

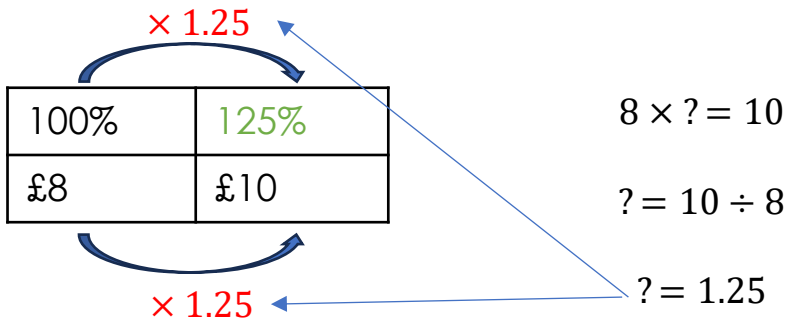


Percentage Change

Using the same ratio tables, we can calculate the percentage change that has taken place.

Example 1

Joe has had a pay rise. Before the pay rise he earned £8 per hour, he now earns £10 per hour.
What is the percentage increase?



$8 \times ? = 10$

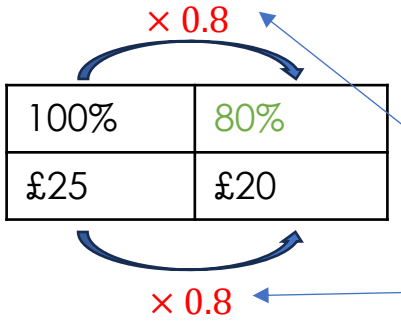
$? = 10 \div 8$

$? = 1.25$

This means there has been a 25% increase.

Example 2

In a sale a pair of shoes costs £20. Before the sale they cost £25.
What is the percentage change?



$25 \times ? = 20$

$? = 20 \div 25$

$? = 0.8$

This means there has been a 20% decrease.

Keyword/Skill	Definition/Tips
Best Buy	The cheapest price per item/unit OR the highest number of units/price .
Direct Proportion	2 variables change at the same rate
Unitary Method	Finding the cost of a single unit OR finding the amount of units per eg. £1
Exchange Rate	The price of one currency in terms of another currency. Eg. £1 = $1.25 For each pound I have to spend I can buy $1.25
Increase	To make something bigger in size or amount.
Decrease	To make something smaller in size or amount.

Year 7 & 8 Science Knowledge Organiser – BOM8: Purity

LESSON 1&2 – PURITY AND INVESTIGATING PURE WATER

Key Terms

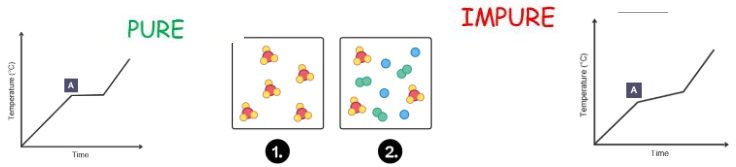
Determine – To find out/ establish

Pure – substance made of only one type of atom/molecule

Impure - Also called a mixture - A substance that contains more than one element or compound not chemically bonded together.



- A pure substance will boil at a specific temperature e.g: pure water boils at 100°C.
- Impure substances boil over a range of temperatures e.g: salt water will boil between 100 – 102°C.

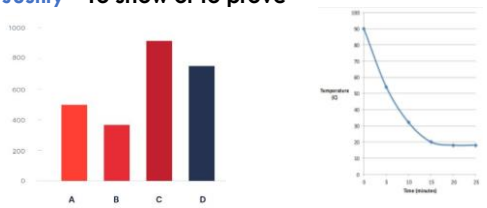


- Investigating pure water: pour solution into a beaker. Measure the temperature of the solution. Heat the solution using a Bunsen burner. Measure and record the temperature when the solution starts to boil. Repeat and take a mean. Record the boiling point of that solution.

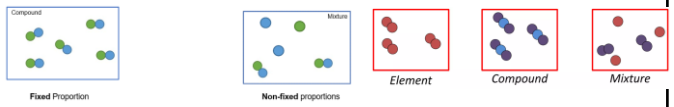
LESSON 3 – MIXTURES

Mixture - More than one type of element or compound that are not chemically combined.

Justify – To show or to prove



- Mixtures are impure.
- Types of atom involved are in non-fixed proportions.



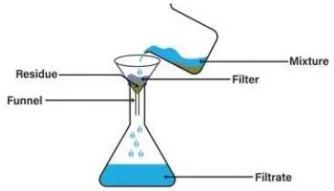
- Data can be presented as a bar chart or a line graph.
- Bar chart = One set of continuous/ discrete data (numbers) and one set of categoric data (groups)
- Line graph = Two set of continuous/ discrete data (numbers)

LESSON 4 – FILTRATION

Insoluble – Not able to dissolve

Fluid – a substance that has no fixed shape and can flow (liquids and gases)

Soluble- Able to dissolve



- Filtration is a process that uses a filter
- Filtration is a separation technique
- Filtration separate solids from fluids
- Different size filters are used to separate different size particle
- HEPA (high efficiency pleated air) filters are used to remove pathogens and dust from the air.
- Insoluble solids get trapped as residue on filter paper, while filtrate passes through.
- Filtrate may still include soluble, dissolved solids.

LESSON 5 – EVAPORATION AS A SEPARATION TECHNIQUE

Evaporation – change of state from a liquid to a gas

Solute- a substance that dissolves in a solvent to form a solution

Solution – A liquid mixture formed when a solute dissolves in a solvent.

Solvent- a substance that dissolves a solute to form a solution

- Evaporation is the process by which a liquid changes into a gas.
- As solution evaporates, it will leave insoluble solids/crystals behind, separating them from the liquid.
- The longer evaporation takes, the bigger the crystals will be as they have had more time to form.

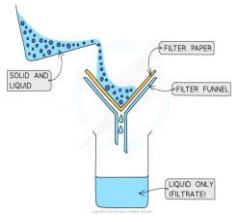


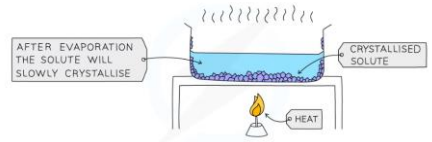
LESSON 6 – SEPARATING ROCK SALT

Plan – A series of steps to complete a task

Hazard – Anything that has potential to cause harm

Precaution- An action taken in advance to try and prevent harm.



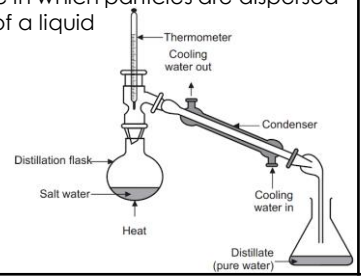


- Rock salt is made up of sand, salt and grit.
- Sand and grit are insoluble.
- We can separate the components using filtration and evaporation.

LESSONS 7&8 – DISTILLATION AND INVESTIGATNG DISTILLATION

Distillation- A separation technique that allows you to keep evaporated liquid

Suspension- A mixture in which particles are dispersed throughout the bulk of a liquid



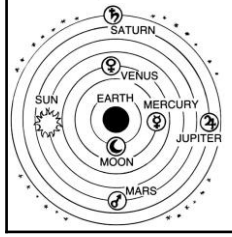
- Simple distillation separates substances by removing one liquid part.
- Separated based on boiling point- substance with lower boiling point will evaporate first and travel up into condenser.
- Condenser has cold water to cool gas/vapour, causing it to condense back into a liquid that can be collected (distillate).

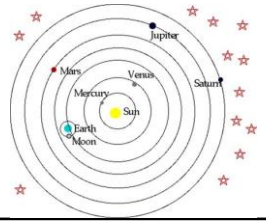
Year 7 & 8 Science Knowledge Organiser – BE4: The space race

Lesson 1 – Galileo

Key Terms

Natural satellite – a natural occurring object that orbits a planet.
Orbit – a repeated path than an object takes around another object
Telescope – a piece of equipment that allows you to see distant objects





- An orbit is the curved path an object follows as it moves around another object in space, such as planets, moons, or satellites.
- The **geocentric model** is the old idea that everything orbits the Earth. This was believed for many years because it matches what we see in the sky.
- The **heliocentric model** states that the Earth and other planets orbit the Sun, which is now the accepted scientific model.
- Galileo Galilei used a telescope to observe planets and moons, providing evidence that supported the heliocentric model and challenged the geocentric idea.
- Orbits occur because of gravity pulling objects together while the object is also moving forwards, causing a curved path.
- Modern science accepts the heliocentric model, where gravity keeps planets and moons in stable orbits.

Lesson 2 – The V2 rocket

Key Terms

Weight – The force caused by gravity pulling on an object and is measured in newtons (N).
Ethical – Thinking about what is right or wrong and whether actions are fair, responsible, and cause harm or benefit to others.



- The V2 rocket was developed in Nazi Germany during World War II and was the first man-made object to reach space, helping to start the space age.
- The V2 rocket used liquid fuel (ethanol and liquid oxygen) and could travel at about 1,600 m/s, meaning it could reach London from Berlin in under 10 minutes.
- Rockets are affected by forces, especially weight (gravity) pulling downwards and thrust pushing upwards from the engines.
- Weight is calculated using the formula:

$$\text{Weight (N)} = \text{mass (kg)} \times \text{gravity (N/kg)}$$

- After WWII, scientists such as Wernher von Braun used V2 rocket knowledge to help develop modern rockets (e.g. Saturn V), raising ethical questions about using technology created through harm.

Lesson 3 – The evolution of satellites

Key Terms

Artificial satellite – a man-made object that orbits a planet.
Weight – The force caused by gravity pulling on an object and is measured in newtons (N).
Mass - The amount of matter in an object and is measured in kilograms (kg).





- Artificial satellites are man-made objects that orbit a planet. They are used for communication, weather forecasting, navigation (satnav), research, and military purposes.
- Sputnik 1 was the first artificial satellite, launched by the USSR in October 1957.This marked the beginning of the space race and the development of modern satellite technology.
- Mass and weight are not the same. **Mass** is the amount of matter in an object and is measured in kilograms (kg). **Weight** is a force caused by gravity and is measured in newtons (N).
- An object's weight depends on the gravitational field strength of the planet it is on. Gravity is stronger on some planets (like Jupiter) and weaker on others (like the Moon), so the same object has different weights in different places.

Lesson 4 – Travelling beyond Earth

Key Terms

Define- A phrase or sentence that specifies the meaning of something.
Probe – an unmanned spacecraft that is used to explore places humans are unable to go.
Rover – An unmanned craft that is used to explore the surface of uninhabited moons



- Space probes and rovers are unmanned spacecraft used to explore space and planets that humans cannot safely reach. Probes usually travel through space, while rovers land and move around on a planet's surface.
- Signals from distant probes take time to reach Earth. For example, messages from Mars take about 11 minutes to arrive because space distances are extremely large.
- Standard form is used to write very large numbers more simply, such as distances in space.
- A number written in standard form will always looking this:

$$A \times 10^n$$

- A = number between 1 and 10. n = the index, This can be any positive or negative whole number (
- Scientists use standard form and SI units (metres, seconds, etc.) to calculate distances, times, and speeds involved in space travel accurately.
- Parachutes are essential when landing spacecraft because they increase air resistance, slowing objects down to land safely by reducing their speed through the atmosphere.

Lesson 5 – The beauty of space

Key Terms

Telescope – a piece of equipment that allows you to see distant objects
Light year – A unit of distance that is equal to the distance light would travel in one year
Nebula – A cloud of dust and gas that is birthplace of a star/solar system

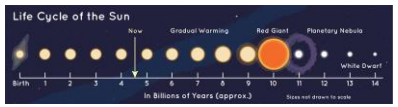


- Space telescopes are telescopes that operate in space rather than on Earth, meaning their images are not distorted by Earth's atmosphere and are much clearer.
- The Hubble Space Telescope (launched in 1990) and the James Webb Space Telescope (JWST) (launched in 2021) are two famous space telescopes that have taken detailed images of stars, nebulae, and galaxies.
- A light-year is a unit of distance, not time. It is the distance that light travels in one year, which is about 9.5×10^{15} metres.
- The James Webb Space Telescope can see deeper into space and further back in time than Hubble, helping scientists study the early universe and the formation of solar systems that may support life.

Lesson 6 – Our sun

Key Terms

Describe - A more detailed account of an object, event, or action.
Supernova - A catastrophic explosion from a very large star that ejects most of its mass
White dwarf – The remains of a small-medium sized star after the end of its life



- The Sun is a star at the centre of our solar system and is an example of a main sequence star, made mostly of hydrogen and helium.
- All stars are born in a nebula, which is a large cloud of gas and dust where new stars form. The Sun was formed this way about 4.5 billion years ago.
- Stars change over time. As the Sun gets older, it will expand into a red giant before shedding its outer layers. At the end of its life, the Sun will become a white dwarf, because it is not large enough to explode.
- Much larger stars can explode in a supernova at the end of their lives. These explosions create many of the elements found on Earth.

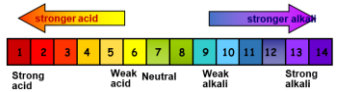
Year 8 Science Knowledge Organiser – CR4 The pH scale

Lesson 1 – Identifying Acids and Alkalis Using Indicators

Key terms

Indicator - a chemical that changes to a different colour to identify the acidity or alkalinity of a substance
Acid - A substance with specific properties that include turning blue litmus red.
Alkali - A soluble substance with specific properties that include turning red litmus blue.
Neutral - A substance that is neither acidic nor basic.
Base - A substance that neutralises an acid.

- Substances can be classified as being acidic, basic or neutral.
- Indicators are used to identify the acidity of a substance.
- **Universal Indicator** is a chemical that changes a range of different colours to show how strong or weak the acid or alkali is.
- In universal indicator acids are red, alkalis are purple and neutral is green.



