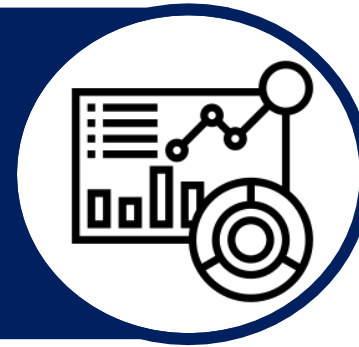


Name: _____



BROADOAK
ACADEMY

Knowledge
Organisers



Term 2
Year 9

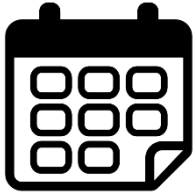
Contents

- How to learn over time
- Revision Strategies
- Knowledge Organisers:
 - English
 - Maths
 - Science
 - Humanities
 - Languages
 - The Arts



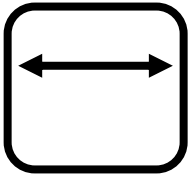
How to learn over time

Successful Learning Takes Place Over Time

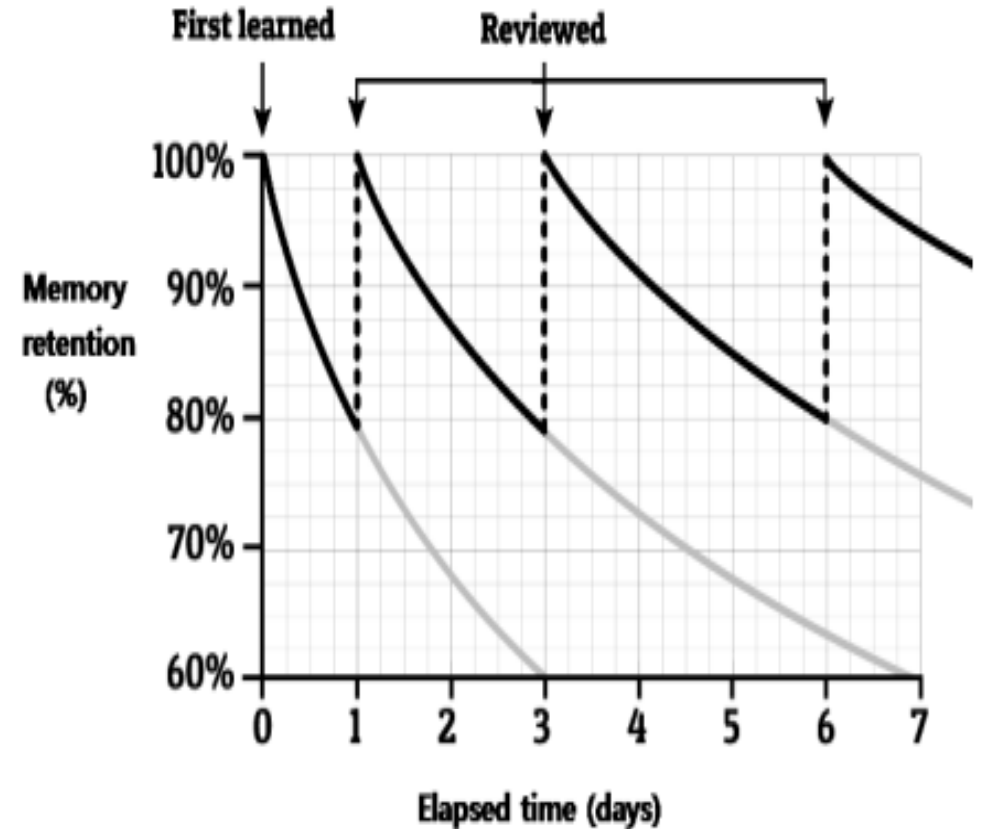


It's rare for anyone to be completely comfortable with something they learn for the first time. This could be a new piece of music, dance move, language or chemistry. We all have to practice. In most instances, the aim is to be at your optimum on the day it matters, e.g. the performance, race or exam. Everything leading up to this point is part of the process of improving. It's about the long-term rather than the short-term, which also means there are no quick fixes. During this period, it's okay to make mistakes; it's okay to feel frustrated. What matters is what you do about it.

Space out your learning on a subject



Spacing out your learning over time is far more effective than last-minute cramming. This is based on research into how we forget and how we remember. The speed at which we forget something will depend on many factors such as the difficulty of the material, how meaningful it was to us, how we learned it and how frequently we relearn or remember it. The last factor tells us that when we learn something for the first time, we need to review it quickly afterwards. The more times we force ourselves to remember something, the longer the gap between reviews, which the diagram below illustrates nicely. The Leitner system and Cornell Notes mentioned earlier provides a wonderful way of achieving this, but the principle applies to all of the learning strategies mentioned in this booklet.



Revision Strategies

List It



This is a simple free recall task that is very versatile. It can feel challenging, but this is a good thing, and it provides clear feedback on what you do and don't know. Choose a topic, set yourself a time limit and...

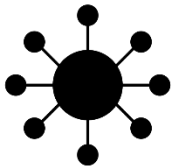
- List as many keywords as you can
- List as many facts as you can
- List as many key events/quotes/individuals as you can
- List as many causes of X as you can
- List as many consequences of Y as you can

Flashcards



Flashcards have the potential to be a powerful learning aid. However, how successful this is will depend on the thought you put into making them in the first place and then how they're used. It's very important to remember that they're for testing, not summarising.

Mapping



Mapping is a brilliant way of organising and learning information, demonstrated on various pages in this booklet. It helps you break down complex information, memorise it, and see the connections between different ideas.

Self-testing



Research has shown that every time you bring a memory to mind, you strengthen it. And the more challenging you make this retrieval, the greater the benefit. Self-testing improves the recall of information, transfer of knowledge and making inferences between information. Equally, there are many indirect effects, such as a greater appreciation of what you do and don't know, which helps you plan your next steps.

Flashcards



Flashcards are small sheets of paper or card with matching pieces of information on either side. They are a useful tool for learning facts and allow you to quickly check whether you have remembered something correctly.

When making and using flashcards:

- | | |
|--|--|
| <p>Do:</p> <ul style="list-style-type: none"> ✓ ...make flashcards quickly. ✓ ...put a single piece of information of each flashcard. ✓ ...sort your flashcards according to your confidence with them (see below). ✓ ...test yourself on the flashcards from memory. | <p>Don't:</p> <ul style="list-style-type: none"> X ...spend more time making flashcards than actually using them. X ...put lots of information onto each flashcard. X ...revise the flashcards in the same order every time that you use them. X ...only read through flashcards. |
|--|--|

1861	groynes	osmosis	Where is the pharmacy?
Pasteur published his paper about germ theory.	A low wall on the coastline which slows longshore drift	Net movement of water from a high concentration to low concentration across a partially permeable membrane	Où est la pharmacie?

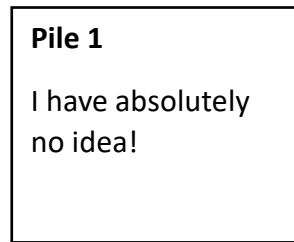
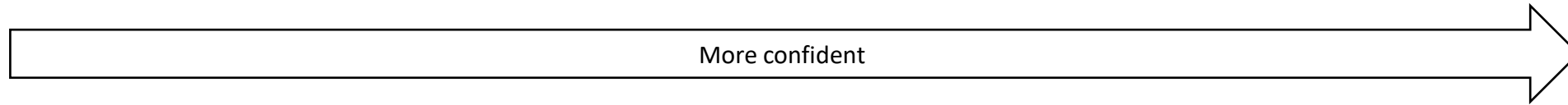
How to make flashcards:

- You can buy a set of flashcards or use a free website such as Quizlet.
- Find the information you want to put onto flashcards using your existing revision resources (e.g. a knowledge organiser).
- Fold a piece of A4 paper into 10.
- Write the questions on the top half of the paper.
- Write the answers on the bottom half of the paper.
- Cut the paper along the dotted lines shown here.
- Fold the strips of paper so that the writing is on either side.

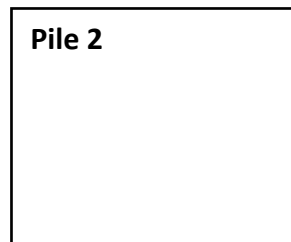
Definition 1	Definition 2	Definition 3	Definition 4	Definition 5
Answer 1	Answer 2	Answer 3	Answer 4	Answer 5

How to use flashcards:

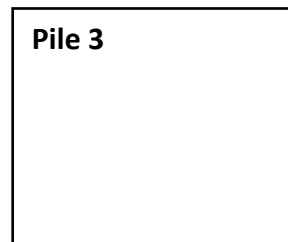
1. Test yourself using the flashcards.
2. As you test yourself, sort the flashcards into up to five piles according to how confident you are with the content.
3. Put the piles into numbered envelopes (1-5).
4. Test yourself on the different piles on different days (see below):



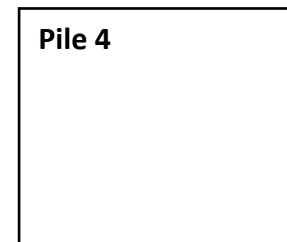
Practise **every** day.



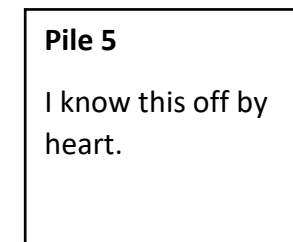
Practise every **other** day.



Practise every **three** days.

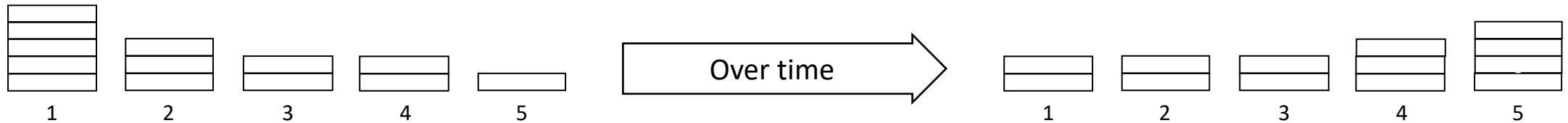


Practise every **four** days.



Practise every **five** days.

