

Knowledge Organisers are designed to help and support you to learn the key knowledge within the subjects you study.

In addition to your Knowledge Organisers Learning Consultants may still provide Independent Learning to further develop your skills, knowledge and understanding within the subject.

*'The best advice I ever got was that knowledge is power and to keep reading'.
David Bailey.*

Using your Knowledge Organisers

Expectations:

- Study at least one section of a Knowledge Organiser for independent learning (homework) each evening. Aim to spend at least 30 minutes on this.
- You will also be tested in your lessons on the information on your Knowledge Organiser.

How to get the most out of your Knowledge Organisers:

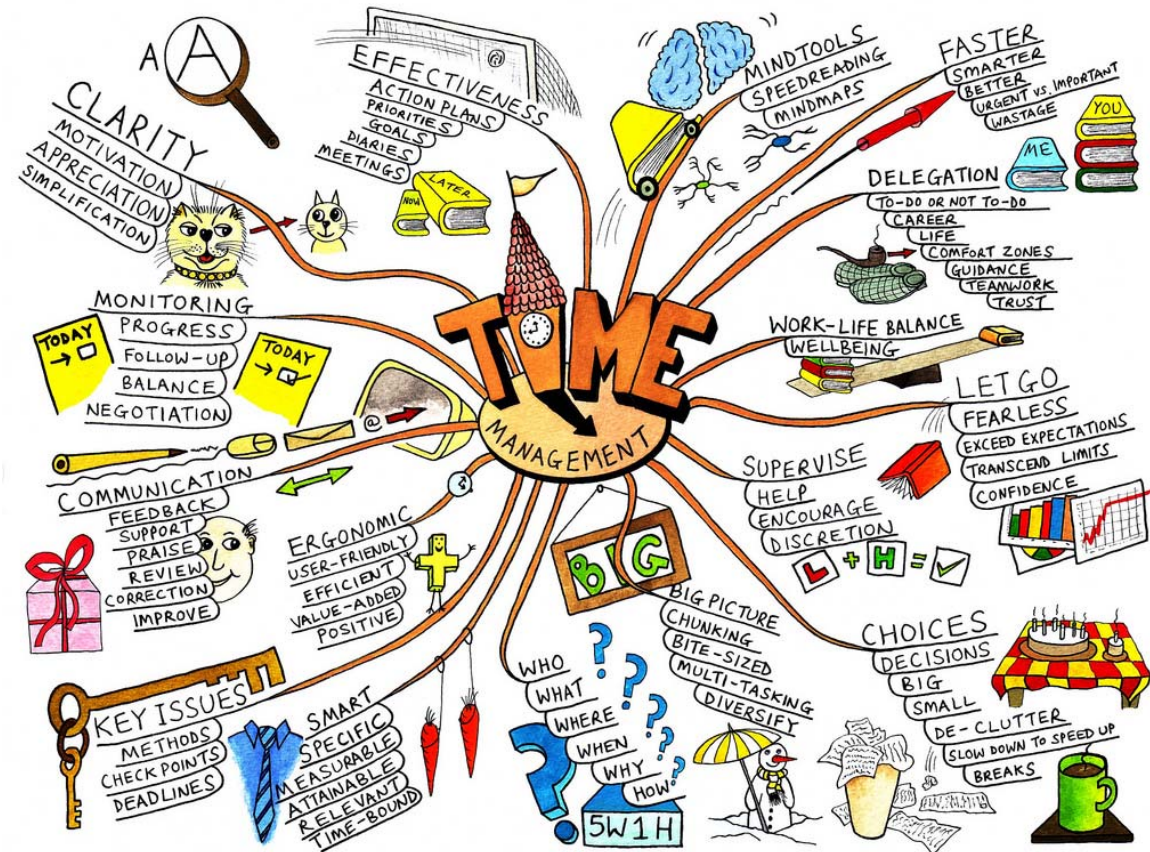
- Sometimes your Learning Consultant may tell you how to use certain sections of your Knowledge Organisers. In addition, they are a very useful tool for independent study and will help ensure that you know many of the facts and key areas of information in each of your subject areas. You can use your Knowledge Organisers in a number of different ways, including:
 - Use the 'Thinking Hard' strategies to refine your notes from the Knowledge Organiser
 - Write your own challenging questions on a section. Leave these until the next day to answer
 - Ask someone to write or ask you questions based on a section.
 - Put keywords into complete sentences
 - Look, Cover, Write and Check key words and terminology to help with spelling
 - Carry out further research on a topic
 - Create mind maps, flash cards, timelines, diagrams to aid with revision
 - Self test