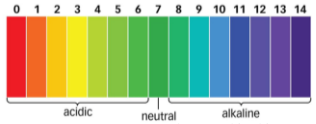
- **Litmus paper is an indicator** that can be blue or red to identify if a substance is acidic or alkaline. Litmus is red in acid. Litmus is blue in alkali.
- Examples of acids are ethanoic acid (vinegar), hydrochloric acid (stomach acid) and sulphuric acid.
- Examples of alkalis are ammonia, sodium hydroxide (drain cleaner) and bleach.

Lesson 2 – COMPULSORY PRACTICAL – pH and Indicators

Key Terms

pH scale - Shows how acidic a substance is, it can be measured to give a numerical value.
Neutral - A substance that is neither acidic nor basic.
Indicators
Observe - Notice or perceive (something) and register it as being significant.
Predict - To say or estimate that a specific thing will happen

- In universal indicator acids are red, alkalis are purple and neutral is green.



- Litmus paper can be blue or red to identify if a substance is acidic or alkaline.
- Red litmus paper will stay red if a substance is acidic and turn blue if the substance is alkaline.
- Blue litmus paper will stay blue if a substance is alkaline and turn red if the substance is acidic.

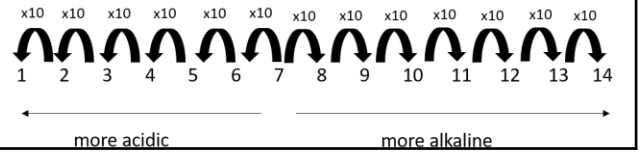


Lesson 3 – The pH Scale

Key Terms

pH scale - Shows how acidic a substance is, it can be measured to give a numerical value.

- **The pH scale** shows how acidic a substance is, it can be measured to give a numerical value and ranges from 0 (very acidic) through 7 (neutral) to 14 (very alkaline)
- pH 1 is 10 times more acidic than pH 2.
- pH 2 is 10 times more acidic than pH 3.
- pH 14 is 10 times more alkaline than pH 13.

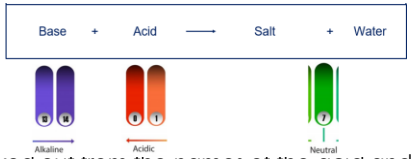


Lesson 4 – Neutralisation

Key Terms

Neutralisation - A chemical reaction in which an acid reacts with a base to form salt and water.
Base - A substance that neutralises an acid.
Salt - A substance that is produced when an acid reacts with a base.

- An acid and alkali will chemically react to produce a salt and water. This is called a **neutralisation reaction.**



- The name of the salt produced can be worked out from the names of the acid and the alkali.
- **E.g. sodium hydroxide and hydrochloric acid --> sodium chloride + water.**
- A base will chemically react to neutralise an acid to produce neutral products, salt and water. This is called a neutralisation reaction.

- **If hydrochloric acid is used, the ending of the salt is – chloride.**
- **If sulfuric acid is used, the ending of the salt is – sulfate.**
- **If ethanoic acid is used, the ending of the salt is – ethanoate.**

Lesson 5 – Planning an Investigation to Neutralise an Acid

Key Terms

Neutralisation - A chemical reaction in which an acid reacts with a base to form salt and water.
Observe - Notice or perceive (something) and register it as being significant.
Predict - To say or estimate that a specific thing will happen
Valid - you have measured what you intended to measure.

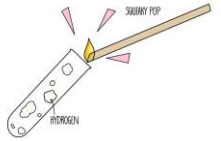
Reliable - when you repeat the experiment, you get similar results

- Particles have to collide (bump) n order to react.
- Concentration is the number of particles in a specific volume. Dilute and concentrated are used to describe the number of particles in a given area. More particles means more concentrated.
- **Planning an Investigation to Neutralise an Acid**
- Measure out 20cm^3 dilute hydrochloric acid using a measuring cylinder and pour into a conical flask.
- Test the pH of the acid using universal indicator paper and record the value in the results table
- Measure 40cm^3 of sodium hydroxide (alkali) using a measuring cylinder and add into another beaker
- Add the sodium hydroxide drop by drop to the acid using a pipette.
- After adding 5 drops of sodium hydroxide to the acid, stir the mixture with the glass stirring rod
- Measure the pH again using the universal indicator paper
- Continue until the solution is neutral

Lesson 6 – Reacting Acids with Metals

Key Terms

Ignition - The action of setting something on fire.



- Acids chemically react with most metals and will form a salt and hydrogen.

Metal(s) + Acid(l) ⟶ Salt(s) + Hydrogen(g)

- When acids react with metals, bubbles of gas can be observed.
- You can test for the presence of hydrogen gas by igniting the gas with a lit splint (wooden stick).
- Hydrogen makes a characteristic squeaky pop when ignited.
- Most acids react with most metals. However, not all metals react with all acids.

Year 8 Science Knowledge Organiser – CR4 The pH Scale

Lesson 7 – COMPULSORY PRACTICAL – Reacting Metals with Acids

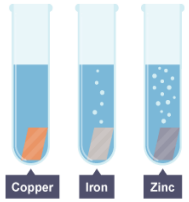
Key terms

Ignition - The action of setting something on fire.

Observe - Notice or perceive (something) and register it as being significant.

Predict - To say or estimate that a specific thing will happen

- Acids chemically react with most metals and will form a salt and hydrogen.
- When acids react with metals, bubbles of gas can be observed.
- You can observe the reactivity of different metals in acid by observing the reactions, if they react, how fast they react, and the number of bubbles observed.



Lesson 8 – Transfer of Energy During Chemical Reactions

Key Terms

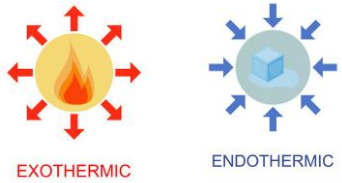
Exothermic - A process where energy is transferred from the system to the surroundings.

Endothermic - A process where energy is transferred from the surroundings to the system.

System - A collection of objects that can be identified (specifically the reactants and products)

Thermal Insulator - A material designed to prevent thermal energy transfers

- When a chemical reaction happens, energy is transferred to or from the surroundings.
- When energy is transferred to the surroundings, this is called an **exothermic reaction.**
- The temperature INCREASES in an exothermic reaction because heat energy is being given OUT.



- When energy is taken in from the surroundings, this is called an **endothermic reaction.**
- The temperature DECREASES in an endothermic reaction because heat energy is TAKEN IN.
- A thermometer can be used to measure temperature.
- A polystyrene cup can be used to investigate exothermic and endothermic reactions, because it is an **insulator**. This means it reduces heat transfer through the cup.

Lesson 9 – Transfer of Energy During Changes of State – part 1

Key Terms



Exothermic - A process where energy is transferred from the system to the surroundings.

Endothermic - A process where energy is transferred from the surroundings to the system.

System - A collection of objects that can be identified (specifically the reactants and products)

State - To express something definitely or clearly in speech or writing.

- Energy can either exist in a **system**, in the surroundings. The sum of which makes up the energy in the universe.
- When a substance changes state, energy is transferred to or from the surroundings.
- When energy is taken in from the surroundings, this is an **endothermic process.**
- As the particles gain more energy the state changes from a solid to a liquid to a gas.

- When energy is transferred to the surroundings, this is an **exothermic process.**
- As the particles lose energy the state changes from a gas to a liquid to a solid
- When a solid changes state to a liquid, this is called melting.
- When a liquid changes state to a gas, this is called boiling.

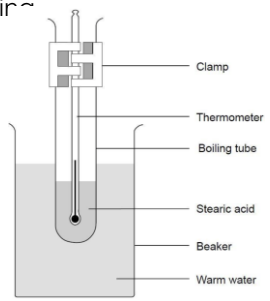


- Between 1 and 2 the temperature is increasing (at a constant rate).
- Between 2 and 3 the temperature does not increase.
- Between 3 and 4 the temperature increases (at a constant rate).
- Between 4 and 5 the temperature does not increase.
- Between 5 and 6 the temperature increases (at a constant rate).
- Overall, as time increases, the temperature increases.

Lesson 10 – Transfer of Energy During Changes of State – part 2

Key Terms

State - To express something definitely or clearly in speech or writing



Observing cooling stearic acid:

- Put about 150 cm3 water into the beaker.
- Heat it on a tripod and gauze until the water just starts to boil.
- Set up the apparatus as shown in the diagram and start the timer. Keep the water boiling but not boiling vigorously.
- Using a suitable results table, record the temperature of the stearic acid every minute until it reaches about 70˚C. Note on your results table the point at which you see the solid start to melt.
- Use the clamp stand to lift the tube from the hot water. Record the temperature every minute as the stearic acid cools down until it reaches about 50˚C. Note on your results table the temperature at which you see the stearic acid begin to solidify.

Year 8 Science Knowledge Organiser – THB9 : The Digestive System

Lesson 1 – Proteins, Lipids and Carbohydrates

Key Terms

Lipid – A word used to describe fats and oils

Name – Write the name of something

Label – Identify something on a diagram

Evaluate - Suggest things that are good and things that are bad about something

- Proteins needed to make new cells and repair damage to tissues such as muscles / found in fish , red meat , eggs



- Carbohydrates provide energy for things like movement and to keep us warm / found in potatoes , grains , bread



- Lipids (fats and oils) provide energy and are used to make things in the body such as cell membranes / found in oil , butter and nuts



Lesson 2 – Vitamins, Minerals, Fibre and Water

Key Terms

Vitamin – An organic compound the body cannot produce so must be obtained from food

Mineral – inorganic substances found in soil and water also obtained from food

Fibre – A carbohydrate that the body cannot fully digest that helps with digestion

- Vitamins are needed for many life processes, supporting our immune system, energy production, and cell growth.
- Minerals such as iron help us carry oxygen around the body and calcium is used to strengthen bones
- Fibre is not digested but is needed to help other foods move through the digestive system
- Water is needed for chemical reactions and to replace water lost from sweat and urine

Lesson 3 – Energy in Food Calculations

Key Term

(Kilo)calorie – A unit of measurement used to show how much energy there is in food

- Women need approximately 2000kcal per day
- Men need approximately 2500kcal per day
- Energy in food is normally measured in calories.
- Each item of food or drink a person consumes has a calorie value , this can be added together to determine total calories consumed in a day.

Lesson 4 – Food Tests

Key Terms

Reagent – A chemical that can be used to indicate if there are certain nutrients in that substance

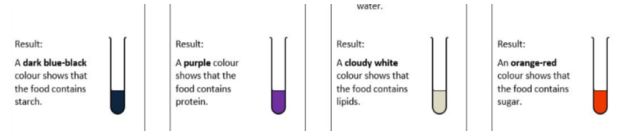
Biuret - A type of reagent (chemical) that changes colour in the presence of protein

Benedict's solution – A type of reagent (chemical) that changes colour in the presence of sugars

Iodine – A type of reagent (chemical) that changes colour in the presence of starch

Ethanol – Used to test for lipids

- Biuret solution will colour change to purple in the presence of protein
- Benedict's solution will colour change to orange – red in the presence of sugar
- Iodine will turn blue black in the presence of starch
- Ethanol will produce a cloudy white colour in the presence of lipids



Lesson 5 – Deficiency Diseases and Obesity

Key Terms

Deficiency disease – a non-communicable illness caused by a lack of an essential nutrient, vitamin, or mineral ion in the diet or environment.

Malnutrition – A condition where someone does not get enough of a certain substance in their diet that can make them unwell

Obesity– Obesity is a condition where someone has a high excess of body fat and can lead to type 2 diabetes.

- Deficiency diseases occur when an individual suffers from either malnutrition or obesity these include
- Anaemia – lack of iron – causes tiredness and shortness of breath
- Scurvy – lack of vitamin C – causes loss of teeth
- Kwashiorkor – lack of protein – causes swollen skin and muscle waste
- Obesity – high level of body fat – causes type 2 diabetes

Low-energy foods	Cal/g	High-energy foods	Cal/g
Celery	0.16	Ham	1.45
Carrots	0.41	Spaghetti	1.58
Pear	0.42	Chicken	1.72
Milk	0.42	Steak	2.77
Orange	0.47	Bread	2.89
Apple	0.52	Hamburger	2.95
Blueberries	0.57	Cupcake	3.05
Yogurt	0.59	Candy	3.50
Oatmeal	0.71	Cheese	3.53
Potato	0.77	Pastry	3.74
Peas	0.81	Cookies	4.80
Corn	0.86	Chocolate	5.46
Banana	0.89	Bacon	5.48
Cottage cheese	0.98	Nuts	5.76
Rice	1.11	Butter	7.17

Year 8 Science Knowledge Organiser – THB9 : The Digestive System

Lesson 6 – The Digestive System

Key Terms

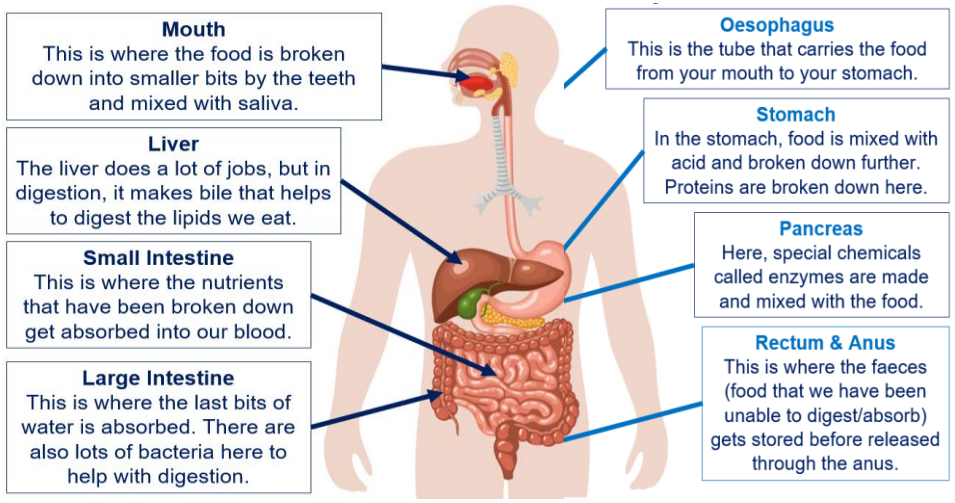
Pancreas– An organ in the body that makes enzymes and insulin, aiding in digestion

Oesophagus – Muscular tube that carries food from mouth to the stomach

Stomach – Organ containing acid, used for digestion

Small intestine – Organ used for nutrient absorption

Large intestine – Organ used for water absorption

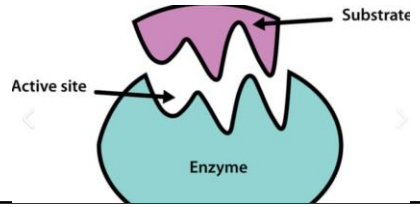


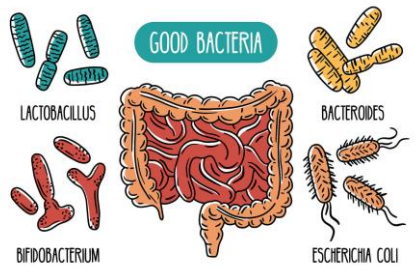
Lesson 7 – The Role of Enzymes and Bacteria

Enzymes– A biological catalyst (chemical) that breaks down substances into smaller parts

Gut Bacteria – Bacteria found in the intestines that help aid digestion

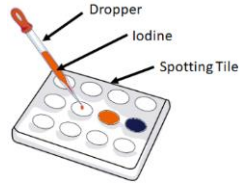
- Enzymes are types of chemical made in different parts of our digestive system that break up large molecules into smaller molecules.
- Gut bacteria – are bacteria found in the digestive system but mostly in the large intestine, that help to break down some of the food we can't – like beans.