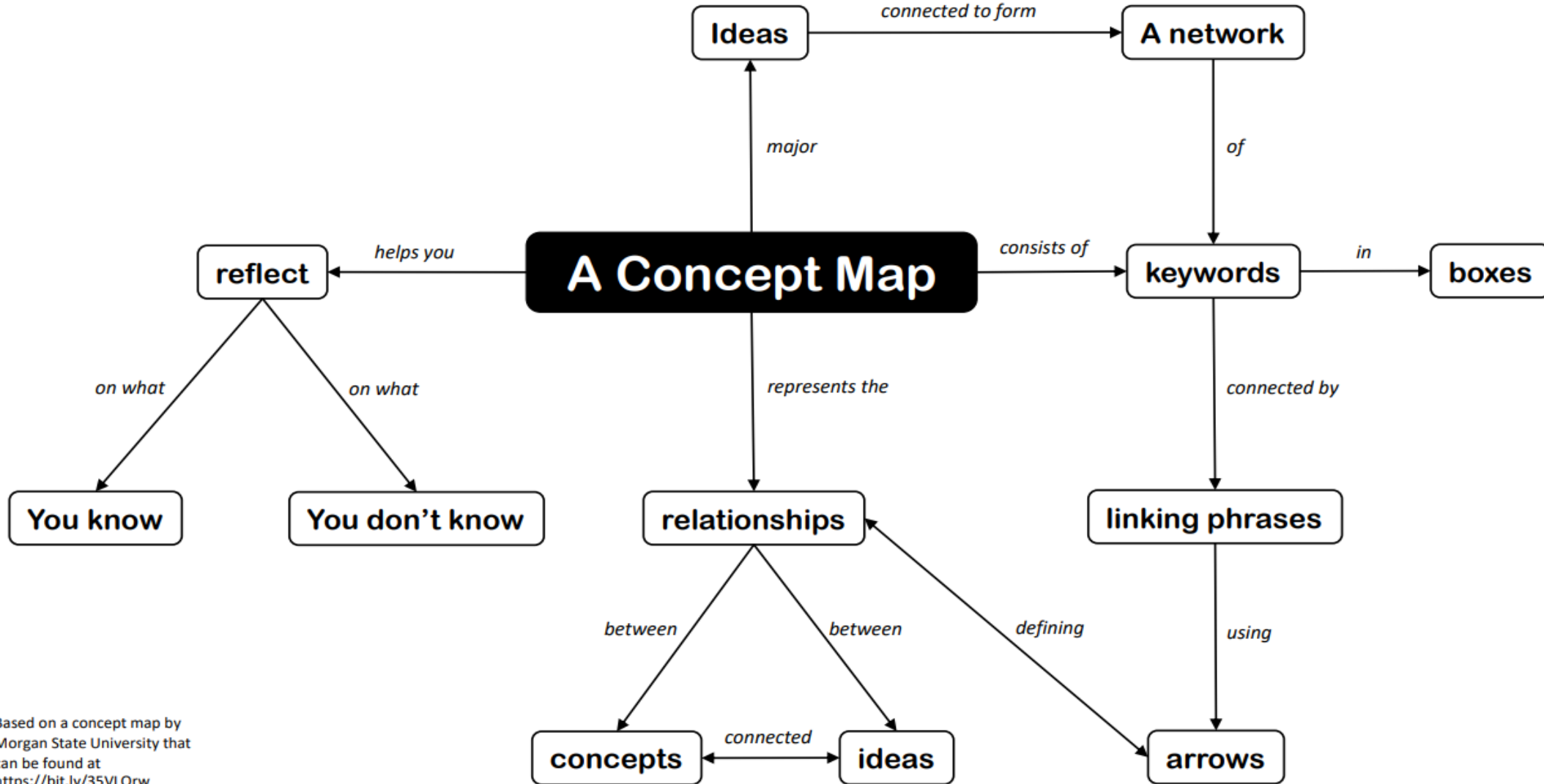
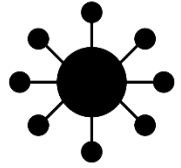
5. As you test yourself on the different piles, move the cards into different piles as you become more confident.



Useful resources:

www.quizlet.com – This free website allows you to quickly create flashcards which you can print, use on a computer, or use on your phone.

Mapping



Based on a concept map by Morgan State University that can be found at <https://bit.ly/35VLQrw>





English



Merchant of Venice

Characters			
6	Antonio	Antonio is the protagonist in this play. He is a merchant who we first encounter being depressed. He takes out the loan on Bassanio's behalf, putting his own life on the line. He has a bitter feud with Shylock but strong loyalty to the other Christian characters.	A simple black silhouette of a sailboat on a small base.
7	Bassanio	Bassanio is a Christian character who, having gambled away his money, approaches his friend, Antonio, to borrow money to win Portia's hand in marriage. Bassanio is seen as one of the main Christian characters in this play.	Two black dice, one slightly behind the other, showing different faces.
8	Portia	Portia is a wealthy heiress from Belmont. Before passing away, her father established a casket challenge to find Portia a potential suitor. Portia defies expectations of women in Elizabethan England as she takes destiny into her own hands throughout the play.	A black silhouette of a woman with long hair, wearing a suit and holding a book or document.
9	Shylock	Shylock is the antagonist within this play. He is a Jew who feels mistreated by the Christian characters. He establishes a bond with Antonio in order to gain revenge for the way that he has been treated, claiming a pound of Antonio's flesh if he does not meet the terms of the bond.	A black silhouette of a seven-branched menorah with a flame on each branch.
10	Gratiano	A comedic Christian character who seems to mirror Bassanio's actions within the play. He travels with Bassanio to Belmont where he marries Nerissa. He is often mocked by other characters for talking too much!	Two black interlocking wedding rings.
11	Nerissa	Nerissa is Portia's servant and best friend. She helps Portia with many of her schemes throughout the play, including disguising herself as a man in the court to save Antonio. Nerissa marries Gratiano.	A black silhouette of two stylized human figures standing side-by-side.
12	Jessica	The daughter of Shylock who is ashamed of her father's behaviours. Jessica runs away from her father, steals his money and converts to Christianity. She is in love with Lorenzo who she runs away with leaving Shylock heartbroken.	A black silhouette of a person in mid-stride, running.
13	Lorenzo	One of the minor Christian characters. Lorenzo has a relationship with Jessica and, in the middle of the night, helps Jessica to run away from her father, Shylock.	Two black hearts, one slightly larger than the other, positioned together.
14	Lancelot	A comedic character. Having once worked as a servant to Shylock, Lancelot leaves Shylock's service and instead works for Bassanio. He has a very strong relationship with Jessica.	A black silhouette of a dog's head, looking forward.



Context			
	Anti-Semitism	The hatred of Jews, or of their religion	
	Usury	Jews were only allowed certain occupations that were deemed 'un-Christian'. Usury meant that Jews were seen as being increasingly greedy and were therefore immensely disliked.	
	Repression	Within society, many aspects of an individual may be repressed in order to conform to societal expectations. Homosexuality as well as attitudes towards religion would have been considered inappropriate and therefore likely not discussed.	
	Women	Women were seen as being inferior within Shakespearian England. Often women were objectified for their beauty or wealth. Shakespeare presented women in a stronger way within his plays, perhaps to appease Queen Elizabeth	

Rounding and estimation and indices

Rounding R

2.46192 (to 1dp) - Is this closer to 246 or 247

246 247

This shows the number is closer to 246

Significant Figures
 370 to 1 significant figure is 400
 37 to 1 significant figure is 40
 3.7 to 1 significant figure is 4
 0.37 to 1 significant figure is 0.4
 0.00000037 to 1 significant figure is 0.0000004

SF: Round to the first nonzero number

Estimation R

Round to 1 significant figure to estimate

$$214 \times 3.1 \approx 20 \times 3 \approx 60$$

The equal sign changes to show it is an estimation

This is an **underestimate** because both values were rounded down

It is good to check all calculations with an estimate in all aspects of maths - it helps you identify calculation errors

Addition/ Subtraction laws for indices

$$3^5 \times 3^2 \rightarrow 3^7$$

$$= (3 \times 3 \times 3 \times 3 \times 3) \times (3 \times 3)$$

The base number is all the same so the terms can be simplified

Addition law for indices
 $a^m \times a^n = a^{m+n}$

$$3^5 \div 3^2 \rightarrow 3^3$$

$$\frac{3 \times 3 \times 3 \times \cancel{3} \times \cancel{3}}{\cancel{3} \times \cancel{3}} \rightarrow \frac{3^3}{3^0} \rightarrow \frac{3^3}{1}$$

Subtraction law for indices
 $a^m \div a^n = a^{m-n}$

Zero and negative indices

$x^0 = 1$

Any number divided by itself - 1

$\left\{ \begin{aligned} a^6 \\ a^6 \end{aligned} \right. = a^6 \div a^6$
 $= a^{6-6} = a^0 = 1$

Negative indices do not indicate negative solutions

$2^2 = 4$
 $2^1 = 2$
 $2^0 = 1$
 $2^{-1} = \frac{1}{2}$
 $2^{-2} = \frac{1}{4}$

Looking at the sequence can help to understand negative powers

Estimation

Estimations are useful - especially when using fractions and decimals to check if your solution is possible.

Most estimations round to 1 significant figure

Estimations are useful - especially when using fractions and decimals to check if your solution is possible.

$210 + 899 < 1200$

This is true because even if both numbers were rounded up, they would reach $300 + 900$

The correct estimation would be $200 + 900 = 1100$.

Limits of accuracy

A width w has been **rounded** to 64cm correct to 1dp.

Error interval $63.5 \leq w < 64.5$

Any value within these limits would round to 64 to 1dp

A width w has been **truncated** to 64cm correct to 1dp.

Error interval $64 \leq w < 65$

Any value within these limits would **truncate** to 64 to 1dp

Round to powers of 10 and 1 sig. figure R

If the number is halfway between we "round up"

5495 to the nearest 1000 5475 to the nearest 100 5475 to the nearest 10

5000 5400 5500 5470 5480

370 to 1 significant figure is 400
 37 to 1 significant figure is 40
 3.7 to 1 significant figure is 4
 0.37 to 1 significant figure is 0.4
 0.00037 to 1 significant figure is 0.0004

Round to the first non-zero number

Round to decimal places

2.46192

To 1dp - to one number after the decimal
 To 2dp - to two numbers after the decimal

2.46192 (to 1dp) - Is this closer to 2.4 or 2.5

2.4 2.5

This shows the number is closer to 2.5

2.46192 (to 2dp) - Is this closer to 2.46 or 2.47

2.46 2.47

This shows the number is closer to 2.46

Estimate the calculation

Round to 1 significant figure to estimate

$$4.2 + 6.7 \approx 4 + 7 \approx 11$$

This is an **overestimate** because the 6.7 was rounded up more

The equal sign changes to show it is an estimation

$$214 \times 3.1 \approx 20 \times 3 \approx 60$$

This is an **underestimate** because both values were rounded down

It is good to check all calculations with an estimate in all aspects of maths - it helps you identify calculation errors

Divide expressions with indices

$$\frac{24}{36} \rightarrow \frac{\cancel{2} \times \cancel{2} \times 2 \times \cancel{3}}{\cancel{2} \times \cancel{3} \times 2 \times \cancel{3}} \rightarrow \frac{2}{3}$$

$$\frac{5a^3b^2}{15ab^6} \rightarrow \frac{\cancel{5} \times \cancel{a} \times a \times a \times \cancel{b} \times \cancel{b}}{3 \times \cancel{5} \times \cancel{a} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b}} \rightarrow \frac{a^2}{3b^4}$$

Cross cancelling factors shows cancels the expression

$\frac{23a^7y^2}{5db^6}$

This expression cannot be divided (cancelled down) because there are no common factors or similar terms

Maths

Standard form and working with algebra

Standard form

Any number between 1 and less than 10 → $A \times 10^n$ ← Any integer

0.001
 $1 \times \frac{1}{1000}$
 1×10^{-3}

10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
10^1	10^0	10^{-1}	10^{-2}	10^{-3}
10	1	0.1	0.01	0.001