Mind Mapping

Mind Mapping is a process that involves a distinct combination of imagery, colour and visual-spatial arrangement. The technique maps out your thoughts using keywords that trigger associations in the brain to spark further ideas.

How to mind map:

<https://www.youtube.com/watch?v=u5Y4plsXTV0>

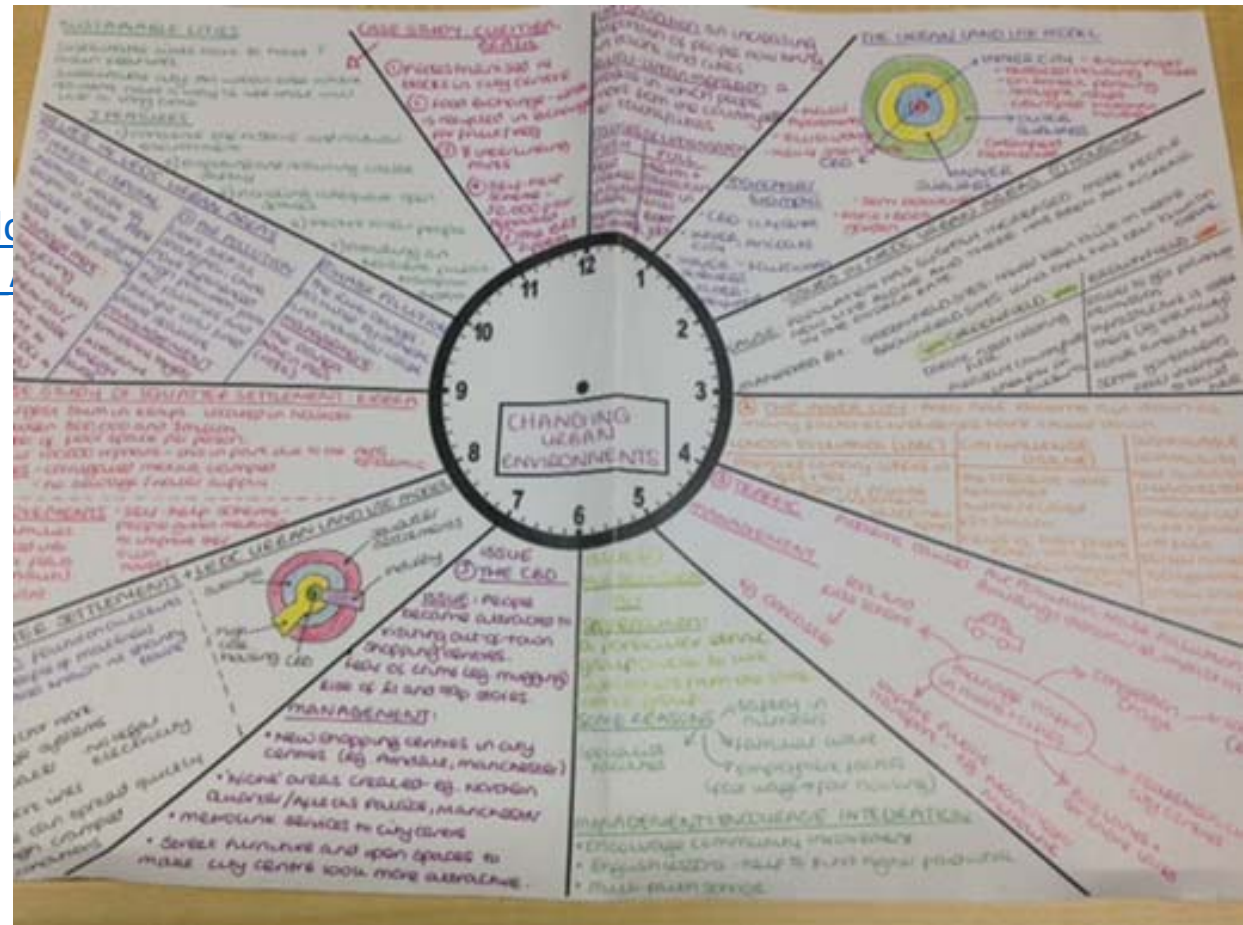


Revision Clock

Make notes in each chunk of the clock. Revise each slot for 5 minutes, turn the clock over and then try to write out as much information as you can from one of the segments. Eg. all the information in the 2-3pm segment.

Revision clock template:

<https://www.google.co.uk/search?q=revision+cloze+d=0ahUKEwi1gMD6wflEAhWNzqQKHahSChkQJcM:&spf=1543251070019>



Flash Cards



- To make your own, take some card and
- cut into rectangles roughly 10cm x 6cm
- You could write down the key content of the topic and then try to reduce this to keywords to summarise the topic
- You could then write the keyword on one side and the definition on the other.
- Then go through your cards looking at one side and seeing if you can remember the keyword/definition on the other side.
- Prioritise cards you have previously got wrong.

The Thinking Hard Process

Knowledge and understanding

Reduce
Transform
Deconstruct
Derive



Reduce it



Transform it



Deconstruct
it



Derive it

Analysis and application

- Prioritise
- Categorise
- Criticise
- Trends and patterns
- Practise



Prioritise
it



Categorise
it



Criticise it



Find
Trends/
patterns

Flexibility of thinking

- Make connections
- Compare
- Extend
- Create



Connect it



Compare it



Extend it



Create it



Reduce it

Reduce the key information into 20 words.

Reduce it

Key information:



Reduce it

Sum up the key information into 5 bullet points.

1.

2.

3.

4.

5.



Reduce it

Write 3 questions that the knowledge organiser has answered so far.