Testing Enzyme Action:

- You are going to test how quickly an enzyme called amylase breaks down starch
- You will be given difference concentrations of starch and some amylase enzyme
- You will also be given some iodine and a spotting tile.



1) Put 5 cm^3 of the enzyme in to 4 boiling tubes
2) On the spotting tile, add 2 drops of iodine to each dimple
3) Add 5 cm^3 of the first starch solution to the boiling tube
4) After 20 seconds, mix and take a small sample, adding two drop to an iodine sample.
5) Keep doing this until the iodine stops changing colour – this will show when all the starch is broken down.
6) Record the time, then repeat for the next starch solution.

Year 8 Science Knowledge Organiser – OE4: Our Atmosphere

Lesson 1 – The Composition of the Atmosphere

Key terms

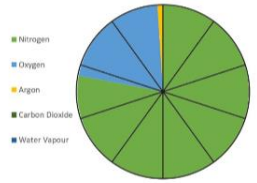
State – To express something definitely or clearly in speech or writing.

Composition – the nature of something's ingredients or constituents; the way in which a whole or mixture is made up.

Choose - Pick a correct answer – normally from a list.

Abundance – amount of each gas in the atmosphere

- Earth's atmosphere is made up of approximately 78% nitrogen, 21% oxygen and 1% argon
- The pie chart has been split into 10 segments; each segment is worth around 10%. We can use the pie chart to approximate the abundance of each gas in the Earth's atmosphere



Lesson 4 – Using the Earth's Resources

Key Terms

Life cycle assessment - An assessment that is carried out to assess the environmental impact of products in each stage of its lifetime.

Recycling - The process of converting waste into reusable material.

Finite Resource - A natural resource that will run out one day because it is being used faster than it can be replaced

- Humans use the Earth's resources for warmth, transport, shelter and food.
- Many of the resources that are extracted from the Earth are finite.
- Recycling is one way we can reduce the extraction of finite resources.
- Life cycle assessments (LCAs) are carried out to assess the environmental impact of products in each stage of its lifetime.



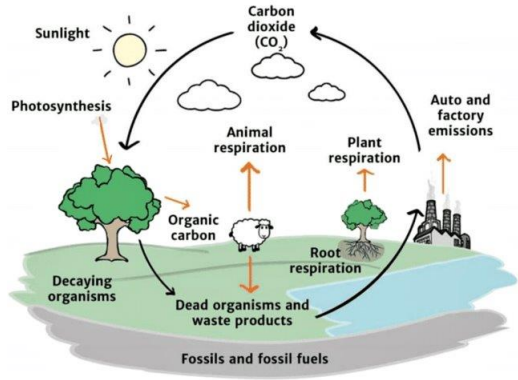
Lesson 2 – The Carbon Cycle

Key Terms

Photosynthesis -The process by which green plants and some other organisms use sunlight to synthesize nutrients from carbon dioxide and water.

Deforestation – The large-scale removal of forests

- The percentage of carbon dioxide in the atmosphere is maintained by the **carbon cycle.**
- Carbon is present in the atmosphere as carbon dioxide.
- Plants use carbon dioxide during photosynthesis to produce sugars. The carbon is then transferred to animals along the food chain.
- Decomposition, respiration and combustion release carbon dioxide into the atmosphere.
- Carbon dioxide also dissolves in the oceans, reducing the amount of carbon dioxide in the atmosphere.
- Sea creatures use the dissolved carbon dioxide to help them form shells; this then allows more carbon dioxide to dissolve into the ocean



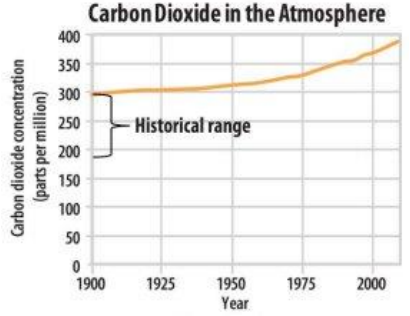
Lesson 3 – Global Warming and Climate Change

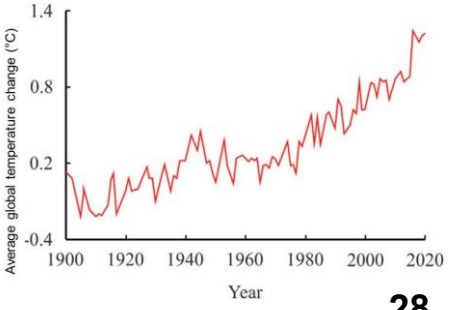
Key Terms

Global Warming – The long-term warming of the planet's overall temperature

Climate change – Long-term shifts in temperature and weather patterns

- Fossil fuels release carbon dioxide into the atmosphere when they are burnt (combustion).
- Scientists have gathered evidence in the form of the increase in atmospheric carbon dioxide levels over many decades and the change in average global temperature over the same time period.
- The increasing temperature of the planet is causing climate change – some effects are forest fires, rising sea levels and extreme weather (such as flash flooding, heatwaves and drought).





Year 8 Science Knowledge Organiser – BOE10 Principles of Energy

Lesson 1 – Energy stores

Key Terms

Elastic Store - The store of energy in a stretched/distorted elastic object.

Chemical Store - The store of energy found in reactant and products.

Gravitational Store -The store of energy in an object raised in a gravitational field.

Kinetic Store - The store of energy in a moving object.

Thermal Store - The store of energy in a hot object.

Nuclear - Energy stored in the nucleus of an atom.

Electrostatic - The store of energy that results from the attraction (opposite charges) or repulsion (like charges) of static charges.

Magnetic - Energy stored when objects are attracted to or repelled from each other by a magnetic force.

The unit for energy is joule, J.

Energy is a quantity that can be calculated.

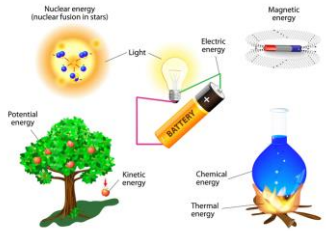
Internal energy stored in materials.

A bullet moves very fast –because of this movement, it has energy stored in it.

An object that is higher up will have more energy stored that an object lower down.

A stretched elastic has energy stored in it, because when we let it go, it can push something a great distance.

The total energy has the same value before and after a change.



Lesson 2 – Changes to energy stores

Key Terms

Describe - To say what something is like

Determine - To find out/establish

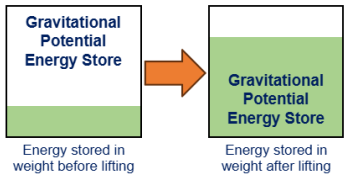
Identify - Be able establish or indicate what something is.

Energy transfer - The movement of energy from one energy store to another.

The unit measure for energy is Joules, J

The amount of energy something has in its energy store can change e.g. When the weightlifter lifts the weights higher, it increases the gravitational potential energy store in the weights.

We can represent this written description using a visual model:



NOTE: This is a very simple model

It is a simple representation to show how the quantity of energy in an object's energy store changes.

It is not to scale – we are just showing an increase or decrease from the original store.

Lesson 3 – Conservation of energy

Key Terms

Conservation - reducing waste to preserve natural resources and lower environmental impact



A system is an object or group of objects.

In **closed system** the total amount of energy never changes – energy is conserved.

The universe is an example of a closed system because it has a certain (finite) amount of energy

Conservation of energy states that energy cannot be created or destroyed – it can be transferred from one store to another.

If energy is transferred, it has to go somewhere – it can't just disappear

We can use energy diagrams to show transfers of energy between energy stores.

Lesson 4 – Energy Pathways

Key Terms

Mechanical Work - The pathway of energy transfer when a force is applied to move an object

Electrical Work - The pathway of energy transfer when a charge moves through a circuit

Heating - The pathway of energy transfer where energy is transferred from one object to another causing an increase in a thermal store.

Radiation – Energy transferred by waves e.g light, infrared, sound, microwaves etc.

When energy changes from one form to another, it must follow an energy pathway.

The main energy pathways:

- Mechanical Work
- Electrical Work
- Heating

The mechanical work pathway is when energy is transferred from one store to another through movement.

The electrical work pathway is when energy is transferred from one store to another using an electrical current.

Lesson 5 – Reducing Unwanted Energy Changes

Key Terms

Lubricant - A material that is able to reduce the fiction between two solid surfaces

Lubrication -The use of a lubricant to reduce friction between solid surfaces

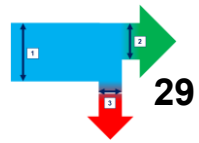
When energy is transferred to an energy store that is not useful, it is considered unwanted or wasted.

Unwanted energy changes caused by friction can be reduced through lubrication

To show these unwanted energy transfers, we can use something called a Sankey diagram.

1. The input energy is the energy before the transfer and is represented with the width of the arrow.
2. The "useful" energy transfer remains horizontal.
3. The "wasted" energy transfer goes down.

- $Input\ energy = useful\ energy + wasted\ energy$



Year 8 Science Knowledge Organiser – BOE11 Heating and Cooling

Lesson 1 – Temperature

Key Terms

Temperature: a measure of how hot a substance is and depends on the average speed of the particles.

Degrees Celsius (°C): the unit for temperature

Thermal energy: a measure of how much energy there is in an object depending on the temperature of the object.

Joules: The unit for thermal energy



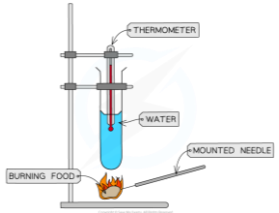
- A lower temperature means the particles within a substance are moving or vibrating more slowly.
- A higher temperature means the particles within a substance are moving or vibrating faster.
- Ice cream is colder than the surroundings, so will absorb thermal energy and its temperature will increase
- Coffee is warmer than the surroundings, so will release thermal energy and its temperature will decrease

Lesson 2 – Energy Stores in Food

Key Terms

Kilojoule (kJ): a unit of measure for energy. Kilojoules is used on food and drink labels to quantify the amount of energy the item provides to the body

1 kJ = 1000J



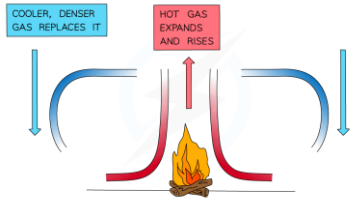
- Food is an example of a chemical energy store.
- We use the chemical store within food to be able to fuel our body for many different processes.
- Food packages have kcal and kJ on them – 1 kcal or calorie is the same as 4.2 kJ.
- You can measure the chemical energy stored in food by burning it to heat a known volume of water
- During burning the chemical energy in the food is transferred to thermal energy, which is used to heat water.

Lesson 4 – Convection

Key Terms

Fluid: A material that can flow and take the shape of its container; liquids and gases

Convection: the transfer of thermal energy through fluids (liquids and gases) by the movement of the heated fluid particles itself.



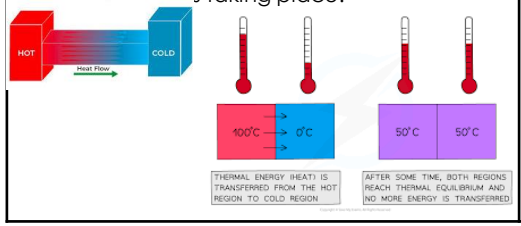
- When a fluid is heated, the particles at the point of heating **gain kinetic energy**, causing the particles to move faster and the fluid to expand.

- This causes the region of the fluid to become **less dense.**
- The warmer, less dense fluid rises.
- The cooler, denser fluid sinks to replace it.
- This cycle of heating, rising, cooling and sinking is called a convection current.
- The cycle continues until the energy has been spread through the whole fluid.

Lesson 5 – Thermal Equilibrium

Key Terms

Thermal equilibrium: When objects are at the same temperature and no net thermal energy transfer is taking place.



Heat flows from the hotter object to the cooler object. This continues until their temperatures are exactly the same (**Thermal equilibrium**)

- Example: A hot meal will cool down as thermal energy is transferred to the surroundings. If you leave it too long, it will be the same temperature as the surroundings.

Ice will melt in a warm environment as it absorbs thermal energy and reaches a thermal equilibrium with its surroundings.

Lesson 3 – Conduction

Key Terms

Thermal Conductor: A material that is able to transfer thermal energy across itself

Thermal Insulator: A material designed to prevent thermal energy transfers

An abstract model: used in science to describe a process or phenomena that leaves out some details.