R

Example
 3.2×10^4
 $= 3.2 \times 10 \times 10 \times 10 \times 10$
 $= 32000$

Non-example
 0.8×10^4
 5.3×10^{07}

Any value to the power 0 always = 1

Numbers in standard form with negative powers will be less than 1

Negative powers do not indicate negative solutions

$$3.2 \times 10^{-4} = 3.2 \times \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10} = 0.00032$$

Positive powers of 10

1 billion = 1 000 000 000
 $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^9$

Addition rule for indices $10^a \times 10^b = 10^{a+b}$
 Subtraction rule for indices $10^a \div 10^b = 10^{a-b}$

Numbers between 0 and 1

0.054
 $= 5.4 \times 10^{-2}$

1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
10^0	10^{-1}	10^{-2}	10^{-3}
0	0	5	4

A negative power does not mean a negative answer — it means a number closer to 0

Standard form with numbers > 1

Any number between 1 and less than 10 → $A \times 10^n$ ← Any integer

Example
 3.2×10^4
 $= 3.2 \times 10 \times 10 \times 10 \times 10$
 $= 32000$

Non-example
 0.8×10^4
 5.3×10^{07}

Negative powers of 10

0.001
 $1 \times \frac{1}{1000}$
 1×10^{-3}

10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
10^1	10^0	10^{-1}	10^{-2}	10^{-3}
0	0	0	0	1

Any value to the power 0 always = 1

Negative powers do not indicate negative solutions

Order numbers in standard form

10^2	10^1	10^0	10^{-1}	10^{-2}	10^{-3}	10^{-4}
6.4 × 10 ⁻²	2.4 × 10 ²	3.3 × 10 ⁰	1.3 × 10 ⁻¹			
0.064	240	1	0.13			

Look at the power first will the number be > or < than 1
 Use a place value grid to compare the numbers for ordering

Mental calculations

$6.4 \times 10^2 \times 1000$ Not in Standard Form
 $= 6.4 \times 10^2 \times 10^3$ Use addition for indices rule
 $= 6.4 \times 10^5$

$(2 \times 10^3) \div 4$ Divide the values
 $= (2 \div 4) \times 10^3$
 $= 0.5 \times 10^3$

Remember the layout for standard form
 Any number between 1 and less than 10 → $A \times 10^n$ ← Any integer

Addition and Subtraction

Tip: Convert into ordinary numbers first and back to standard form at the end

Method 1
 $6 \times 10^5 + 8 \times 10^5$
 $= 600000 + 800000$
 $= 1400000$
 $= 1.4 \times 10^6$

Method 2
 $= (6 + 8) \times 10^5$
 $= 14 \times 10^5$
 $= 1.4 \times 10^1 \times 10^5$
 $= 1.4 \times 10^6$

More robust method
 Less room for misconceptions
 Easier to do calculations with negative indices
 Can use for different powers

Only works if the powers are the same

Using a calculator

$14 \times 10^5 \times 3.9 \times 10^3$

Input 14 and press $\times 10^x$ then press 5 (for the power)
 Press \times
 Input 3.9 and press $\times 10^x$ then press 3 (for the power)
 Press $=$

This gives you the solution

To put into standard form and a suitable degree of accuracy
 Press MODE SETUP and then press 7 for sci mode
 Choose a degree of accuracy so in most cases press 2

Click calculator for video tutorial

Answer: 5.5×10^8

Multiplication and division

For multiplication and division you can look at the values for A and the powers of 10 as two separate calculations

Division questions can look like this

$(1.5 \times 10^5) \div (0.3 \times 10^3)$
 $(1.5 \div 0.3) \times (10^5 \div 10^3)$
 5×10^2
 $= 500$

Revisit addition and subtraction later for indices — they are needed for the calculations

Addition law for indices $a^m \times a^n = a^{m+n}$
 Subtraction law for indices $a^m \div a^n = a^{m-n}$

Algebraic constructs

Expression
 A sentence with a minimum of two numbers and one maths operation

Equation
 A statement that two things are equal

Term
 A single number or variable

Identity
 An equation where both sides have variables that cause the same answer includes \equiv

Formula
 A rule written with all mathematical symbols e.g. area of a rectangle $A = b \times h$

Like and unlike terms

Like terms are those whose variables are the same

♥ and 3♥ are like terms
 the variable is the same

★ and 3♥ are unlike terms
 the variables are NOT the same

Examples and non-examples

Like terms

y, 7y
 $2x^2, x^2$
 ab, 10ba
 5, -2

Un-like terms

y, 7x
 $2x^2, 2c^2$
 ab, 10a
 5, -2t

Note here ab and ba are commutative operations, so are still like terms

Collecting like terms \equiv symbol

The \equiv symbol means equivalent to
 It is used to identify equivalent expressions

Collecting like terms
 Only like terms can be combined

$4x + 5b - 2x + 10b$
 $(4x - 2x) + (5b + 10b)$
 $2x + 15b$

Common misconceptions
 $2x + 3x^2 + 4x \equiv 6x + 3x^2$
 Although they both have the x variable x^2 and x terms are unlike terms so can not be collected

Substitution into expressions

$4y$ ← 4 lots of 'y'

If $y = 7$ this means the expression is asking for 4 lots of 7

4×7 OR $7 + 7 + 7 + 7$ OR 7×4 **-28**

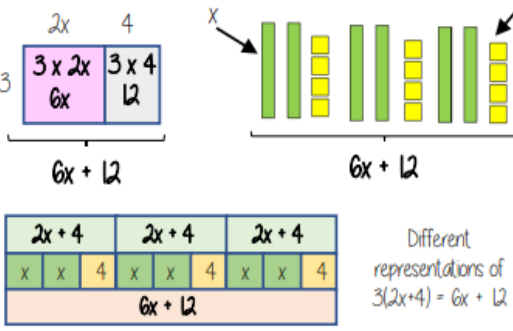
eg: $y - 2$
 $= 7 - 2 = 5$

Expanding, factorising and rearranging

Maths

Multiply single brackets

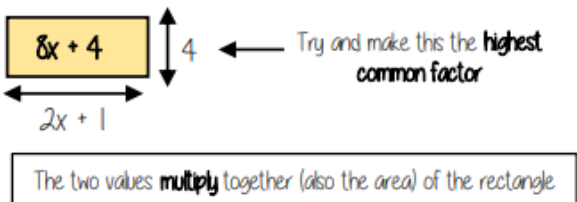
$3(2x + 4)$



Different representations of $3(2x+4) = 6x + 12$

Factorise into a single bracket

$8x + 4$



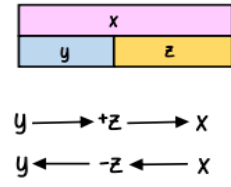
The two values **multiply** together (also the area) of the rectangle

$8x + 4 \equiv 4(2x + 1)$

Note:
 $8x + 4 \equiv 2(4x + 2)$
 This is factorised but the HCF has not been used

Rearranging Formulae (one step)

$x = y + z$
 Rearrange to make y the subject
 $y = x - z$



Using inverse operations or fact families will guide you through rearranging formulae

Rearranging can also be checked by substitution.

Language of rearranging...

- Make XXX the subject
- Change the subject
- Rearrange

Rearranging Formulae (two step)

In an equation (find x)

$$4x - 3 = 9$$

$$+3 \quad +3$$

$$4x = 12$$

$$\div 4 \quad \div 4$$

$$x = 3$$

In a formula (make x the subject)

$$xy - s = a$$

$$+s \quad +s$$

$$xy = a + s$$

$$\div y \quad \div y$$

$$x = \frac{a+s}{y}$$

The steps are the same for solving and rearranging

Rearranging is often needed when using $y = mx + c$

e.g Find the gradient of the line $2y - 4x = 9$
 Make y the subject first $y = \frac{4x+9}{2}$ Gradient = $\frac{4}{2} = 2$

Method 1

$$(3x + 2)(5x + 3)$$

$$= 15x^2 + 9x + 10x + 6$$

$$= 15x^2 + 19x + 6$$

You can use the grid method

Don't forget to simplify $9x + 10x = 19x$

You must take care with the 'signs' in front of the terms

$$(4x - 7)^2$$

x	4x	-7
4x	16x ²	-28x
-7	-28x	+49

$$= 16x^2 - 28x - 28x + 49$$

$$= 16x^2 - 56x + 49$$

Don't forget to simplify $-6x + 5x = -x$

Method 2

$$(5x - 3)(2x + 1)$$

x	5x	-3
2x	10x ²	-6x
+1	+5x	-3

$$= 10x^2 - 6x + 5x - 3$$

$$= 10x^2 - x - 3$$



Working Scientifically

Types of Variable

Independent - the variable that is **changed**

Dependent - the variable that is **measured**

Control - the variable that stays the **same**

Qualitative - Worded data.

Continuous - Numbered data, can be any value.

Discrete - Numbered data, only certain values.

Tables

Units **only** go in headings

Time (s)	Vol. gas (cm ³)

Types of Error

Systematic - a problem with the method or equipment used. E.g. using a beaker to measure the volume of a liquid instead of a measuring cylinder.

The effect cannot be reduced by taking repeat readings.

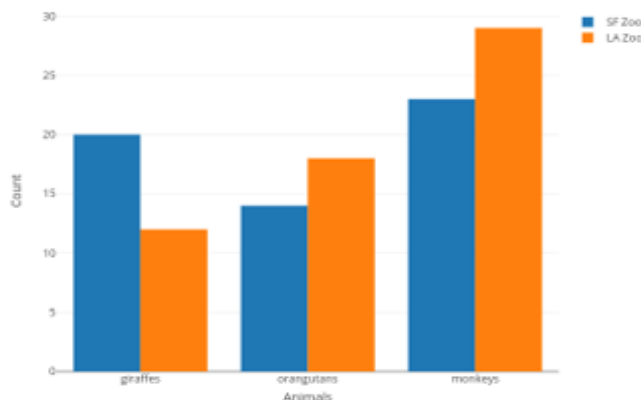
Random - whenever something is measured a random error is made. E.g. measuring with a ruler.

The effect can be reduced by taking repeat readings.

Zero - caused by a piece of equipment not reading zero when it should. E.g. a balance. Either reset the piece of equipment or deduct the false reading from all measurements.

Type of graph plotted for one **qualitative** variable and one **continuous** variable.

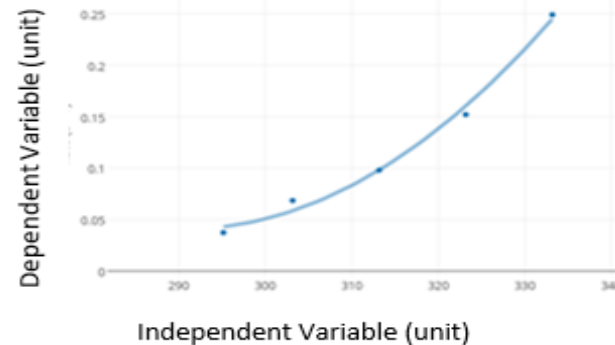
data



Line Graph

Type of graph plotted for two pieces of **continuous** data

Has a **line of best fit**. This may be a **straight line** or a **curve** (not join the dots)



Key words

Accurate - close to the true value

Anomalous - a result that doesn't fit the pattern

Precise - small amount of spread around the mean

Resolution - the smallest reading on a piece of measuring equipment

Reproducible - if the same results are obtained by different people for the same investigation

Range - the biggest and smallest values of the independent or dependent variable e.g. 0-10 N

Volume - amount of a liquid

Hypothesis - a prediction of what will happen in an experiment.

C1 & 2: States of matter and separating substances

Lesson sequence

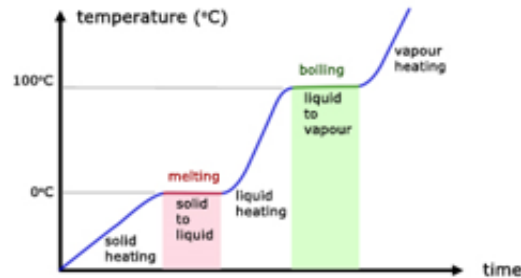
- States of matter
- Mixtures
- Filtration and crystallisation
- Paper chromatography
- Distillation
- Core practical – investigating inks (CP7)
- Drinking water

1. States of matter

Particle	The tiny pieces that all matter is made from.
Atom	The smallest independent particle. Everything is made of atoms.
Molecule	A particle made from two or more atoms bonded together.
State of matter	Whether a substance is solid, liquid or gas.
Particle model	A theory that uses the idea of particles to explain the differences between solids, liquids and gases.
Solid	Particle arrangement: Regular pattern, touching each other. Particle movement: Vibrating around a fixed point.
Liquid	Particle arrangement: Random, touching each other. Particle movement: Moving around
Gas	Particle arrangement: Random Particle movement: Moving quickly
State changes	Solid to liquid = melting Liquid to solid = freezing Liquid to gas = evaporating or boiling Gas to liquid = condensation Solid to gas = sublimation Gas to solid = deposition

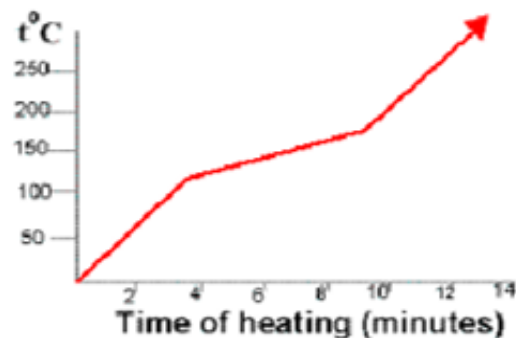
Heating curve for a pure substance

Temperature rises as you heat a solid, levels out as it melts, continues rising once fully liquid, levels out whilst boiling and rises again once fully gas.



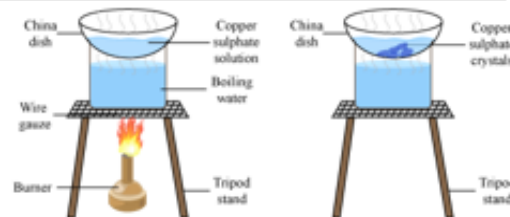
2. Mixtures

Element	A substance made from only one type of atom.
Compound	A substance made from two of more different elements bonded together.
Mixture	A substance made of two of more substances (elements or compounds) mixed but not bonded together.
Melting point of mixtures	Mixtures do not melt at a fixed temperature but melt gradually over a range of temperatures.
Heating curves of mixtures	The flat sections of the heating curves of a pure substance are sloped for a mixture.



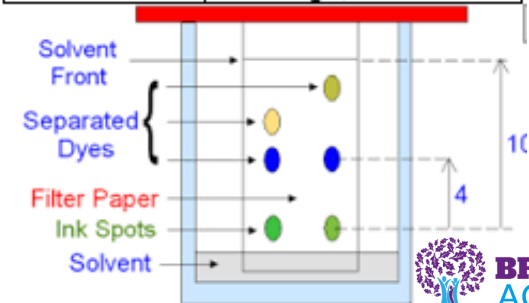
3. Filtration and crystallisation

Dissolve	When a substance mixes with a liquid by breaking down into individual particles (atoms or molecules).
Soluble	When a substance can be dissolved by a liquid.
Insoluble	When a substance can't be dissolved by a liquid.
Filtration	A method of separating a mixture of a liquid and an insoluble solid by passing it through a filter paper.
Residue	The solid that gets left behind in the filter paper.
Filtrate	The liquid that passes through the filter paper.
How filtration works	The filter paper contains many tiny holes. The water molecules are small enough to pass through the holes, the solid particles are too big and get trapped.
Solution	A mixture of a solute dissolved in a solvent.
Solvent	A liquid that has dissolved a substance, for example water.
Solute	A solid that has been dissolved, for example salt.
Crystallisation	A method of collecting the dissolved solid from a solution by heating it so that the solvent evaporates away.
Risks of crystallisation	As the solvent boils away, the hot solution can spit, so you should wear safety goggles to protect your eyes.

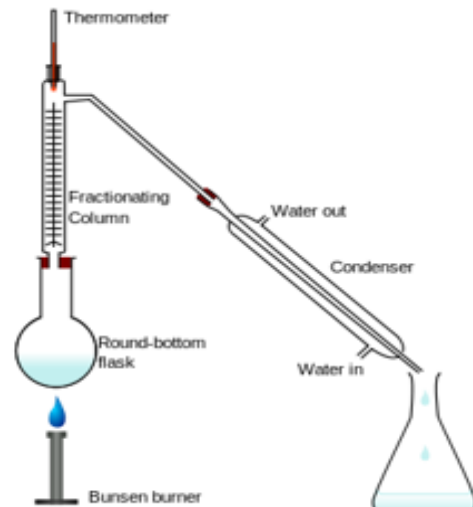
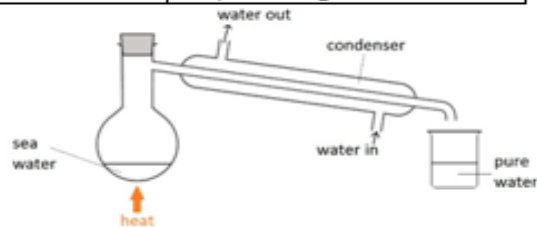


4. Paper chromatography

Paper chromatography	A method of separating out mixtures of liquids to show what is in them, by letting them travel up a piece of chromatography paper.
Chromatography method	<ol style="list-style-type: none"> Draw pencil line on paper Place sample spot on line Place paper in solvent, with solvent below pencil line. Allow solvent to soak up the paper Stop when solvent near top, and mark how far it gets.
Stationary phase	The substance the solvent moves through – usually paper (Note: technically it is a thin layer of water from air that is bound to the paper molecules)
Mobile phase	The solvent.
R_f (retardation factor)	$R_f = \text{spot distance} / \text{solvent distance}$
Uses of R_f	R _f enables you to identify a substance because for a given solvent and stationary phases, it is unique to each substance.
Uses of chromatography	<ul style="list-style-type: none"> To tell between pure and impure substances To identify substances by comparison with known ones To identify substances by calculating R_f.



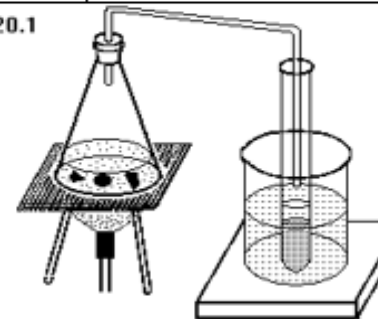
5. Distillation	
Distillation	A method used to collect pure liquid from a solution, such as getting pure water from seawater.
Condenser	A glass tube surrounded by a glass jacket containing cold tap water. Used to condense gases back to liquids.
How distillation works	The solution is heated until it is hot enough for the solvent to boil. The solvent is then passed through a cool condenser where it turns back to liquid. The solute does not get hot enough to evaporate and stays where it is.
Anti-bumping granules	Jagged grains of glass that are added during distillation to prevent violent boiling.
Fractional distillation	A type of distillation used to separate mixtures of two or more liquids.
How fractional distillation works	The liquid with the lowest boiling point boils first and can be collected, then the next boils and so on.
Fractionating column	A tall glass column used during fractional distillation that gives a better separation of the liquids by producing a temperature gradient.



6. Core practical – investigating inks	
Aim	To separate inks using distillation and chromatography.
Distillation set up	Place some ink in a conical flask with a side arm and delivery tube attached, place the flask on a tripod above a Bunsen burner. Place a boiling tube in a beaker of ice and place the delivery tube into the boiling tube.
Run the distillation	Light the Bunsen burner and allow the ink to boil, stop once a few drops of liquid have collected.
Distillation results	Pure water collects in the test tube because it <u>boils</u> and the cold ice condenses the vapours back to liquid. The ink gets darker because there is less water to dilute it.
Chromatography setup	<ol style="list-style-type: none"> 1. Draw pencil line on paper 2. Place ink spot on line 3. Place paper in solvent, with solvent below pencil line. 4. Allow solvent to soak up the paper 5. Stop when solvent near top, and mark how far it gets.

Chromatography - calculate Rf	Measure how far each of your spots has moved from the line and how far the solvent has moved. $R_f = \text{spot distance} / \text{sample distance}$.
Chromatography results	The ink separates into multiple different spots. The one that moves furthest is most soluble in the water.

3.20.1



7. Drinking water	
Potable water	Water that is safe to drink.
Desalination	Producing pure water from seawater.
Purifying seawater	The seawater is distilled: heating the water to produce water vapour and condensing it back to liquid. Uses lots of energy.
Uses of pure water	Pure water has to be used when chemists analyse substances to find out what they contain. Tap water contains many dissolved substances that could interfere with this.
Water treatment in the UK	Water is passed through a sedimentation tank, to allow sediment to settle out, it is passed through a filtration tower to remove floating particles, chlorine is added to kill bacteria.