Conduction: the process where vibrating particles transfer kinetic energy to neighbouring particles

Metals are good examples of **thermal conductors.**

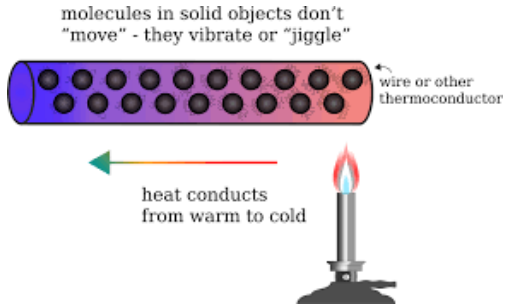
Plastic and wood are good examples of **thermal insulators.**

In conduction, warmer particles vibrate with more kinetic energy than cooler ones.

Warmer particles transfer kinetic energy to neighbouring particles.

Conduction passes energy the whole way down the object through vibrating particles.

Conduction is the transfer of energy in solids.

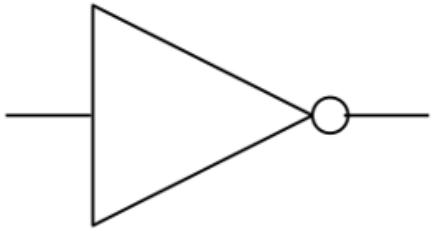


Year 8 Computing – Logic Gates

Logic Gate: A building block of a digital circuit. They perform logical functions in a circuit and use binary

Truth Tables: Display all possible outcomes for that gate

Careers
- Software development
- Programing
- Software Engineering



Not Gate

Opposite the input (0 becomes 1 and 1 becomes 0

IN	OUT
0	1
1	0

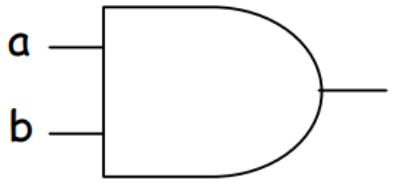


OR Gate

Wait for either inputs to be 1 for output to be 1 or both to be 1

A OR B

A	B	Out
0	0	0
0	1	1
1	0	1
1	1	1



AND Gate

Both inputs to be 1 for output to be 1

A AND B

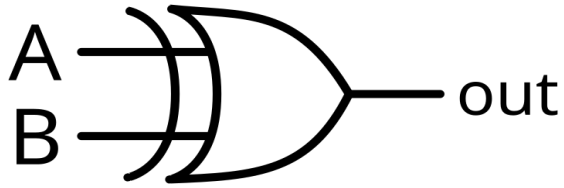
A	B	Out
0	0	0
0	1	0
1	0	0
1	1	1

Year 8 Computing – Logic Gates

Logic Gate: A building block of a digital circuit. They perform logical functions in a circuit and use binary

Truth Tables: Display all possible outcomes for that gate

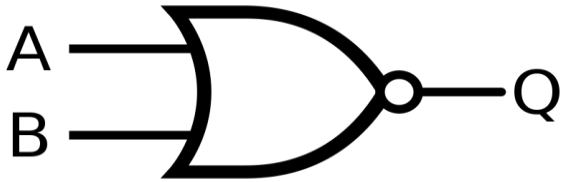
Careers
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XOR Gate

One input on or the other only

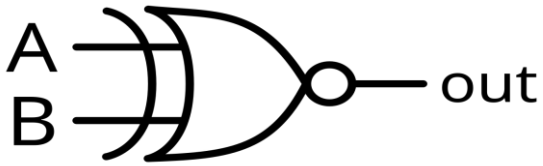
A	B	Out
0	0	0
0	1	1
1	0	1
1	1	0



NOR Gate

Opposite of an OR gate, O if any inputs are 1.

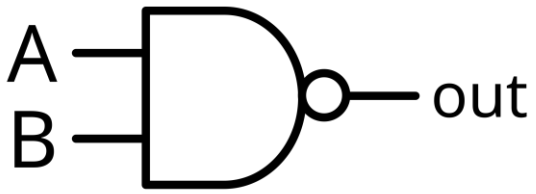
A	B	Out
0	0	1
0	1	0
1	0	0
1	1	0



XNOR Gate

Both inputs 1 or both inputs 0 to output 1

A	B	Out
0	0	1
0	1	0
1	0	0
1	1	1



NAND Gate

Opposite of AND gate any or both inputs 1 the output will be 0.

A	B	Out
0	0	1
0	1	1
1	0	1
1	1	0

Year 8 Computing – Logic Gates

Logic CIRCUIT: A combination of different logic gates used to perform more complex tasks

TRANSISTOR: A tiny switch that is activated by the electronic signals it receives. The digits 1 and 0 used in binary reflect the on and off states of this.

Notation

The symbols used to describe logic gates

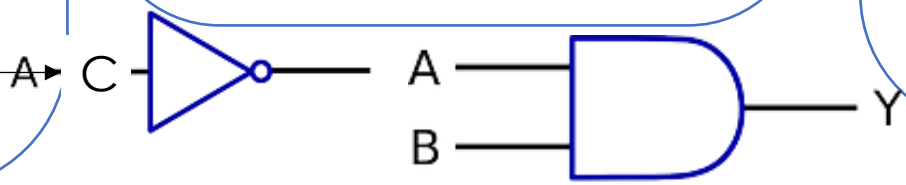
∧ And

V Or

¬ **Not**

EG. The notation below means – P = A and b and not c. When you draw the circuit the one in brackets goes first

Y = A ∧ B (¬ C)



HINT: when completing the inputs in a truth table – don't forget to count up in binary, to make sure you have all possible inputs

A and B re inputs. There are 4 rows – starting from 0 make the binary numbers 0,1,2,3.

	A	B	Out
0	0	0	0
1	0	1	0
2	1	0	0
3	1	1	1

How many rows do you need in a truth Table?

$$Number\ of\ Rows = 2^{number\ of\ inputs}$$

So for 1 input = 1 x 2 = 2

For 2 inputs = 2 x 2 = 4

For 3 inputs = (2x2)x2 = 8

For 4 inputs = 2x2x2x2 = 16

Gate	Input	$2^{number\ of\ inputs}$
NOT	1	$2^1 = 2$
AND	2	$2^2 = 4$
OR	2	$2^2 = 4$

Year 8 Computing – Algorithms

Binary Search

Make sure the list is in order.

- Take the middle number
- Compare it to the number you are looking for
- IF it is the number you are looking for
  - Celebrate and stop
- ELSEIF it is larger than the one you are looking for
  - Take the numbers to the left of the middle number
  - Make them into a new list
- ELSEIF it is smaller than the one you are looking for
  - Take the number to the right of the middle number
  - Make them into a new list
- REPEAT from 1 with the new list UNTIL you have checked and it is not in the list

Linear Search

Use the steps below to help you perform the binary search.

1. Take the first number
2. Check if it is the number you are looking for
3. IF it is the number you are looking for
   a. Celebrate and stop
4. ELSE
   a. Move to the next number
   b. Repeat from step 2

Bubble Sort

1. Take the first number and the second number from the list
2. Compare them
3. IF number 1 > number 2 THEN
   - Swap then
4. ELSE
   - Do nothing
5. **Repeat**: Move along the list to the next pair
   - IF no more numbers: Goto 1
   - ELSE: Goto 2

Until: you have moved through the entire list and **not**

Insertion Sort

Number 1 in the list is 'sorted'

The rest of the numbers are an 'unsorted' list

Compare the first number in the 'unsorted' list to each number in the sorted list

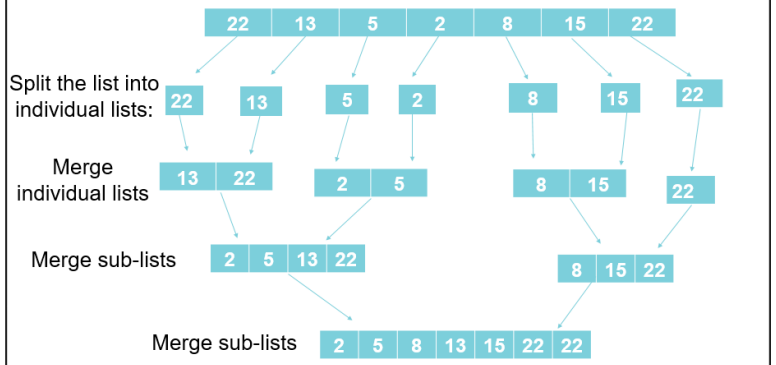
IF it is smaller, put it in than

ELSEIF it is larger, compare with the next

ELSEIF there are no more numbers in the 'sorted' list put it in the final position

REPEAT UNTIL all numbers in the 'unsorted' list are in the 'sorted' list

Merge Sort

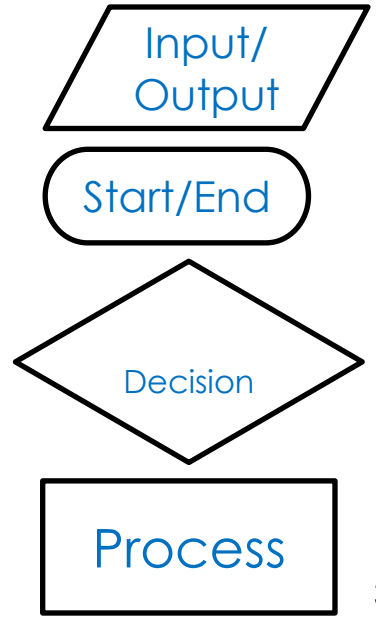


Careers

- Software development
- Programing
- Software Engineering

Computational Thinking:

- Decomposition
- Abstraction
- Pattern Recognition
- Algorithm



Year 8 Computing – Computational Thinking

What is Computational thinking?
The thought processes involved in formulating a problem and its solution(s), so that a computer, human or machine can effectively carry out

How do you think computationally?

To effectively solve problems you need to….

- Decompose
- Abstract
- Algorithmic thinking
- Create algorithms

KEY TERMS

Algorithm: Steps to provide a solution to a problem, usually represented in flowcharts or pseudocode

Decompose: Breaking down a large problem into smaller sub-problems

Abstraction: Representing 'real world' problems in a computer using variables and symbols and removing unnecessary elements from the problem

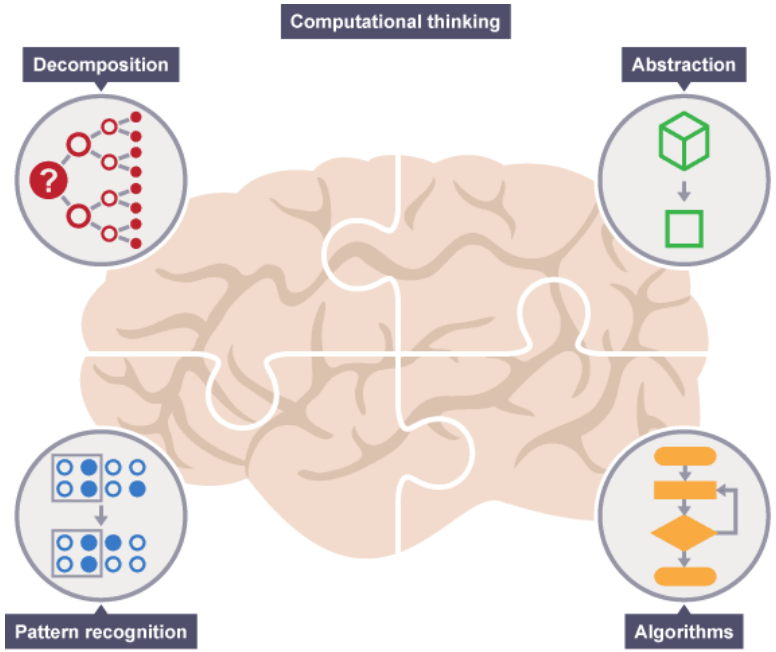
Pattern Recognition: Identifying similarities.

Sequence: Completing steps in the order which they must happen

Selection: Where a choice is made in a program depending on a condition or outcome

Iteration: Act of repeating or lopping specific sections of code

Careers
- Software development
- Programing



Flowcharts
Displays an algorithm in diagram form using symbols and arrows to show to flow of information

Pseudocode
A structured use of English used to define the steps needed to solve a problem.

Year 8 Computing – Flowcharts

Key Vocabulary	
Algorithms	A set of rules or instructions to be followed.
Flowcharts	A graphical way of showing an algorithm.
Selection	Deciding what code to run based on a decision or answer to a question. E.g an IF statement.
Sequence	A set of instructions that are completed in the exact order that they are written.
Iteration	Where a set of instructions is repeated. E.g a while loop, for loop and repeat until loop.
Input	Data that is given to the computer or program to then use.
Output	Information that is provided by the computer or program.
Procedure	A group of instructions grouped together that can be used by the main program.
Variable	A name given to a value in a program that can change when the program is running.

Careers

- Software development
- Programing
- Software Engineering

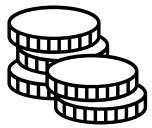
Flowchart Symbols	
	Used at the start and end of a flowchart.
	Controls all the inputs and outputs.
	General instructions and calculations carried out by the computer.
	Where a question/decision is asked. Must have a 'Yes' and 'No' output.
	Used to connect flowchart symbols to show the direction of flow in the program.

Year 8 – Geography – Our Unequal World

Global development is a broad concept that surrounds the idea that societies and countries have different levels of economic and human development.



Examples of Development Indicators
Gross National Income (GNI) - shows how wealthy a country is and is measured in 'per capita' which means per person.
Life Expectancy – the average age you are expected to live to from birth.
Literacy Rate – the percentage of the population (over the age of 15) that can read and write.
Human Development Index (HDI) – a composite indicator that looks at GNI per capita, life expectancy at birth, average years of schooling and expected years of schooling.











Happiness in Bhutan



Bhutan is located in eastern Asia, bordering China and India.



Gross National Happiness is considered to be more important than Gross Domestic Product in Bhutan.



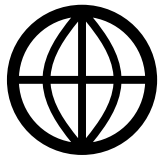
The Gross National Happiness Index looks at the general wellbeing of Bhutan's population.



Bhutan ensure they are protecting the happiness of their population in various ways, for example 60% of the country must be forest.

Bhutan also restrict social media, television and tourism to protect their culture.