B1: Biology key concepts
Lesson sequence

1. Microscopes
2. Plant and animal cells
3. Measuring cells
4. Core practical: using microscopes
5. Specialised cells
6. Bacterial cells
7. Digestive enzymes
8. How enzymes work
9. Factors affecting enzymes
10. Core practical: enzymes and pH
11. Cell transport
12. Core practical: osmosis in potatoes

1. Microscopes

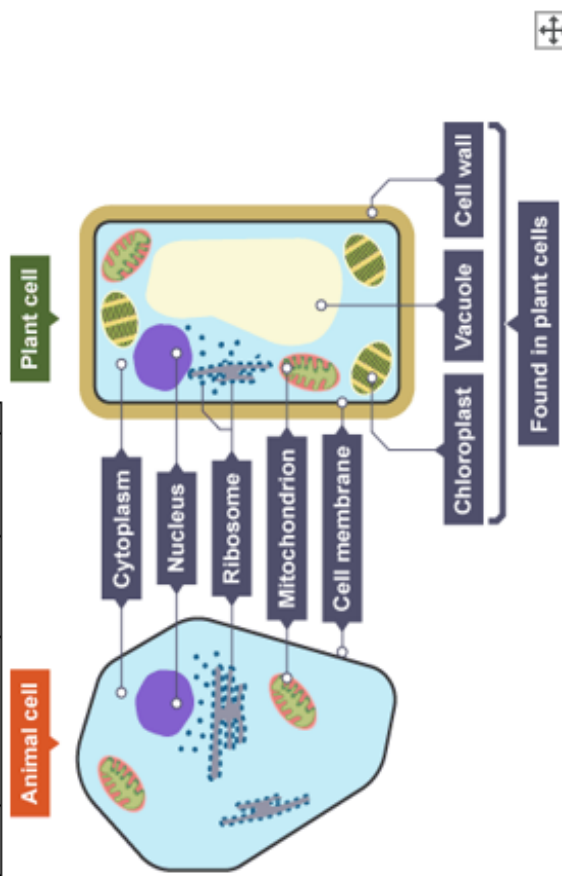
Magnification	The number of times bigger something appears under a microscope.
Eyepiece lens	The lens on a microscope that you look through.
Objective lens	The lens at the bottom of a microscope. There are normally three you can choose from.
Total magnification	Eyepiece lens x objective lens.
Resolution	The smallest distance between two points so that they can still be seen as two separate points.
Stains	Dyes added to microscope slides to show the details more clearly.
Milli	Thousandth, 1×10^{-3} (a millimetre is a thousandth of a metre).

Micro	Millionth, 1×10^{-6} (a micrometre is a millionth of a metre).
Nano	Billionth, 1×10^{-9} (a nanometre is a billionth of a metre).
Pico	Trillionth, 1×10^{-12} (a picometre is a trillionth of a metre).


2. Plant and animal cells

Cell	The basic structural unit of all living things (the building blocks of life).
Parts of an animal cell	Cell membrane, cytoplasm, nucleus, ribosomes, mitochondria.
Parts of a plant cell	Cell membrane, cytoplasm, nucleus, ribosomes, mitochondria, cell wall, permanent vacuole, chloroplasts.
Cell membrane	Controls what enters and leaves the cell.
Cytoplasm	A jelly-like substance where chemical reactions take place.

Nucleus	Contains DNA and controls the cell.
Ribosome	Produces proteins.
Mitochondria	Releases energy by aerobic respiration.
Cell wall	Protects and supports the cell, made of cellulose.
Permanent vacuole	Stores sap and helps to support the cell.
Chloroplast	Where photosynthesis happens, contains chlorophyll.


3. Measuring cells

Micrograph	A picture produced by a microscope.
Light microscope	A microscope that uses light, can magnify up to 1500 times.
Electron microscope	A microscope that uses electrons to produce an image, can magnify up to 1,000,000 times.
Actual size of a cell	Actual size = measured size / magnification
Convert mm to μm	Micrometres (μm) = millimetres (mm) x 1000

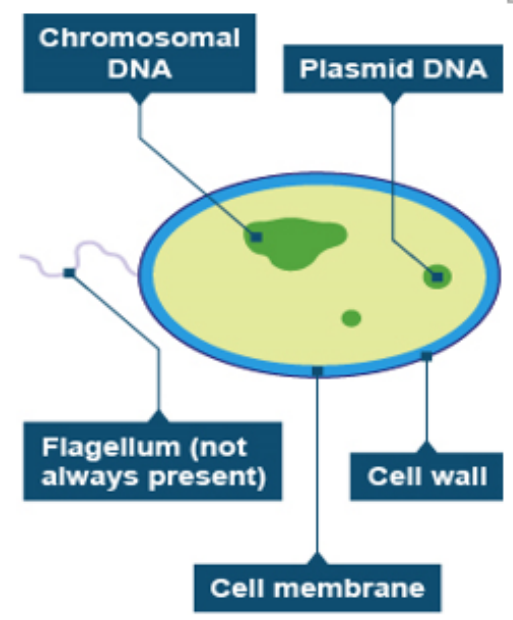
4. Core practical – using microscopes

key question	What do cells look like under a light microscope?
Prepare the slide	Collect the cells you are studying and place them on the slide. Add a drop of stain and cover with a cover slip.
Select lens	Choose between the 4x, 10x and 40x objective lenses.
Place slide in microscope	Place slide on microscope stage, adjust the coarse focus until the lens is just touching the slide.
Rough focus	Looking through the eyepiece, slowly adjust the coarse focus until you see a rough image.
Fine focus	Looking through the eyepiece, slowly adjust the fine focus until you see a sharply focussed image.
Record the image	Draw what you see, label any cell parts you can recognise and repeat with different objective lenses.
Results	As you increase the magnification of the objective lens, the cells appear larger and more detailed.

5. Specialised cells	
Small intestine cell	Job: To absorb small food molecules produced during digestion. Adaptations: Tiny folds called microvilli that increase their surface area.
Sperm cell	Job: Fertilise an egg and deliver male DNA. Adaptations: A tail to swim, mitochondria to give energy for swimming, an acrosome to break through the egg's jelly coat, haploid nucleus with only half the total DNA.
Egg cell	Job: To be fertilised by a sperm and then develop into an embryo. Adaptations: Jelly coat to protect the cell, many mitochondria, and nutrients to provide energy for growth, haploid nucleus with only half the total DNA.
Ciliated epithelial cell	Job: To clear mucus out of your lungs (and other internal surfaces). Adaptations: Small hairs on the surface – called cilia – which wave to sweep mucus along.

6. Bacterial cells	
Parts of a bacterial cell	All bacteria: Cell membrane, cell wall, cytoplasm, ribosomes, chromosomal DNA, plasmid DNA Some bacteria: flagellum.
Chromosomal DNA	Large piece of DNA containing most genes.
Plasmid DNA	Small loops of DNA containing a few genes.
Flagellum	A tail used for movement.

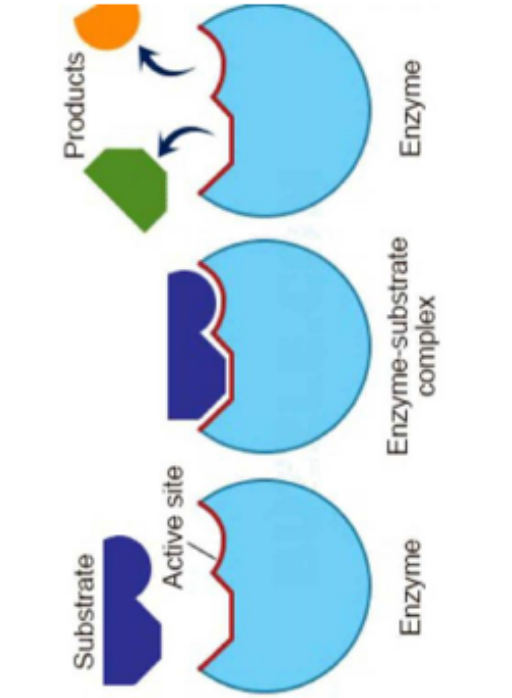
Eukaryotic cells	Cells with a nucleus.
Prokaryotic cells	Cells without a nucleus.
Standard form	A way of writing numbers in terms of powers of ten. E.g. $0.015 = 1.5 \times 10^{-2}$ $0.000458 = 4.56 \times 10^{-4}$ The index of ten (the 'minus' number) tell you which decimal point to start on.



7. Digestive enzymes	
Digestion	Breaking large food molecules down into ones small enough to be absorbed by the small intestine.
Catalyst	A substance that speeds up a chemical reaction without being used up.

Enzyme	A protein that works as a catalyst to speed up the reactions in our cells.
Digestive enzymes	Enzymes that break large food molecules down into smaller ones.
Amylase	Where found: saliva, small intestine What it does: breaks down starch into simple sugars such as maltose
Lipase	Where found: small intestine What it does: breaks down fats into fatty acids and glycerol
Protease	Where found: stomach (pepsin), small intestine (trypsin) What it does: breaks down proteins into amino acids

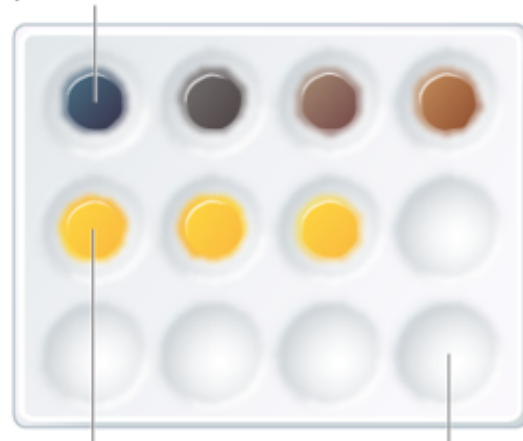
8. How enzymes work	
Substrate	The chemical(s) that an enzyme works on.
Active site	An area of an enzyme with the same shape as the substrate.
Lock and key mechanism	The substrate moves into the active site and reacts to form the products. The products leave the active site so another substrate can then enter and so on.
Specificity	Each enzyme can only work on one substrate because the shape of the active site has to match.
Denature	When the shape of the active site changes so the enzyme stops working.



9. Factor affecting enzymes	
Optimum temperature	The temperature when an enzyme works fastest (about 37° for human enzymes).
Changing the temperature	Increasing to optimum: rate increases because particles move faster Increasing past optimum: rate decreases as enzyme denatures
Optimum pH	The pH when enzymes work fastest (around pH 6-8 for most human enzymes)
Changing pH	Rate decreases as you move away from the optimum because the enzyme denatures.
Increasing substrate concentration	At first the rate increases, but then it levels out as the enzyme is working as fast as possible.

10. Core practical – enzymes and pH	
key question	How does the rate that amylase works change as you change the pH?
Prepare your reactants	Place starch solution, amylase solution and pH 7 buffer into separate test tubes and warm them in a water bath at 40°C
Prepare your dropping tile	Place a few drops of iodine solution into each well of a spotting tile.
Start the reaction	Mix reactants together, start the stop watch and keep the mixture warm in the water bath.
Test for starch	Remove a small amount of mixture and place in a well on the spotting tile.
Record your results	Repeat the test until the mixture does not go black (no starch). Record the time.
Vary the pH	Repeat with different pH buffers from pH 3 to pH 10
Results	The amylase works fastest around pH 7 and more slowly at pH high or lower than this.

A blue/black colour indicates the presence of starch.



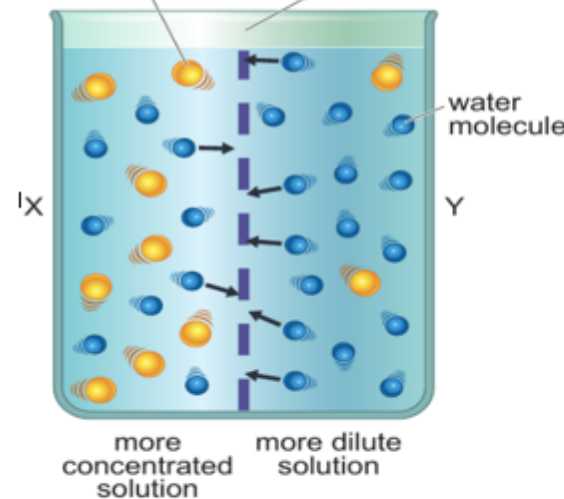
A yellow/orange colour that no longer changes indicates that the reaction is complete.

B iodine solution is used to indicate the presence of starch

11. Cell transport	
Concentration	The number of particles in a given volume (the strength of a solution).
Concentration gradient	The difference in concentration between two neighbouring areas.
Diffusion	The movement of particles from high to low concentration (down a concentration gradient).
Diffusion examples	Lungs: oxygen into blood, carbon dioxide out of blood Leaf: carbon dioxide into leaf, oxygen out of leaf.

Partially permeable membrane	A membrane that allows some molecules but not others to pass through it (like a cell membrane).
Osmosis	The movement of water across a partially permeable membrane from high water/low solute conc to low water/high solute conc.
Osmosis examples	Water into plant roots, water in/out of any cells.
Active transport	Using energy to move substances from low to high concentration (up a concentration gradient).
Active transport examples	Minerals being absorbed into plant roots.

soluble molecule that is too large to pass through the membrane (e.g. sucrose) partially permeable membrane allows molecules to pass through if they are small enough



C In osmosis, a solvent flows from a dilute solution of a solute to a more concentrated one.

12. Core practical – osmosis in potatoes	
Prepare potatoes	Cut six similar pieces of potato, blot them dry and weigh them.
Run the experiment	Place each potato piece in a test tube with sucrose (sugar) solutions with concentrations from 0% to 50%
Record results	Blot each potato piece dry and re-weigh it.
Calculate percentage mass change	$\% \text{ change} = (\text{final value} - \text{starting value}) / \text{starting value} \times 100$
Results	Potato in weaker sucrose solutions gain mass because water enters potatoes by osmosis, those in stronger solutions lose mass as water leaves by osmosis.

Year 9 Geography Knowledge Organiser – How long can we exploit Earth’s resources?

1	Spheres	Everything in Earth's system can be placed into one of four major subsystems: land, water, living things, or air. These are listed below:
2	Atmosphere	Thin, fragile layer of gases that surrounds the Earth
3	Biosphere	Living matter on Earth, including all plant and animal life
4	Hydrosphere	The water on the surface of the Earth in oceans, rivers, lakes and rain.
5	Lithosphere	The Earth's crust including landforms, rocks and soil
6	Geological Time	Geologic time is the billions of years since the planet Earth began developing. Earth is 4.6 billion years old.
7	Rock Cycle	The Earth's rocks are always being created, changed and destroyed because of processes such as weathering, erosion and large earth movements. This takes place over millions of years.
8	Metamorphic	Rocks formed from other rocks that are changed by heat or pressure.
9	Sedimentary	Rocks formed by the broken remains of other rocks joining together.
10	Igneous	Rocks formed from molten rock that has cooled and become solid.
11	Natural resources/raw materials	Substances that are found in nature from which products can be made e.g wood made into furniture.

12	Sustainability	When materials and resources are used in a way that balances the needs of the present without compromising the future, the ability to maintain something such as economic growth.
13	Fossil Fuel	A natural hydrocarbon fuel such as petroleum, coal or natural gas, which is formed by the fossilised remains of ancient plants and animals over millions of years.
14	Crude oil	Naturally occurring and unrefined petroleum that can be refined into diesel, petrol, plastics etc.
15	Non-renewable	Substances which are limited and so will run out one day or cannot be replaced during our lifetime such as natural gas, coal etc.
16	Paris Agreement	An agreement made by 196 country leaders in France 2015, to work together to reduce the impact of harmful emissions on the planet and limit the rise in the Earth's temperature.
17	Keystone XL	A planned 1,897km pipeline to connect the oil sands of Alberta, Canada to Steele City, Nebraska USA, and carry 830,000 barrels of oil each day.
18	Stakeholders	Individuals, groups or organisations that are affected by an activity or have an opinion
19	Mining	The process or industry of extracting coal or other minerals from the inside the Earth
20	Industrial Revolution	Period of time when places become industrialised, use of machines develop and factories are built. Manufacturing becomes common. Happened in the UK during late 1700s and early 1800s
21	Energy Mix	The combination of different energy sources a country uses to meet its energy needs.

WWI Key Events



Key Terms

Who do we remember in WWI?


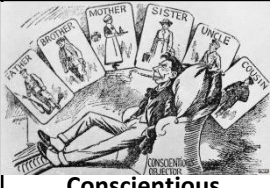







Key Skills

Significance Use the 5Rs	<p>Remarkable – an event/person commented on at the time</p> <p>Remembered – has not been forgotten</p> <p>Resulted in change – led to other events</p> <p>Revealing – tells us a lot about that time</p> <p>Resonant – has an effect on future generations</p>
Source Analysis Use NOP Content	<p>Nature: What is the type of source?</p> <p>Origin: Who wrote it? When? Where?</p> <p>Purpose: Why was the source made?</p> <p>Content: What does it tell us?</p>

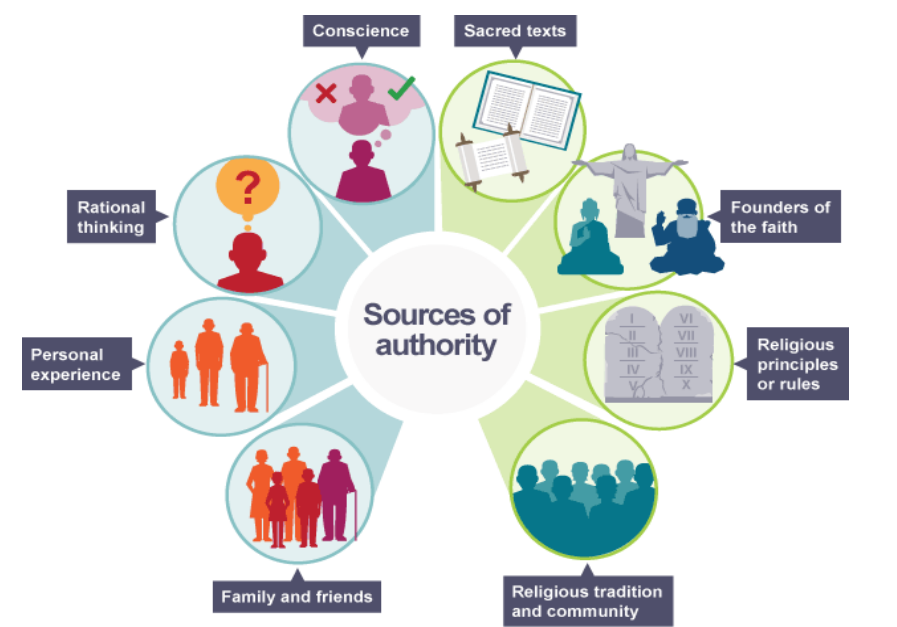
Key Groups/People



Absolutists	Conscientious objectors who wanted nothing at all to do with the war. These men were usually imprisoned.
BWIR	British West India Regiment – formed in October 1915 to allow Caribbean troops to volunteer to fight in WWI.
Conscription	Government law that made it compulsory for men aged 18-40 to join the armed forces and fight in the war.
Enlistment	The process by which men enrolled or ‘joined up’ to serve in the armed forces
‘Going over the top’	When troops left their trenches to launch a frontal attack and cross ‘no man’s land’ to attack the enemy.
Non-combatants	Those who served in the armed forces but in a non-fighting role such as ambulance drivers
Royal Flying Corps	RFC – name of the section of the army that flew and developed aeroplanes during WWI.
Reconnaissance	Gaining information about enemy troop numbers and positions using spying, observation and photographs
Trench warfare	Defensive style of fighting whereby both sides dig trenches to protect themselves from weapon fire.
War of attrition	Method of fighting that involved sending huge numbers of men to wear down the enemy and gain land.

1914 4 August	Britain declares war on Germany
19 October – 22 November	First Battle of Ypres – trenches built to protect men from machine guns and artillery. Trench warfare begins
1915 31 January	First use of chemical weapons (gas) by Germans against Russians on the Eastern Front at Bolimov.
25 Sep – 8 October	Battle of Loos – Artillery develops the ‘creeping barrage’. Infantry are able to advance under heavy shelling
1916 1 July-18 Nov	Battle of the Somme – Huge loss of life trying to capture German trenches. Around 60,000 killed on first day
1917 March – April	Following the Russian Revolution, Russia sign a treaty with Germany to leave the war. USA joins in April.
31 July – 10 November	Battle of Third Ypres – accuracy and use of weapons have improved but it takes 3 months to advance 5 miles
1918 21 Mar-18 Jul	German Spring Offensive - Germany almost breaks through to Paris and defeats France ending the war
8-12 August	Battle of Amiens – warfare becomes more mobile. Technology and weapons used well in combination
11 November	Armistice ends the war at 11 am. WWI is over

								
Kaiser Wilhelm	Conscientious Objectors	William H Coltman	BWIR	Walter Tull	Queen Alexandria Nurses	VADs	WAAC	Major 'Mick' Mannock
Leader of Germany during WW1 until 1918	Men who refused to fight due to their beliefs and conscience	Non-Combatant awarded medal for bravery as a stretcher bearer	British West Indies Regiment – not allowed to fight on Western Front	First Black British officer in the British Army	Professional nurses who treated soldiers on Western Front	Volunteer nurses who provided care to troops on the Western Front	Female non-combatant unit who freed up men to fight	Britain’s most successful pilot. Shot down 61 enemy planes and develop tactics

How can we make an ethical decision?



Utilitarianism	Situation Ethics
 <p>A theory developed by British philosopher Jeremy Bentham; do what creates.. 'the greatest happiness for the greatest number'. This is a consequentialist theory as it believes the greatest happiness for greatest amount of people will produce the best consequences/ outcomes.</p>	 <p>A theory developed by American Professor Joseph Fletcher. Inspired by his Christian faith, Fletcher believed that Agape (unconditional love) was the best tool for moral decision making. Fletcher taught that 'the morality of an action, depends on the situation'. This means that, rather than a blanket rule for everyone, such as do what creates 'the greatest happiness for the greatest number', you should look at each situation individually and do what is the most loving thing. This is an intentionalist theory as it requires you to look at a situation individually and intentionally do what you believe will be the most loving thing.</p>

Euthanasia	
Active euthanasia	Something is done to a person to make them die more quickly.
Passive euthanasia	Any form of treatment that might extend a person's life is withdrawn. This is legally allowed in the UK, and so would not be called euthanasia.
Non-voluntary euthanasia	A person cannot decide about euthanasia or cannot make their wishes known, and so someone else.
Voluntary euthanasia	A person asks for their own life to be ended.

Keyword:	Definition:
Autonomy	The ability to make your own decisions
Morality	What societies sanction as right and acceptable
Ethical	Being 'ethical' is about having standards of behaviour and 'doing the right thing'. Relating to beliefs about what is morally right and wrong
Conscience	A person's moral sense of right and wrong
Abortion	The termination (ending) of a pregnancy
Euthanasia	The act of deliberately ending a person's life to relieve suffering
Death Penalty	Capital punishment, also known as the death penalty, is a state-sanctioned practice of killing a person as a punishment for a crime.
Quality of life	"How good someone's life is" - The standard of health, comfort, and happiness experienced by an individual or group
Sanctity of life	The idea that all life is special and belongs to God.