Globalisation



Globalisation is the process of interaction among people, companies, and governments worldwide.



Technological advancements (e.g. aeroplanes, Wi-Fi) are making it easier to connect with other parts of the planet.

Keyword	Definition
Developed	A high-income country that has good healthcare, lots of well paid jobs and good housing.
Developing	A low-income country that has poor healthcare, few jobs, poor quality housing and poverty.
Development	The improvement in the standard of living of people in a specific country.
Distribution	The spread of where something is.
Emerging	A new, growing economy, a country that is starting to get richer and improve housing and healthcare.
Export	A country selling something to another.
Fair trade	A global organisation that helps farmers get a fair price for the crops and goods they sell.
Globalisation	The process of interaction among people, companies, and governments worldwide.
Import	A country buying something from another.
Indicator	A thing that tells you the state or level of something.
Inequality	When something is not equal.
Malnutrition	Not eating enough of the right nutrients.
Over-nutrition	Eating too many of the wrong nutrients.
Sanitation	Having clean water, good sewerage and waste disposal to help prevent disease and protect people's health.
Sweat shop	A factory or workshop, especially in the clothing industry, where manual workers are employed at very low wages for long hours and under poor conditions.
Trade	The action of buying or selling goods and services.
Unequal	Not the same.

Year 8 – Geography – Our Unequal World

Trade

Inequalities in trade exist because of a lack of natural resources to develop or sell. There are low literacy rates leading to a lack of skills to develop resources.

Trade policy also influences inequality through market access and entry conditions.

Fair Trade

Trade is not always fair – the most money from a chocolate bar goes to the supermarkets and a very small amount goes to the cocoa bean farmers.

Life for a cocoa bean farmer is difficult – they don't earn enough money to pay for food, clothes, medicine or education.

Fairtrade is an organisation that helps farmers get a fair price for the crops and goods they sell – making sure that farmers in developing countries are not in poverty.

Sweat Shops

A sweat shop is a factory or workshop, especially in the clothing industry, where manual workers are employed at very low wages for long hours and under poor conditions.

Sweat shop are built in developing countries by global companies because labour will be cheaper here meaning the companies can make more money.

In 2013, a sweatshop in Bangladesh collapsed, owners were aware of cracks, but told workers not to worry. This led to 400 deaths and 2,500 injuries.

Sanitation

In 2020, 54% of the global population (4.2 billion people) used a safely managed sanitation service.

Over 1.7 billion people still do not have basic sanitation services, such as private toilets.

Lack of access to poor sanitation is a leading risk factor for infectious diseases, including cholera and diarrhoea. This makes development more difficult.

Food Inequality

Food inequality is where some people in the world have access to enough, nutritious food whereas others don't.

Around 815 million people in the world do not have enough food to lead a healthy life. In Africa, around 1 in 4 people are malnourished.

Causes of Food Inequality

One cause of food inequality is poverty.

Long periods of drought mean crops cannot grow and families cannot source enough food or make money. Droughts are happening mor frequently because of climate change.

Conflict often means people have to leave their homes, crops and cattle.

Food shortages increase the prices leaving some people unable to afford food.

Effects of Food Inequality

People are more likely to get diseases as they are not getting the right nutrients.

If people are ill, and unable to access healthcare, they may not be able to go to school or work, leading to further poverty.

However, this is only one end of the scale. In some countries, there is over-nutrition which also has negative effects on people's lives. People can eat too many calories and still not have the right nutrients to be healthy.

Healthcare

In developed countries healthcare systems are well-developed and funded by governments. People have access to good healthcare and medicine. This often leads to a high life expectancy.

In developing countries healthcare is often poor, particularly in rural areas, where people die from even common diseases, this leads to a low life expectancy.

For example, in Japan there are 2.57 doctors per 1,000 people whereas in India there are 1.34 doctors per 1,000 people. Healthcare in developing countries is often worse in rural areas leading to a much lower life expectancy. Poor healthcare results in high infant mortality rates and a lack of vaccines available.

Year 8 – Geography – Our Physical World

The Earth's Structure



The Earth's structure is split into four layers: the crust, the mantle, the outer core and the inner core.



The crust is the outside layer and it is the thinnest

The mantle is made up of molten rock called magma.



Plate Boundaries



The Earth's crust is like a jigsaw puzzle – it is broken up into pieces that are moved by the convection currents in the mantle.

These pieces are called tectonic plates.



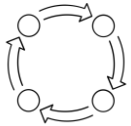
Plate boundaries are where these tectonic plates meet.

Tectonic plate movement



Tectonic plates are carried by currents in the upper mantle.

Convection currents are where heated mantle rises to the earth's surface.



Slab pull is when the weight of the moving plate drags the rest behind it.



There are currently many scientific debates surrounding which process actually moves tectonic plates.

Volcanoes



A volcano is an opening in the Earth's crust. It allows hot magma, ash and gases to escape from below the surface.

An active volcano is one that has erupted recently and one that will erupt again. A dormant volcano is one that has not erupted for a long time but may still erupt in the future. An extinct volcano is one that will have erupted thousands of years ago and will probably never erupt again.



A volcano has different parts; the vent is the pipe which carries magma up the volcano, the cone is the shape of a volcano formed by lava and ash and a crater is a funnel shaped hollow at the top of a volcano.

Iceland Eyjafjallajökull 2010



April 2010 the volcano erupted underneath an ice sheet.

Areas were flooded because of the glacier meltwater. This meltwater also interacted with the magma causing rapid cooling which resulted in the magma exploding into tiny pieces of ash. This resulted in the ash plume which shot really 11km into the sky.



Agricultural land was damaged. 800 people were evacuated, nobody died.

Travel was severely disrupted as many flights were cancelled between 14 and 21 April 2010. Businesses lost trade. Air operators lost millions of pounds each day.



However, following the eruption the Icelandic government launched a campaign to promote tourism.

Nyiragongo, Democratic Republic of the Congo 2021



On 22nd May 2021 Nyiragongo in the Democratic Republic of Congo (a developing country) erupted killing 32 people and destroying 1,000 homes. It also erupted in 2002 which killed 250 people.

Developing countries often have more severe impacts of volcanic eruptions because they do not have plans in place to protect their populations. They also struggle to respond as well and as quickly. Developing countries often rely on aid.



Plate Boundary	What happens?
Constructive	This is where two plates move away from each other. Magma rises through the gap creating new land. Volcanoes are formed.
Conservative	This is where two plates slide past each other or are moving in the same direction at different speeds. There is often a build up of friction. Earthquakes happen at this plate boundary.
Destructive	This is where an oceanic plate and a continental plate move towards each other. The oceanic plate sinks below the continental plate as it is heavier causing some friction. Volcanoes, fold mountains, earthquakes and tsunamis happen at this plate boundary.
Collision	This is where two continental plates move together. They push against each other and the plates crumple. Fold mountains to form.

Year 8 – Geography – Our Physical World

Earthquakes



An earthquake is the shaking and vibration of the Earth's crust due to movement of the Earth's plates. They happen when tension is released from inside the crust. Plates do not always move smoothly, and they can sometimes get stuck. When they get stuck, pressure is built up. When this pressure is released, there is usually an earthquake.



The point inside the crust where the pressure is released is called the focus. The point on the surface directly above the focus, is called the epicentre.



Earthquake energy is released in seismic waves. These are felt more strongly closer to the epicentre. The most damage will occur closer to the epicentre.

Earthquakes are measured on the Richter scale, with each level being ten times stronger than the last.



Earthquakes have both p and s waves. P waves are faster and can travel through both solids and liquids. S waves are slower and can only travel through solids.



Nepal 2015

7.8 magnitude earthquake struck the capital city of Kathmandu on April 25, 2015.



About 9,000 people were killed, many thousands more were injured. The fact that buildings were weak caused more deaths.

Nepal is a developing country and lacked the wealth and infrastructure needed to be resilient and the impact was severe.



New Zealand 2011

6.3 magnitude earthquake in Christchurch struck on 22nd February 2011. 181 people were killed. 2,000 injured.



Over 50% of the city's buildings were damaged. Businesses were closed for a long time.



International aid was provided (around $6-7 million). Temporary housing was provided, around $898 was made in insurance claims.

Causes of Tsunamis



Most tsunamis are cased by earthquakes at destructive plate boundaries.

The energy released causes a wave to form. These waves can travel large distances.



When the waves reach shallower water, the waves slow down, increase in height and get closer together.

Indian Ocean 2004 Tsunami

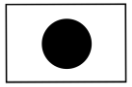


Magnitude 9 earthquake caused the tsunami that affected 13 countries and killed approximately 230,000 people.

It was devastating because the epicenter was close to densely populated areas and there was no early warning system in place.



Japan 2011 Tsunami



Severe 9.0 magnitude on 11th March 2011 causing a tsunami.

The tsunami had wider issues as it flooded the Fukushima Nuclear Power Plant causing a system meltdown.



Keyword	Definition
Convection Current	This is where magma heated by the core rises and as it gets further away it cools down, causing the tectonic plates to move.
Developed country	Countries with relatively high levels of economic growth and security.
Developing country	Countries with a less developed industrial base and lower human development.
Disaster	An event that causes loss of life.
Economic	Something that relates to money.
Environmental	Something that relates to the land, air and sea.
Hazard	An event that has the potential to cause disruption and harm.
Lava	Molten rock on the Earth's surface.
Magma	Molten or semi-molten rock under the Earth's surface.
Plate boundary	Where two tectonic plates meet.
Primary	Effects that occur as a direct result of the ground shaking, e.g. buildings collapsing.
Secondary	Secondary effects occur as a result of primary effects, e.g. fires.
Seismic Waves	Waves of energy that travel through the Earths layers as a result of earthquakes.
Slab pull	Slab pull is when the weight of the moving plate drags the rest behind it.
Social	Something that relates to people.
Subduction	Where one plate moves under another and is forced to sink.
Tectonic	Relates to the structure of the Earth's crust and any processes that take place within it.
Tsunami	A large ocean wave usually caused by an underwater earthquake or volcano. It is different to a tidal wave.

Year 8 – Geography – Topic 8 Our Urban World

World population

The population of the world reached 8 billion in mid-November 2022.



The UN predicts that the global population will increase to 10.4 billion by the end of century.



The population growth might be much smaller due to falling fertility rates.

In 2021 there was 2.4 and is now 2.3 children per women in average.



What is urbanisation?

Today 56% of the world's population live in urban areas.



This is expected double by 2050, meaning 7 of 10 people will live in the cities.



There are two main causes for the growth in the urban population. The first being birth rates and the second rural to urban migration.



People migrate for many reasons like job opportunities, better education and easier access to services.

Megacities

A megacity is a huge city – where the population is over 10 million.



In 1950 there were two megacities in the world, today are 34. Asia is a continent with most megacities, there is 28 of them!



China is the country with the most megacities with 17, including Shanghai and Beijing. In 2023, about 66.2% of total population in China lived in cites.
For the last four decades, urbanisation in China has been centered on export demand, cheap labour, and low pricing..



Informal settlements

In informal settlements there is lack of basic services like electricity and clean water. They are overcrowded and are often not connected to the cities sewerage systems. Pollution is also an issue.



Informal settlements are home to 24% of the population in Rio de Janeiro. In Brazil they are referred to as favelas and they have always been one of the cities defining features.



Inequality in Brazil has been a significant problem for many years. It is due to low wages and extremely high cost of living in Rio de Janeiro and other parts of Brazil



Kiberia is the largest urban informal settlement in Africa. It is located in outskirts of Nairobi in Kenya.

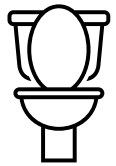


Over 250,000 lives there and only 20% of the population have access to electricity. In Kiberia up to 50 homes will share a toilet.



Despite the size and level of poverty in the area, Kiberia has been ignored by those outside the community.

In 2009 project 'Map Kibera' was launched. This was launched because the informal settlement was not on google maps. Adding it to maps by allowing young people within the informal settlement to collect data. They were not paid by the project, but it empowered them and gave them more skills.



There are many documentary and vlogs of people visiting an informal settlement. The live there can be also documented as a diary entry.



Keyword	Definition
Economic	Something that relates to money.
Environmental	Something that relates to the land, sea or air.
Informal settlement	Settlements that cannot provide the basic living conditions necessary for its inhabitants to live in a safe and healthy environment.
Megacity	A city with a population of over 10 million.
Migration	The movement of people from one place to another.
Quality of life	The standard of health, comfort and happiness experienced.
Rural	Countryside.
Rural-Urban migration	People moving from the countryside to towns and cities.
Social	Something that relates to people directly.
Sustainability	Meeting the needs of people today without compromising those in the future.
Unequal	Not balanced, not the same.
Urban	Built up areas, e.g. cities, towns.
Urbanisation	The process of a higher proportion of people living in urban areas than in rural areas.

Year 8 – Geography – Topic 8 Our Urban World

Sustainability
Sustainability means we can meet the needs of people today without compromising the needs of people in the future.

Many cities in the world are now trying to be more sustainable.

Canberra
Canberra is the capital city of Australia and it offers 48% of its energy in sustainable ways.

Canberra has an excellent public transport service, so the pollution levels are extremely low.

Tokyo
It is the largest megacity with 37.4 million inhabitants. It is home to 10% of Japanese population.

Tokyo is sustainable because people have good wages, the environment is of good quality and people enjoy living there.

Tokyo now have robots that can translate all languages for people who visit Tokyo to make the city even more sustainable.

Tokyo has had to invest lots of money to make sure they are prepared for earthquakes.

They have a bullet train that stops when earthquake occurs to prevent derailing train and 75% of buildings are earthquake proof. This makes the city socially sustainable.

Jobs involved in a sustainable city
An architect is a skilled professional who plans and designs buildings.

A town planner helps communities, companies and politicians to decide on the best way to use land and buildings.

An environmental manager ensures that an organisation is operating in accordance with environmental guidelines and targets. They will examine activities and determine where improvement can be made. They will create, implement, and monitor environmental strategies to promote sustainable development.

A housing manager deals with tenants, local authorities, neighbours and organisations to create harmonious living.