1. The Present Tense

Normalement *normally*

D'habitude *usually*

Quelquefois *sometimes*

Step 1: Take the infinitive of the verb (ER/IR/RE)

Step 2: Chop off the ending (ER/IR/RE)

Step 3: Add the correct ending:

Pronouns	ER verbs	IR verbs	RE verbs
Je	e	is	s
Tu	es	is	s
Il/Elle/On	e	it	-
Nous	ons	issons	ons
Vous	ez	issez	ez
Ils/Elles	ent	issent	ent

Super Five Irregular Verbs:

There are verbs that don't follow this pattern.

The 4 most important irregular verbs are on this sheet (ÊTRE, AVOIR, ALLER, and FAIRE).

ÊTRE – to be

Je suis	<i>I am</i>
tu es	<i>You are (s)</i>
il/elle/on est	<i>He/she/one is</i>
nous sommes	<i>we are</i>
vous êtes	<i>you are</i>
ils/elles sont	<i>they are (m)</i>

FAIRE – to do/make

Je fais	<i>I do</i>
tu fais	<i>You do (s)</i>
il/elle/on fait	<i>He/she/one does</i>
nous faisons	<i>we do</i>
vous faites	<i>you do (pl)</i>
ils/elles font	<i>they do (m)</i>

Common Past Tense Verbs with ÊTRE

Je suis allé (e)	<i>I went</i>
Nous sommes allé(e)s	<i>We went</i>
Je suis resté (e)	<i>I stayed</i>
Nous sommes resté(e)s	<i>We stayed</i>

Opinions

C'est – it's
C'était – it was
Ce sera – it will be

2. The (Near) Future Tense

La semaine prochaine *next week*

Le weekend prochain *next weekend*

Demain *tomorrow*

L'année prochaine *next year*

Step 1: Take the present tense of the verb 'ALLER' (to go)

ALLER: to go

Je vais *I go/am going*

Tu vas *You go/are going (s.)*

Il/Elle/On va *He/she/one goes/is going*

Nous allons *We go/are going*

Vous allez *You go/are going (p.)*

Ils/Elles vont *They go/are going*

Step 2: Add an infinitive (the thing you're going to do).

e.g. I'm going to play
Je vais jouer

3. The Preterite (Past) Tense

La semaine dernière *next week*

Le weekend dernier *next weekend*

L'année dernière *next year*

Perfect Tense verbs with 'AVOIR':

Step 1: Take the present tense of the verb avoir

For some verbs you need to use the verb être (MRS VANDERTRAMP)

AVOIR: to have

J'ai *I have*

Tu as *You have*

Il/elle/on a *He/she/one has*

Nous avons *We have*

Vous avez *You have*

Ils/elles ont *They have*

Step 2: Add the past participle (see rules below)

Take the infinitive – chop off the ER + add é

Take the infinitive – chop off the IR + add i

Take the infinitive – chop off the RE + add u

Awesome French Things to Say

j'en ai hâte! *I can't wait for it!*

Que je sache *As far as I know*

les derniers/dernières... *the latest...*

C'est mon truc *It's my (kind of) thing*

Ce n'est pas mon truc *It's not my (kind of) thing*

en regardant la télé *while watching TV*


















en écoutant de la musique *while listening to music*

en faisant des devoirs *while doing homework*

TECHNOLOGY VERBS

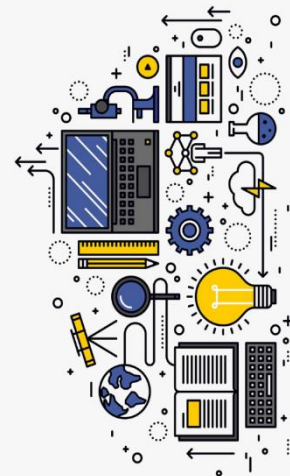
supprimer	to delete, erase
charger	to load
tchatter	to chat online
poster des photos	to post photos
communiquer	to communicate
répondre	to answer
créer	to create
donner	to give
télécharger	to download
envoyer	to send
fonctionner	to work, to function
enregistrer	to save
parler	to speak, to talk
surfer sur Internet	to surf the internet
pouvoir	to be able to
recevoir	to receive
prendre des photos	to take photos
regarder en streaming	to stream
partager	to share
utiliser	to use

TECHNOLOGY NOUNS

 Un dossier	file
 Un courrier indésirable	spam, junk mail
 Un courrier électronique	email
 Un disc dur	hard drive
 Un jeu	game
 Un texto/un SMS	text message
 Un téléphone portable	mobile/smartphone
 Un ordinateur	computer
 Un ordinateur portable	laptop
 Des jeux-vidéo	video games
 Une chanson	song
 Un écran	screen
 Internet	internet
 Un réseau social	social network
 Une magazine (digitale)	(digital) magazine
 Un salon de discussion	chat room
 Une tablette	tablet
 La technologie	technology

TECHNOLOGY ADJECTIVES

ennuyeux/se	boring
vieux/vieille	old
animé(e)	exciting
confus	confusing
court(e)	short
à la mode	fashionable
lent(e)	slow
divertissant(e)	entertaining
effrayant(e)	scary
estimulant(e)	stimulating
informatif/ve	informative
intéressant(e)	interesting
inutile	useless
long(ue)	long
dangereux/se	dangerous
pratique	practical
rapide	fast
ridicule	ridiculous
cassé(e)	broken
utile	useful



TV GENRES

les comédies	comedies	Les émissions de musique	music programmes
les dessins animés	cartoons	La télé-réalité	reality TV
les jeux télévisés	game shows	La série policière	police series
les documentaires	documentaries	La météo	weather
les infos	the news	La publicité	advert
les émissions de sport	sports programmes		
les séries policières	police shows		
les feuilletons	soap operas		



FILM GENRES

Les films d'action	action films
Les films d'amour	romantic films
Les films de science fiction	sci-fi films
Les films dramatique	dramatic films
Les films à suspense	Suspense/thriller films
Les films de guerre	War films
Les films d'horreur	horror films

1. The Present Tense

normalmente	<i>normally</i>
generalmente	<i>usually</i>
a veces	<i>sometimes</i>

Step 1: Take the infinitive of the verb (AR/ER/IR)

Step 2: Chop off the ending (AR/ER/IR)

Step 3: Add the correct ending:

Pronouns	AR verbs	ER verbs	IR verbs
Yo	o	o	o
Tú	as	es	es
El/Ella	a	e	e
Nosotros	amos	emos	imos
Vosotros	áis	éis	ís
Ellos/Ellas	an	en	en

Super Five Irregular Verbs:

There are some verbs that don't follow this pattern. The 4 most important irregular verbs are on this sheet (TENER, IR, SER, and HACER).

2. The (Near) Future Tense

la semana próxima	<i>next week</i>
el fin de semana próximo	<i>next weekend</i>
mañana	<i>tomorrow</i>
el año próximo	<i>next year</i>

Step 1: Take the present tense of the verb 'ir' (to go)

ir: to go

(yo) Voy	<i>I go/am going</i>
(tú) Vas	<i>You go/are going (s.)</i>
(el/ella) Va	<i>He/she/one goes/is going</i>
(nosotros) Vamos	<i>We go/are going</i>
(vosotros) Vais	<i>You go/are going (p.)</i>
(ellos/ellas) Van	<i>They go/are going</i>

Step 2: Add the preposition 'a'

Step 3: Add an infinitive (the thing you're going to do).

e.g. I'm going to play
Voy a jugar

3. The Preterite (Past) Tense

la semana pasada	<i>last week</i>
el fin de semana pasado	<i>last weekend</i>
ayer	<i>yesterday</i>
el año pasado	<i>last year</i>

Regular Verbs:

Step 1: Take the infinitive of the verb (AR/ER/IR)

Step 2: Chop off the ending (AR/ER/IR)

Step 3: Add the correct ending:

Pronouns	AR verbs	ER/IR verbs
Yo (I)	é	í
Tú (You s.)	aste	iste
El/Ella (He/She)	ó	ió
Nosotros (We)	amos	imos
Vosotros (You pl.)	asteis	isteis
Ellos/Ellas (They)	aron	ieron

Ser – to be

(yo) Soy	<i>I am</i>
(tu) Eres	<i>You are (s.)</i>
(él/ella) Es	<i>He/she/ is</i>
(nosotros) Somos	<i>We are</i>
(vosotros) Sois	<i>You are (p.)</i>
(ellos/ellas) Son	<i>They are</i>

Hacer – to do/make

(yo) Hago	<i>I do/make</i>
(tu) Haces	<i>You do/make (s.)</i>
(él/ella) Hace	<i>He/she/ does/makes</i>
(nosotros) Hacemos	<i>We do/make</i>
(vosotros) Hacéis	<i>You do/make (p.)</i>
(ellos/ellas) Hacen	<i>They do/make</i>

Tener: to have

(yo) Tengo	<i>I have</i>
(tu) Tienes	<i>You have (s.)</i>
(él/ella) Tiene	<i>He/she/one has</i>
(nosotros) Tenemos	<i>We have</i>
(vosotros) Tenéis	<i>You have (p.)</i>
(ellos/ellas) Tienen	<i>They have</i>

6. Awesome Spanish Things to Say

¡No puedo esperar!	<i>I can't wait for it!</i>
Por lo que sé	<i>As far as I know</i>
Que yo sepa	<i>As far as I know</i>
el último / la última...	<i>the last/latest...</i>
Es mi (tipo de) cosa...	<i>It's my (kind of) thing</i>
No es mi (tipo de) cosa...	<i>It's not my (kind of) thing</i>
Mientras estaba viendo	<i>while I am watching TV</i>
Mientras estaba escuchando / escucho la música	<i>while I am listening/I listen to music</i>
Mientras estaba haciendo / hago los deberes	<i>while I am doing / I do homework</i>

TECHNOLOGY VERBS

borrar	to delete, erase
cargar	to load
chatear	to chat online
colgar fotos	to post photos
comunicarse	to communicate
contestar	to answer
crear	to create
dar	to give
descargar	to download
enviar	to send
funcionar	to work, to function
guardar	to save
hablar	to speak, to talk
mandar	to send
navegar la red	to surf the internet
poder	to be able to
recibir	to receive
sacar fotos	to take photos
transmitir	to stream
usar	to use
utilizar	to use

TV GENRES

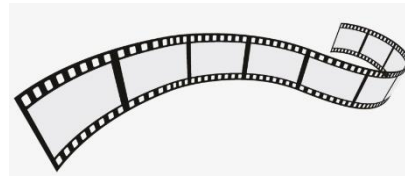
las comedias	comedies
los concursos	game shows
los dibujos animados	cartoons
los documentales	documentaries
las noticias	the news
los programas de deporte	sports programmes
las series policiacas	crime series
las telenovelas	soap operas

TECHNOLOGY NOUNS

	el archivo	file
	el correo basura	spam, junk mail
	el correo electrónico	email
	el disco duro	hard drive
	el juego	game
	el mensaje de texto	text message
	el móvil	mobile/smartphone
	el ordenador	computer
	el ordenador portátil	laptop
	el videojuego	video game
	la canción	song
	la pantalla	screen
	la red	internet
	la red social	social network
	la revista (digital)	(digital) magazine
	la sala de chat	chat room
	la tableta	tablet
	la tecnología	technology

FILM GENRES

las películas de acción	action films
las películas de amor	romantic films
las películas de ciencia ficción	sci-fi films
las películas de drama	dramatic films
las películas de suspense	suspense films
las películas de terror	horror films



TECHNOLOGY ADJECTIVES

aburrido/a	boring
antiguo/a	old
animado/a	exciting
confuso/a	confusing
corto/a	short
de moda	fashionable
despacio/a	slow
entretenido/a	entertaining
escalofriante	scary
estimulante	stimulating
informativo/a	informative
interesante	interesting
inútil	useless
largo/a	long
lento/a	slow
peligroso/a	dangerous
práctico/a	practical
rápido/a	fast
ridículo/a	ridiculous
roto/a	broken
útil	useful



THE PERFECT TENSE

HABER

he (I have)
has (you have)
ha (he/she have)
hemos (we have)
habéis (you have)
han (they have)

INFINITIVE

COMUNICAR	→	-ADO	<i>Hemos comunicado</i>
TENER	}	→	-IDO
ELEGIR			

Posture
How an actor stands or sits



Proxemics
The space and awareness of space between actors and sometimes objects. Where an actor is on stage

Interaction
The physical communication between characters and sometimes objects



How does an actor use **vocal** and **physical** skills to communicate their character?