Transportation planners are responsible for developing transportation strategies that include the needs of all transport users including pedestrians and cyclists.

Sustainable cities
For a city to be environmentally sustainable it has to reuse and recycle waste materials and should have energy from cleaner sources like wind or solar power.

Cities that focus on sustainability must address transportation. They should have effective electric and public transport systems.

27% of greenhouse gasses produced in the UK in 2019 came from transportation. Cars made up 79% of this transportation.

Urban farming
The World Research Institute estimates that the world will need to produce 50% more food by 2050.

Urban farming is the practice of cultivating, processing, and distributing food in or around urban areas.

This could help cities to cut down on carbon emissions while increasing food productions.

It will work if citizens will be educated to encourage them to make healthier, more sustainable choices.

Socially sustainable city needs to have good quality housing.

Cities of the future
By 2050, it is estimated that 70 per cent o the world's population will live in cities. Th makes the concept of sustainable citie an efficient resolution to the growing population.

A greater emphasis needs to be put or quality of life and avoiding the negative effects of overcrowding in our cities.

It's crucial for everyone to come together to address pollution, dangerous air quality, and the growing risk of resource shortages.

Key word	Definition
Enslaved person	A person who is the legal property of someone else and forced to work for no pay. They are refused basic freedoms/ human rights.
Transatlantic slave Trade	The buying and selling of people into slavery, where they are forced to work against their will usually on large farms, called plantations.
Triangular Trade	The buying, selling and using of slaves between Europe, Africa and the Americas in exchange for goods (tobacco, guns, sugar)
Colony	A country that has been taken over and is ruled by another country.
Empire	A large group of states or countries ruled over by a single leader.
Imperialism	The aim of increasing a country's power/ influence through military power and trade.
Plantation	A farm where enslaved people lived and worked for their masters. Plantations often grew tobacco, sugar, tea and cotton for the empire.
Resistance	To rebel against a higher power. E.g. fight against the higher power, refuse to work, or disrupt production/ trade.
Legacy	What is left behind after a thing or person no longer exists.
Abolition	Ending or stopping something. E.g. Abolish slavery = end slavery
Abolitionist	A person trying to end/ stop something.
Slavery	The ownership of a person as property, especially in regards to their labour. Slavery typically involves compulsory work.
Culture	Shared beliefs, traditions and behaviours of a group of people
Oppression	Prolonged cruel or unjust treatment.

Year 8 – History – What was the Transatlantic Slave Trade?

ORMISTON SWB ACADEMY

What was life like in Africa before the Transatlantic Slave Trade?

- Africa had many wealthy kingdoms, strong empires and a rich culture.
- There were many languages, opportunities for education including libraries and schools, advancements in medicine including early surgery and different forms of art, music and dance.
- There were many Empires including Mali which was known for gold, and Egypt which is known for pyramids.
- People lived and thrived before their life was disrupted by the Slave Traders.

Africa is a continent rich in culture e.g.

- Ruins in Zimbabwe represent the power of the societies that built them.
- Art and sculpture, including bronze and brass sculptures made in Nigeria.
- Government systems resolved disputes and ensured the well-being of the community.
- Religion included focusing on a connection to nature and spirits

What was the Middle Passage?

- The Transatlantic Slave Trade involved sailing in a 'triangle' shape from Europe/Britain (with a cargo of manufactured goods including guns) to Africa (where those goods were traded for enslaved Africans) then onto the Americas (where the enslaved people were traded for goods like sugar, tobacco and cotton) before returning back to Europe.
- The Middle Passage was the sea journey from Africa to the Americas. Conditions onboard the ship were horrific, with enslaved people chained together, given little food and water, restricted use of an area to go to the toilet and physically beaten. They were separated into different areas of the boat, with men in one area and women / children in the other. This shows the horrific treatment of human beings towards one another. Millions of enslaved Africans were taken to the Americas in this way.

What happened to enslaved people at an auction?

- When the enslaved people arrived in the Americas, they were prepared for, then sold, at an auction.
- Here, they would be separated from their families and friends, if they hadn't been so already.
- They would be prepared by being cleaned and hiding the marks from their beatings.
- They would be examined to see how fit and strong they were: the 'healthiest', youngest and strongest slaves would fetch the highest price.
- The enslaved people were treated as goods to be bought and sold, not as people.

Year 8 – History – What was the Transatlantic Slave Trade?

What was life like on a plantation?

- After enslaved individuals had been purchased, they were taken to a place of work. This was often a Plantation which was a large farming area.
- They would work from sunrise until sunset.
- Healthy, young and fit enslaved people would work in the fields as a field hand, harvesting crops like cotton and sugar. Some women would work in the home.
- They had very basic food and living conditions. They could be treated very badly and punished so they worked faster.

How did enslaved people resist?

- **Resistance:** Some enslaved people choose to resist, either passively e.g. by doing things like pretending to be sick or pretending not to understand
- They also resisted actively e.g. by poisoning their owner or trying to escape and run away.
- If they were caught they would be harshly punished.

- **Revolts:** Enslaved people were often mistreated in ways that provoked resistance e.g. when families were split up and sent to different areas of the country, it encouraged people to break free and attempt to escape.
- Also, plantations that had particularly poor conditions for the enslaved would sometimes lead to large scale slave revolts.

How was Britain involved in the Slave Trade?

- It is important to understand that Britain was involved in the Transatlantic Slave Trade and benefitted from it.
- Cities like Manchester, Bristol, Glasgow, Birmingham and Liverpool were all involved, with ports, goods and enslaved people moving in and out of Britain through these areas.

Why was slavery abolished in Britain and America?

- Britain passed a law in 1807 that made it illegal to buy and sell enslaved people throughout the British colonies.
- Then, in 1833 the Slave Abolition Act was passed which ended slavery altogether, meaning that the enslaved people could no longer be owned.
- People called Abolitionists helped end slavery, including William Wilberforce and Olaudah Equiano who campaigned to end the cruel and inhumane practice.
- Life was still very difficult for people who were once enslaved.
- The Emancipation Proclamation was issued by US President Abraham Lincoln on 1st January 1863. This freed the enslaved people of the Confederate states who were rebelling against the Union states during the Civil War. This ended the enslavement of people in America.

Legacy of slavery in modern times

- Even though slavery was abolished in 1833, there were lasting impacts. Slavery and the slave trade impact Britain (and other areas of the globe) economically, socially and culturally.
- After slavery was abolished, there was still a lot of racism in the world. In recent years there has been awareness brought to the treatment of people of colour e.g. the Black Lives Matter movement has gained momentum, fighting against discrimination and unfair treatment, and fighting for equality.
- Slavery is only one aspect of black history. It is imperative that this terrible practice must not be forgotten, but we must also celebrate and share the rich and diverse history of people of colour too.

Key word	Definition
Absolute poverty	Cannot afford basic needs.
Agriculture	Farming of crops or animals
Cadbury	The chocolate making business
Corruption	When someone or a group of people use their power in a dishonest or illegal way in order to make life better for themselves.
Disease	An illness caused by germs
Entrepreneur	Someone who creates a business
Execution	To kill someone accused of a crime
Factory	A building where goods are manufactured
Hygiene	Maintaining health and preventing disease
Industrial	A group of businesses that make or sell similar products or perform similar service
Inspectors	A person employed to ensure that regulations are followed
Inventor	A person who created a particular process or device
Legislation	Laws passed

Year 8 – History – How did Britain develop from a country of farms to factories?

How did Britain change from 1750-1900?

Britain changed greatly in 150 years. It went from being a country of farmers to factory workers. People moved from the countryside to towns, and then cities, in search of work. As a result, the population in these areas boomed. More and more factories were built to make goods that were manufactured with machines; this was called industrialisation. There were lots of new inventions, including the steam engine, created. The country's transport links improved drastically, with railway lines and canals linking major cities together so people and goods could move quickly.

What was the Industrial Revolution?

Huge changes occurred in the way that people worked and lived in the 1700's and 1800's. This was a time when the manufacturing of goods moved out of people's homes into new steam powered factories.

How did the Industrial Revolution affect our local area?

The Midlands developed vastly during this period. Our local area gained the name 'The Black Country' because of all the coal mines and smog in the area. Wolverhampton was known for making metal products like locks and horse shoes. The iron industry boomed in Dudley, making things like nails and chains.

What were living conditions like during the Industrial Revolution?

Due to the overcrowding in cities housing conditions were cramped and damp with poor ventilation. As it was hard to get water, people found it difficult to wash and clean. This spread diseases like Typhoid. The Industrial Revolution brought smog, a chemical compound of smoke and fog, which was constantly present in the skies; this affected people's lungs. There was no waste collection, so the streets became a dumping ground. Most houses did not have piped water. People had to get water from stand pipes, wells streams or rivers. These were dangerous places to get water.

What made people sick in the Industrial Revolution?

Public health was a problem for people for multiple reasons: poor hygiene, lack of sewers, poor knowledge of disease, cholera, lazy landlords and lack of government action! A lack of knowledge about the dirty conditions people lived in meant diseases were able to spread quickly. Many people did not understand how hygiene linked to health.

Key word	Definition
Manufacture	To make a product on a large-scale, using machinery
Oppression	Prolonged cruel or unjust tr eatment.
Pollution	A harmful substance in the environment.
Poverty	The state of being extremely poor
Public Health	The health of the population
Reform	To make change
Relative poverty	Cannot afford anything above basic needs
Revolution	A very sharp change made to something
Social class	A division of a society based on social and economic status.
Society	'The aggregate of people living together in a more or less ordered community'
Treason	Disloyalty to the monarch
Workhouse	An institution where the poorest in society were given board and shelter in return for work.

Year 8 – History – How did Britain develop from a country of farms to factories?

Why did people end up in the workhouse?

A workhouse was a place where people went if they could no longer look after themselves and their families. There would sometimes be a cell or punishment room, and people would be locked in there for breaking the rules! In the workhouse, they would have to do arduous tasks like oakum picking (rope picking) or rock breaking.

Was life really that terrible for children?

Children were forced to work in factories and mines. They would work long hours for little or no pay. They ended up with health problems from doing hard labour from a young age. Factory Acts improved life e.g. No children under 9 to work in the factories, nine hour days for children aged 9-13, factory inspectors appointed, Children under 13 to work a maximum of 30 hours per week. However, they still had to work but there was now a limit. Children also started going to school.

What was law enforcement like during this period?

Britain's first official police force was set up in 1829 by Sir Robert Peel as an answer to the growing crime rate in London. This was the Metropolitan Police Force. They became known as 'Beat constables' due to the way they worked a 'beat' or walked a set route.

What happened if you committed a crime in Victorian Era?

If you committed a crime in this period, the punishments were harsh. For example, you could be transported to Australia. You could also be sent to prison, but conditions were harsh; everyone was mixed together – men, women and children. However, things did start to change towards the end of the period e.g. prisons like Pentonville prison were built. Important individuals like Elizabeth Fry and John Howard also tried to improve conditions. Fry advocated for women and believed that there was good in everybody so prison should help people improve. Howard said that prison officers should be paid a wage and that prisoners should be separated and live in healthier conditions.

Did life for women finally start to change?

Even though it was legal to sell your wife during the Industrial Revolution, life for women did start to improve slightly. In 1843, women stopped working down mines and long hours in factories were restricted. They started to get jobs like typists, nurses, shop assistants and teachers. Plus, from 1857, women could divorce their husbands.

Why was there nearly a revolution in Britain?

In the 1800s, ordinary people were starting to demand a change. The Chartists were a group of ordinary people who became the first organised national protest movement. They tried several times to get Parliament to change the voting laws. The Chartists showed that working people were powerful if they came together.

How did public health improve?

Towards the end of the Industrial Revolution, public health started to improve slightly. There were many people that tried to improve health, including John Snow who identified that the Broad Street Pump was causing cholera and Joseph Bazalgette who created a new sewer system in London.

Year 8 Term 1 – PRE – How do believers practise their faith? Prayer and Pilgrimage.

Key Words:
Communication: giving or exchanging information by speaking, writing, or using some other medium
Prayer: a request for help or expression of thanks addressed to God or another deity.
Worship: the feeling or expression of adoration for a deity.
Practise: perform an activity or exercise repeatedly or regularly.
Devotion: Showing loyalty/ respect to something or someone.
5 Pillars of Islam: 5 basic acts in Islam which are considered compulsory by believers, and are the foundation of Muslim life
Salat/ Salah: The ritual prayer of Muslims, performed five times daily in a set form
Shrine: a place regarded as holy because of its link with a god, the divine or a sacred person, marked by a building or other construction.
Puja: A worship ritual performed in the morning by Hindus.
Murtis: Images of gods/goddesses.
Mantras: Hindu prayers.
Pilgrimage: A journey to a sacred place for religious reasons
Hajj: The greater Muslim pilgrimage to Mecca, which takes place in the last month of the year and which all Muslims are expected to make at least once during their lifetime if they can afford to do so.
Mecca: Place of pilgrimage for Muslims, located in Saudi Arabia
Ihram: The state in which Muslims must be in before taking part in Hajj (purity)
Lourdes: a leading place of pilgrimage for Roman Catholics after a young girl, Bernadette Soubirous, had visions of the Virgin Mary in 1858
River Ganges: Place of worship for Hindus, located in India
Miracle: an extraordinary and welcome event that cannot be explained by natural or scientific laws.
Environmental issues: climate change, pollution, environmental degradation, and resource depletion.
Hindu Cremation: The most common practice is to cremate the body, collect the ashes, and on the fourth day, disperse the ashes in a sacred (special) body of water e.g. The Ganges.

What is the difference between a pilgrimage and a holiday?

Pilgrimage	Holiday
A pilgrimage is when people travel to a place of worship that is usually far away. They may have to go to a different city or country. A pilgrimage is done for spiritual or religious reasons.	A holiday is where families, friends or individuals will travel for a vacation to spend time together relaxing.

Religious beliefs about Prayer

Christianity

- Christians do not have a set way to pray.
- They may **pray formally**, e.g. in a Church with others, **or informally**, e.g. at home using their own words
- Jesus gave an example of how to pray: **The Lord's prayer**. This prayer includes praise to God, asking for forgiveness and asking for help.