Gesture
Body movements, usually using hands, arms or shoulders

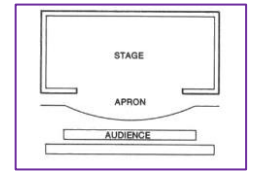
Movement
The way an actor moves and where they move to on stage

Facial Expression
Facial movements to show mood or emotion

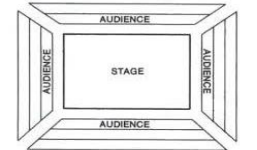
Speech
Pitch (high/low), Volume and Projection, Pace, Diction, Emphasis, Accent

Drama Techniques Toolkit	Definition
Freeze Frame	When everyone on stage at one moment freezes or stands still
Narration	Where there is someone or a voice telling parts of the story not shared by the acting that the audience need to know
Mime	Performing/acting with no speaking
Role-Play	Performing/acting as if you are a specific character or in a specific situation
Split-Stage	Where there are two different things taking place on stage at the same time often to show different places or periods of time
Stage Configuration	The type, layout or design of a stage
Stage Positioning	Specific areas on a stage where actors or set are positioned
Step Out	When an actor steps away or looks up from a freeze frame to address/speak to the audience
Stock Characters	Stereo-typical characters found in a play

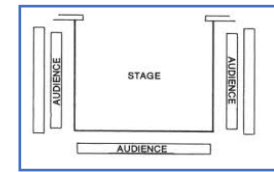
Proscenium Arch



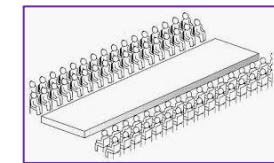
In The Round



Thrust



Traverse



VOCAL SKILLS

PITCH
How HIGH or LOW a voice sounds

ACCENT
A way of talking associated with a geographical location or social class

PACE
The speed in which someone speaks or responds

TONE
The emotional sound of the voice e.g. Angry, Sad, Excited

DICTION
How clear an actor pronounces their words

PROJECTION
The direction and distance an actor sends their voice

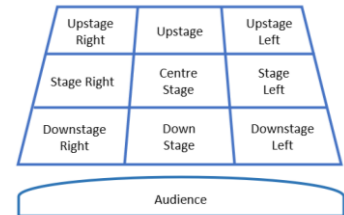
Volume
How LOUD or QUIET an actor speaks to express their emotion

EMPHASIS
Where an actor stresses a word to indicate its importance

PAUSE
Stopping for a moment for dramatic impact

Practitioner	Theatre Techniques, Conventions and Practices
Stanislavski	Realism. What you see on stage is a realistic representation of real life. Understanding the 'Given Circumstances' (the context) and the 'Magic If' (what would I do and how would I feel if I was in that situation)
Brecht	Not realism. You should not believe what you see on stage is real. Use of mime, freeze frame, step out, placards, narration, music, movement and gesture – Physical Theatre
Artaud	Heightening the senses. An intense theatrical experience that combined elaborate props, magic tricks, special lighting, movement, primitive gestures and articulations – Physical Theatre. Theatre of Cruelty
Shared Experience	Exploring both sides. Communicating one feeling/emotion whilst visibly displaying another. Understanding two sides of a story. Use of Physical theatre.
Frantic Assembly	Physical Theatre. Communication of a story/mood/emotion through movement and gesture.

Stage Positioning



Year 9 Drama Theatre Practitioners

Hip-Hop and Reggae

Pulse – constant, steady beat

Rhythm – The combination of long and short notes

Syncopation – playing on the off-beat

Skank – the characteristic off-beat feel of Reggae music

Lyrics – the words of the song

MC (Master of Ceremonies) – another name for a rapper

Rap – pop music where words are recited rapidly and rhythmically over an instrumental backing

Slang – informal words/phrases

Synthesiser – computer-generated sound

Samples – pre-recorded sounds

Loops – the continuous use of a musical phrase in electronically produced music

Rhyme – correspondence of sound between words or endings of words

Structure – the order of the sections in a piece of music

Depressed – Sad feelings

Oppressed – dominated by other people

Y9 Music

How has Music narrated the struggle for equality?

Note Pyramid			
Name	Symbol	Rest Symbol	Value of each
Semibreve			4
Minim			2
Crotchet			1
Quaver			1/2
Semiquaver			1/4

Notes on the lines are:

E G B D F

Notes in the spaces are:

F A C E

Woodwind

All of these instruments are long tubes with holes in them which change the pitch.

Strings

All of these instruments make sound by plucking/bowing strings.

Percussion

All of these instruments are played by hitting them.

Brass

All of these instruments are made out of brass and change pitch by changing the length of the tubes.

C D E F G A B C D E F G A

Rhythm	The pattern of beats in a piece of music
Melody	The main tune
Chord	Three notes played together at the same time
Crotchet	Lasts 1 beat of a pulse
Minim	Lasts 2 beats of a pulse
Quaver	Lasts ½ beat of a pulse
Semibreve	Lasts 4 beats of the pulse
Pulse	A constant steady beat which keeps all the music together
Rest	Silence in music
Elements	The building blocks of music
Pitch	Whether the sound is high or low
Duration	The length of a sound
Tempo	The speed of the music
Timbre	The instruments used
Texture	How many layers of sound there are
Dynamics	The volume of the music
Structure	The order of the sections
Silence	No sound, the gaps in the music
Accompaniment	Sounds going on under the main tune
Introduction	Music heard at the start of a piece – before the main tune comes in

Sharp #	Played with the black note to the RIGHT (F# / G# / C#)
Fiat b	Played with the black note to the LEFT (Bb / Eb / Ab)
Duet	A tune shared between parts equally
Fluency	No hesitations in a performance
Keyboard	An electric piano
Ukulele	A guitar-like instrument with four strings
Lyrics	Words
Conductor	Leader of the music – links between the singing and the instrumentalists
Audience	The people who watch and listen to a performance
Ensemble	A group of performers
Compose	Making up your own music
Perform	Playing music in front of an audience
Improvisation	Making up music on the spot
Bass line	A repeating pattern played at a low pitch
Verse	The section of a song that tells the story and has different words each time
Chorus	The catchy section of a song that is repeated lots
Round	One person starts singing then the next person starts 4 or 8 beats later
Balance	How well the different parts are mixed together
Contrast	Big changes between sections
Multitrack	Layering different parts one at a time by recording them

Tempo

SLOOOOOW QUICK!!

Texture

{ Silence }

Pitch

low high

Dynamics

Timbre

Structure

Duration

The Past

Content: In this project you will develop knowledge of the past and how it relates to art and culture.

Understand the cultural changes in art over time

Develop skills- drawing, shading, painting, appropriation, using materials to create 3 dimensional shapes and showing the influence of other artists in your own work and presentation

Outcome- A response to how you view events and cultures of the past

Andy Warhol
Andy Warhol was an American visual artist, film director, and producer who was a leading figure in the visual art movement known as pop art.



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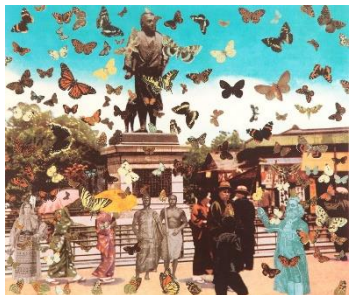
Roy Lichtenstein



Jim Dine



Peter Blake



Research
We will be developing independent research skills that will allow you to apply skills and techniques from artists you like to your personal responses.

The techniques are also very useful in other subjects, and will help you to prepare for higher levels of schooling as many subjects at A-Level and Undergraduate are reliant on being able to produce high quality research.

Keywords:
Civil Rights – Civil rights are the freedoms afforded to all individuals that allow them to live, work, love and generally exist without interference, repression or discrimination from the government or any other parties or individuals.
Appropriation- The use of pre-existing objects or artworks in the creation of art, with subtle changes that make it a new original piece.

- 1. Assessment:**
(D) Demonstrate a deepening- knowledge, understanding and skills
(O+)On Track- Demonstrate some- knowledge, understanding and skills
(O-)On Track- Demonstrate some- knowledge, understanding and skills
(Y)Yet to be on Track- developing some knowledge, understanding and skills
(A)Earlier Stage-minimal knowledge, understanding and skills

Analysis
All artist research pages should be annotated **Artwork-**
Artist name

- Describe the work-what does it look like? Use the formal elements i.e. colour, line etc.
- What techniques/materials were used?
- What is your opinion of the work? How is it relevant to your own idea?

Sentence starters
I like/dislike the way the artist has used...because
I think the colour scheme used is effective because...
I think the artist has been inspired by...because

Evaluation of Your Artwork-
What inspired you to create the piece?
What techniques did you use and why?
What does it mean to you?
How is it relevant to your idea?

Sentence starters
The technique I have used is..
The skill/technique I found most difficult was...because...
I think my work is successful because...

Broadoak Above and Beyond Challenges

Curriculum Area	How to develop your curiosity
English	Read a book of your choosing and write a book review.
Maths	Write a colourful set of instructions/flow diagram for solving questions/equations you have been working on this term.
Science	Research a scientist of the past create a fact-file of their background and achievements and impacts.
Humanities	Create a film reporting on a historical event you have looked at, as if it happened today.
MFL	Make a booklet for the year below you about how to be a successful linguist.
The Arts	Research and make a fact-file on an artist, chef or inventor of your choosing.
Performing (Music and Drama)	Watch live or online a performance of your choosing and write a review for a magazine, rating and evaluating it.
PE	Take an autumnal walk, assessing how you felt before and after.

Due: First week after December break, by 13th January 2023

Where: Give to your subject class teacher first lesson back.



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