Islam

- **Salat** refers to Muslim prayers, **performed five times each day**. It is the **second Pillar of Islam.**
- God ordered Muslims to pray at five set times of day:
- ***Dawn, before sunrise, Midday, after the sun passes its highest, The late part of the afternoon, Just after sunset, Between sunset and midnight.***
- All Muslims try to do this. Muslim children as young as seven are encouraged to pray.
- In Islamic countries, **the public call to prayer** from the mosques sets the rhythm of the day for the entire population
- Muslims will also perform a **series of movements** that go alongside the words of the prayer.
- Muslims must **wash before they pray which is known as Wudu**

Hinduism

- Hindu worship, or **puja**, involves images (murtis) and prayers (mantras)
- Central to Hindu worship is **the image, or icon**, which can be worshipped either at home or in the temple.
- Hindus will use a **Puja tray** which contains items such as a bell (to awaken the god/ goddess), incense and powder to make a paste.
- Worshippers **repeat the names of their favourite gods and goddesses**, and repeat mantras. Water, fruit, flowers and incense are offered.
- The majority of Hindu homes have a **shrine** where offerings are made and prayers are said.
- **A shrine can be anything: a room, a small altar or simply pictures or statues of the deity.**
- Family members often worship together and there may be a god traditionally worshipped by the family
- Different gods have different attributes**, for example Ganesha is the remover of obstacles.**

Examples of Pilgrimage

Christianity

- Lourdes is a pilgrimage site in **France**
- Every year, it's visited by millions of pilgrims, mainly **Roman Catholics**.
- They go to see the site of a famous vision experienced by a young girl called Bernadette Soubirous and to be healed by its supposedly **miraculous waters**.
- St Bernadette claimed to have seen the Virgin Mary (Jesus' mother) appear to her several times
- Christian pilgrims now visit and pray in **the Sanctuary of Our Lady of Lourdes and worship at the grotto** where the vision is said to have taken place.
- Pilgrims may visit to be **cleansed of their sins** and to be **cured of their illnesses**. It is believed that spring water from the grotto can heal people if they are sick. **Millions of visitors come to Lourdes each year** in the hope of being cured.
- By 2015, 69 cases of healings had been recognised as miracles by the Roman Catholic Church.

Islam

- For Muslims it is a **duty to go on pilgrimage to Mecca** (in **Saudi Arabia)** at **least once in their lifetime**, as long as they are physically able and can afford it.
- The pilgrimage is called **Hajj** and is the fifth Pillar of Islam.
- **Ihram relates to the state of purity and equality before God** (Allah) which Muslims enter before going on Hajj. To symbolise this state, male pilgrims wear **two lengths of white cloth** whilst on Hajj; female pilgrims wear ordinary clothes, but must keep their faces uncovered. **These clothes may be kept by the pilgrim and at their death used to wrap their body for burial.**
- Muslims perform many rituals during Hajj, for example:, running between the hills of Safa and Marwah 7 times an **walking around the Ka'bah**d taking water from the spring which is called Zamzam.
- During Hajj, Muslims also travel to Mina, to the plain of Arafat where they stand on or near the Mount of Mercy from noon until dusk, praising Allah.
- On the third day, they will throw small stones at 3 pillars called Jamarat, which represent the Devil.
- **At the end of the pilgrimage, Muslims celebrate the festival of Eid ul-Adha**

Hinduism

- **The River Ganges** is seen as a place of pilgrimage for Hindus
- It runs for more than 1500 miles across Asia and is considered to be **sacred and spiritually pure**, though it is also **one of the most polluted rivers on earth.**
- Some Hindus believe that it **flowed from heaven to purify humans**. Sometimes the river is represented in female form because many Hindus refer to it as 'mother Gangaa' or 'she'.
- Many Hindus believe water from anywhere on the River Ganges is purifying and holy.
- Many pilgrims also **take home small containers of water from there to give to friends and family** who are not able to attend.

¿Cómo usas tu móvil? How do you use your phone?

Normalmente Normally **A veces** Sometimes **Siempre** Always **Raramente** Rarely **Regularmente** Regularly	**uso** I use **no uso** I don't use **me gusta usar** I like to use **suelo usar** I tend to use **mis amigos y yo usamos** my friends and I use	**Amazon** **BeReal** **Facebook** **Instagram** **Netflix** **Snapchat** **Spotify** **TikTok** **WhatsApp** **YouTube** **las aplicaciones** apps **las redes sociales** social media	**en mi móvil** on my phone **en mi ordenador** on my computer **en mi portátil** on my laptop **en mi tableta** on my tablet	**para** in order to	**compartir vídeos** share videos **escuchar música** listen to music **hacer compras** do shopping **hablar con amigos** talk with friends **jugar a los videojuegos** play video games **mandar mensajes** send messages **navegar por internet** go online **pasar el tiempo** pass the time **sacar fotos** take photos **ver series** watch series

Star phrases

Siempre me ha gustado usar I have always liked to use …

Lo que más me gusta usar es What I like to use most is …



Past Present Future

y and	**o** or	**pero** but	**por ejemplo** for example	**porque** because	**entonces** so
sobre todo especially	**si** if	**también** also	**primero** firstly	**después** then	**finalmente** finally

¿Qué haces cuando hace buen tiempo? What do you do when the weather is good?

Cuando hace buen tiempo
When the weather is good

Cuando hace mal tiempo
When the weather is bad

Cuando hace sol
When it is sunny

Cuando llueve
When it rains

Cuando tengo tiempo
When I have time

Los fines de semana
At the weekend

Normalmente Normally

A veces Sometimes

Nunca Never

Siempre Always

juego al fútbol I play football
juego al baloncesto I play basketball
juego a los videojuegos I play video games

mis amigos y yo jugamos
my friends and I we play

hago natación I do swimming
hago los deberes I do homework
hago ejercicio I do exercise

mis amigos y yo hacemos
my friends and I we do

voy al centro comercial I go to the shopping centre
voy al cine I go to the cinema
voy al gimnasio I go to the gym

mi familia y yo vamos
my family and I we go

bailo I dance
canto I sing
charlo con amigos I chat with friends
descanso I relax
escucho música I listen to music
leo I read
monto en bici I ride my bike
uso el móvil I use my phone
veo la tele I watch TV

mi familia y yo charlamos
my family and I we chat

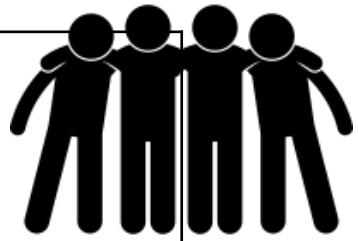
mis amigos y yo leemos
my friends and I we read

en mi opinión
in my opinion

para mí
for me

sin duda
without doubt

es
it is



divertido fun
emocionante exciting
guay cool
increíble incredible
maravilloso marvellous
relajante relaxing

aburrido boring
decepcionante disappointing
fatal awful
insoportable unbearable

Past Present Future

y and **o** or **pero** but **por ejemplo** for example **porque** because **entonces** so
sobre todo especially **si** if **también** also **primero** firstly **después** then **finalmente** finally

Year 8 Spanish – Topic 2 – Where I live

¿Cómo es tu ciudad? What is your town like?

Vivo en … I live in …	**Bilston** **Birmingham** **Madrid** **Lima**	**está en** it is located in	**el centro de** the centre of **el norte de** the north of **el este de** the east of **el sur de** the south of **el oeste de** the west of	**Inglaterra** England **España** Spain **México** Mexico **Perú** Peru

Star phrases

Me gustaría que hubiera I would like there to be
En el pasado había In the past there used to be
Siempre me ha gustado vivir aquí porque …
I've always liked living here because …
Ojalá pudiera vivir en … I wish I could live in …

En mi ciudad In my city **En mi región** In my region **En mi pueblo** In my village **En mi barrio** In my neighbourhood **Cerca de mi casa** Near to my house **En mi calle** In my street	**hay** there is/ there are **no hay*** there is no * do not use un/una after no hay **tenemos** we have	**un campo de fútbol** a football pitch **un castillo** a castle **un centro comercial** a shopping centre **un cine** a cinema	**un estadio** a stadium **un hospital** a hospital **un mercado** a market **un polideportivo** a leisure centre	**un supermercado** a supermarket **un teatro** a theatre **un templo** a temple
		una biblioteca a library **una bolera** a bowling alley **una estación de trenes** a train station	**una iglesia** a church **una mezquita** a mosque	**una piscina** a swimming pool
		muchos lots of	**museos** museums	**parques** parks / **restaurantes** restaurants
		muchas lots of	**cafeterías** cafes	**galerías** galleries / **tiendas** shops

Me gusta donde vivo I like where I live	**porque** because **ya que** because **pero** but	**hay** there is	**mucha historia/naturaleza** lots of history/nature **mucho que hacer** lots to do		
No me gusta donde vivo I don't like where I live		**es** it is	**bastante** quite **demasiado** too **muy** very **tan** so **un poco** a bit	**animado** lively **bonito** pretty **histórico** historic	**moderno** modern **seguro** safe **tranquilo** peaceful
				antiguo old **feo** ugly **industrial** industrial	**peligroso** dangerous **pobre** poor
		hay there is	**mucha basura/contaminación** lots of rubbish/pollution **mucho paro/ruido/tráfico** lots of unemployment/noise/traffic		





y and **o** or **pero** but **por ejemplo** for example **porque** because **entonces** so
sobre todo especially **si** if **también** also **primero** firstly **después** then **finalmente** finally

Unit B – Activities in town

¿Qué se puede hacer en tu ciudad? What can you do in your town?

En mi ciudad
In my city

En mi región
In my region

En mi pueblo
In my village

En mi barrio
In my neighbourhood

Cerca de mi casa
Near to my house

En mi calle
In my street

puedo
I can

suelo
I tend to

me gusta
I like to

odio
I hate to

se puede
you can

ir
go

al castillo to the castle
al mercado to the market
a la biblioteca to the library
a la mezquita to the mosque
al estadio to the stadium
al teatro to the theatre
a la iglesia to the church
a la piscina to the swimming pool

a un concierto to a concert
de compras shopping
de paseo on a walk

jugar
play

al fútbol football
al baloncesto basketball
a los videojuegos video games

hacer
do

natación swimming
deporte sport
ejercicio exercise

beber y comer drink and eat
charlar con amigos chat with friends
comprar ropa buy clothes
descansar relax
montar en bici ride my bike
ver una película watch a film
ver un partido de fútbol watch a football match

en casa at home

en el estadio in the stadium

en el centro comercial
in the shopping centre

en el parque in the park

en el polideportivo
in the leisure centre

en el restaurante in the restaurant



agradable pleasant
emocionante exciting
genial great
increíble incredible
maravilloso marvellous
relajante relaxing

aburrido boring
decepcionante disappointing
fatal awful
insoportable unbearable

Star phrases

En el pasado me gustaba …
In the past I used to like to …

Antes solía … Before I used to …

En mi opinión In my opinion

Creo que I believe that

Pienso que I think that

es
it is

no es
it isn't

Past Present Future

y and **o** or **pero** but **por ejemplo** for example **porque** because **entonces** so
sobre todo especially **si** if **también** also **primero** firstly **después** then **finalmente** finally

Unit C – Past activities in town



¿Qué hiciste en tu ciudad? What did you do in your town?

Este verano This summer

El fin de semana pasado Last weekend

La semana pasada Last week

Ayer Yesterday

Anoche Last night

fui I went

al castillo to the castle
al mercado to the market
al estadio to the stadium
al teatro to the theatre
a la biblioteca to the library
a la mezquita to the mosque
a la iglesia to the church
a la piscina to the swimming pool
a un concierto to a concert
de compras shopping
de paseo on a walk

jugué I played

al fútbol football
al baloncesto basketball
a los videojuegos video games

hice I did

natación swimming
deporte sport
ejercicio exercise

bebí y comí I drank and ate
charlé con amigos I chatted with friends
compré ropa I bought clothes
descansé I relaxed
monté en bici I rode my bike
vi una película I watched a film
vi un partido de fútbol I watched a football match

en casa at home

en el estadio in the stadium

en el centro comercial in the shopping centre

en el parque in the park

en el polideportivo in the leisure centre

en el restaurante in the restaurant

Star phrases

Mi familia y yo fuimos My family and I went
Mis amigos y yo jugamos My friends and I played
Mis padres y yo hicimos My parents and I did

Creo que I believe that

Para mí For me

Sin duda Without doubt

fue it was

no fue it was not

divertido fun
emocionante exciting
guay cool
increíble incredible
maravilloso marvellous
relajante relaxing

aburrido boring
decepcionante disappointing
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Past Present Future

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ART AND DESIGN
AT ORMISTON SWB ACADEMY

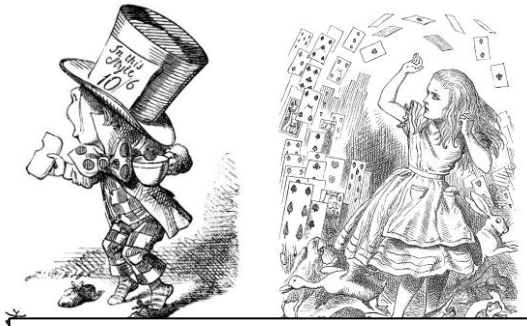
YEAR 8
KNOWELDGE ORGANISER
MAD HATTERS

The **7 Visual Elements** are used to make a piece of artwork. The elements are:
line, shape, form, tone, texture, pattern and colour.
Every piece of art ever created includes one or more of these elements.
They are often **used together**, and how they are organised in a piece of art determines what the finished piece will look like.

Collage	A piece of art made by sticking various materials such as photographs and pieces of paper or fabric on to a backing.
Construct	To build or put together parts to create an artwork or structure.
Composition	Composition is the way in which different elements of an artwork are combined or arranged.
Embellishment	Decorative details added to enhance the appearance of art.
Mixed Media	Mixed media art is when the artist combines a mixture of different materials to create their work.
Illustrator	An artist who creates images to explain or decorate text.
Observational	Drawing or painting by closely studying real-life subjects.
Proportion	The size relationship between parts of an artwork to make it look balanced.
Fonts	Styles of lettering used in design and typography.
Guidelines	Light lines or rules that help organize and plan an artwork.

Mixed-media examples shown in multiple ways which we will create in this project.





John Tenniel created the original Alice in Wonderland illustrations for the author **Lewis Carol.**



***Typography** otherwise know as **font types** have a huge impact on creating art. Look at the vast examples each having its own process for creation.*

Composition plays a large factor in all art work with this project requiring you to create 2d and 3d compositions in a mixture of medias.



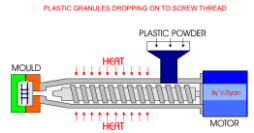
Year 8 What is Design Technology?

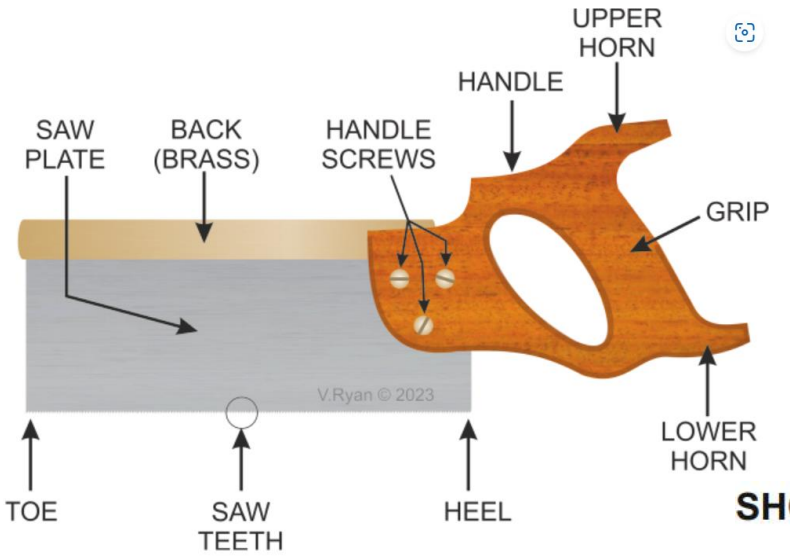
Design and technology gives young people the skills and abilities to engage positively with the designed and made world and to harness the benefits of technology.

Materials

Softwoods Easier to cut, faster growing, cheaper and but strong and durable woods	**Thermoplastics** Plastics that can be heated up and molded several times. Can be recycled back into a plastic	**Hardwoods** Longer lasting, more durable, slower growing, expensive woods
Pine wood A common wood used in construction	**High impact polystyrene** Cheap plastic used for most plastic products	**Oak wood** An expensive wood used for furniture
		

Manufacturing Processes

Wasting Wastage is the process of cutting away material with tools and equipment	**Shaping** This is where material is removed from the original structure to change the dimensions of the original.	**Forming** It involves applying a combination of forces, such as compression, tension and bending, to deform the metal material to the desired shape
Drilling A process of cutting away material to create a hole	**Sanding** Removing saw lines to improve the surface texture	**Forging** Injecting molten plastic into a mold under immense stress.
		





In our DT Workshop we use the following PPE:

- Apron
- Goggles
- Ear Defenders
- Heat Proof Gloves



SHOULDER / REBATE / LAPPED JOINT

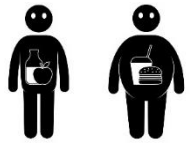


1 2

Year 8 – Food Technology

Why do we need to eat a **balanced diet**?

1. To achieve and maintain a healthy body weight.



2. For growth and repair



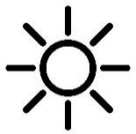
3. To build a strong immune system, prevent disease and infection.



4. To provide energy.



5. To keep us warm.



How do we achieve a balanced diet?
Eight Healthy Tips:

1. Base your meals on starchy foods.

2. Eat lots of fruit and vegetables.

3. Eat more fish – including a portion of oily fish each week.

4. Cut down on saturated fat and sugar.

5. Eat less salt – no more than 4g a day for children.

6. Get active and try to be a healthy weight.

7. Drink plenty of water.

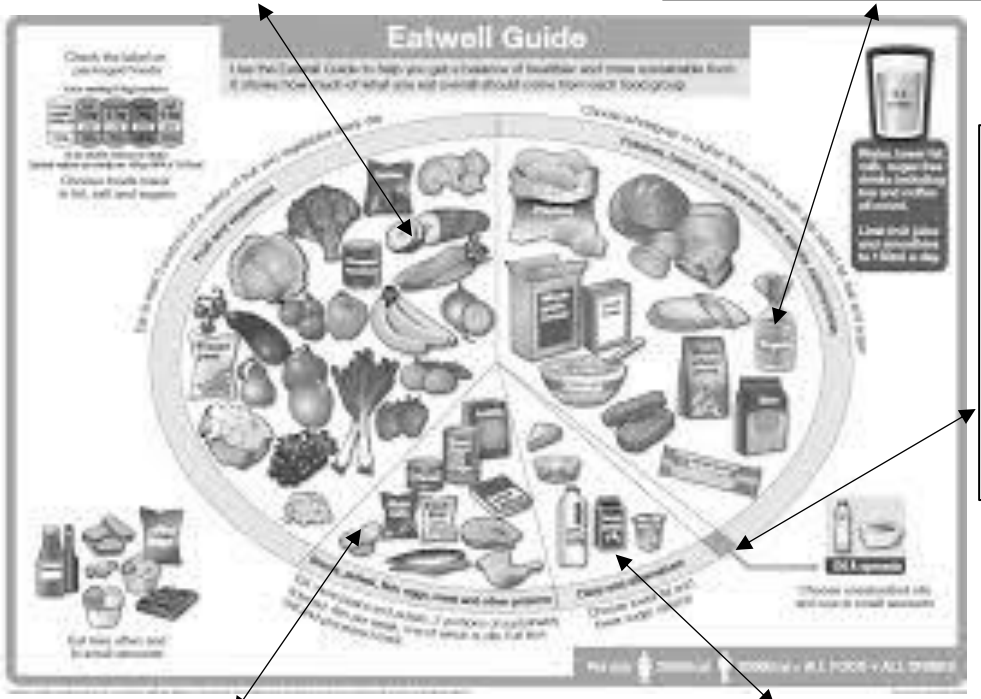
8. Do not skip breakfast.



Eatwell Guide: The Eatwell Guide outlines the recommendations for eating a healthy balanced diet. The guide shows the different types of foods and drinks you should consume – and in what proportions – every day or over a week. The Eatwell Guide shows how much of what you eat overall should come from each food group

Green Section:
Fruit and vegetables are a good source of vitamins, minerals and fibre, needed to build a strong immune system.

Yellow Section:
Starchy foods are a good source of energy. Choose wholegrains for increased fibre, needed to prevent constipation



Purple Section:
Fats, oils and spreads should be eaten sparingly. These do provide energy.

Pink Section:
Beans, pulses, eggs, meat and fish are a good source of protein needed for growth, repair.

Blue Section:
Dairy foods provide a good source of calcium and vitamin D needed for strong bones and teeth.

Year 8 – Food Technology

There are **seven** major classes of nutrients: carbohydrates, fats, dietary fibre, minerals, proteins, vitamins, and water. These nutrient classes can be categorised a either **macronutrients** (needed in relatively large amounts) or **micronutrients** (needed in smaller quantities).

Macronutrients:

Carbohydrates provides the body with **energy**. There are two main types, complex and simple. **Complex carbohydrates** give **long lasting energy**. These are found in foods such as bread, pasta and cereals. **Simple carbohydrates** make blood sugar levels go up very quickly. This provides a **short burst** of **energy.** These are found in 'sugary; foods such as cakes, jams and sweets.

Protein is needed for **growth** and to **repair** cells. Protein is made up of amino acids. Proteins that are high in essential amino acids are called **high biological value (HBV)** proteins. These are found in milk, cheese, fish, eggs, meat and soya beans. Proteins that are low in amino acids are called **low biological value (LBV)** proteins. These are found in nuts, cereals and pulses.

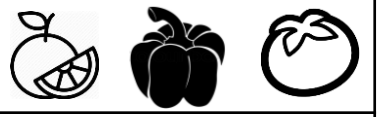
Fats are used by the body for **energy.** Fat also forms an insulating layer under your skin to keep us **warm** and **protect our organs,** such as our kidneys. There are two main types of fat, **saturated** and **unsaturated.** Foods such as meat, cheese and butter are high in saturated fats. Foods such as seeds, fish and vegetable oils are high in unsaturated fats. We should eat less saturated fats.

Fibre helps food to move through our bowels and prevent **constipation**. Foods such as vegetables, wholemeal bread and beans are high in fibre.

Water is needed for lots of reasons, keeping our body at the right **temperature**, **digesting** food, **lubricating** our bones and keeping us **hydrated**. Water is found in drinks, fruits and vegetables.

Keywords	Definition
Constipation	Difficulty empting the bowels
Cholesterol	A type of fat found in our blood
Obesity	Overweight
Diabetes	A disease that occurs when your blood glucose (blood sugars), is too high.

Micronutrients:

Vitamin	What we need it for	Examples of where we get it from
A	Good vision and immune system	
B Group	Releasing energy from carbohydrates	Meat 
C	Fighting diseases and helping the body to absorb iron	
D	Along with calcium, it helps our body make strong bones and teeth	
Minerals	**What we need it for**	**Examples of where we get it from**
Iron	To make red blood cells to carry oxygen around the body	Green leafy veg 
Calcium	Along with vitamin D, calcium helps make strong bones and teeth	

Consequences of a poor diet:

- Eating too many carbohydrates, fatty foods or sugary foods can lead to **obesity,** which can increase the risk of **type 2 diabetes** and **heart disease.**
- Eating too many salty foods can cause **high blood pressure.**
- Too much saturated fat can lead to **high cholesterol.**

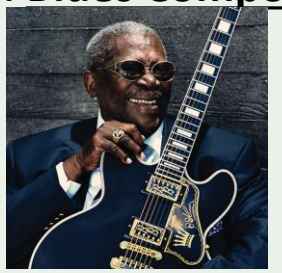
Blues Music

Year 8 Music Knowledge Organiser

a. Key Words

12-Bar Blues- A structure that uses 3 chords over a 12-bar cycle.
Walking Bass Line- The bass part 'walks' up the notes of the chord.
Improvisation- Making music up on the spot, often based on a chord progression or key signature.
Blues Scale- A scale of 6 notes that flattens the 3rd, 5th and 7th notes.
Syncopation- When something is played off beat, usually creating a disjointed feel.
Swing Rhythm- The first bit of the beat is longer as it steals time from the second bit to give the music a swinging feel.
Call and Response- A bit like a musical sentence. One instrument plays and another responds.
Dissonance- A clashing of notes to create tension.

b. Blues Composers



B. B. King



Muddy Waters



Bessie Smith



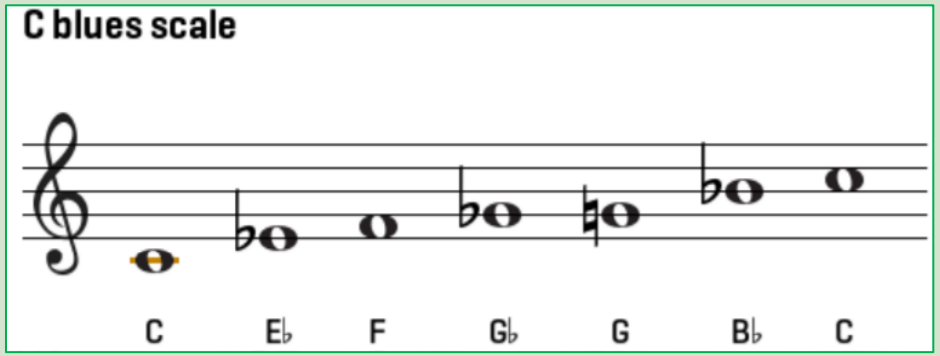
Nina Simone

c. History of Blues Music

Although the blues evolved in the southern states of the USA from the **late 19th century**, it has lots of musical influences from **Africa**. This is because African enslaved people brought their musical traditions with them when they were transported to work in the North American colonies (**The Slave Trade**). Early types of African American music included **spirituals** (religious songs using vocal harmony) and **work songs**.

d. The Blues Scale

Blues music uses a special scale. The Blues scale is built using a flattened 3rd, 5th and 7th note.



Blues Music

Year 8 Music Knowledge Organiser

e. 12-Bar Blues Chord Structure

1 C / / / C+E+G	1 C / / / C+E+G	1 C / / / C+E+G	1 C / / / C+E+G
4 F / / / F+A+C	4 F / / / F+A+C	1 C / / / C+E+G	1 C / / / C+E+G
5 G / / / G+B+D	4 F / / / F+A+C	1 C / / / C+E+G	1 C / / / C+E+G

f. Blues Instruments

Strings- A double bass or bass guitar is used to play the bass line. Guitar plays chords and melodies.

Woodwind- Saxophones and clarinets are sometimes used for the melody.

Brass- Trumpets and trombones are sometimes used for the melody.

Percussion- Drum kit strengthens the rhythm section.

Keyboards- Piano is used to play the chords and melody.

g. Key Features

- Four beats in a bar
- Built on the 12-bar blues form
- Use three four-bar phrases
- A three-line verse structure where the second line repeats the first, for example A A B.
- A short instrumental break (solo) after each line – a form of call and response.
- The lyrics are raw and full of emotion, dwelling on love and loneliness. They tell of injustice and hopelessness, and the longing for a better life. They were passed on from musician to musician through oral tradition. They often use slang and double meanings.

h. Questions

1. *What historical event led to the development of Blues music?*
2. *Name a female composer of Blues music.*
3. *What notes of the scale are flattened to make a Blues scale?*
4. *What are the three chords used in the 12-Bar Blues chord structure?*
5. *What are the lyrics like in Blues music?*
6. *What does the saxophone play in Blues music?*
7. *What does the piano play in Blues music?*
8. *How are the lyrics passed on from musician to musician in Blues music?*