Reduce it

1.

2.

3.



Reduce it

Sum up the content of the knowledge organiser into three key words and justify why you have chosen them.

Reduce it

1.

2.

3.



Transform it

Transform the knowledge organiser into a series of pictures.



Transform it

Transform the knowledge organiser into a piece of poetry.



Transform it

Transform the knowledge organiser into a mnemonic.



Transform it

Transform the knowledge organiser into a series of flash cards



Deconstruct it

Now that you have some new information, write the title in the box and deconstruct it. From the title and new information, tell us what the knowledge organiser is all about.

Deconstruct it

Title:



Deconstruct it

Take part of the Knowledge organiser and deconstruct it into a flow chart or a process diagram. What are the links?

Deconstruct it

Title:



Prioritise it

Prioritise the knowledge you have learnt from sections of your organiser.
From most important to least important.

Prioritise it

1. _____

2. _____

3. _____



Categorise it

Order the information from your Knowledge Organiser into different categories or groups.

Categorise it



Criticise it

Can you criticise parts of your knowledge organiser? Is all the information factually true? How do we know?

Criticise it

Topic or title:



Practice it

Write your own exam question based on your knowledge organiser.

Answer it.

Practice it

Exam Question:



Connect it

Connect it

Write down 4 key words from your knowledge organiser.

Connect them to each other using lines and say why they connect along the line.



Connect it

Connect it

How the information on the knowledge organiser link to another topic we have studied?



Connect it

Connect it

You're the information on the knowledge organiser to answer your 'Big picture' questions.



Connect it

Connect it

Draw a mind map showing how aspects of your knowledge organiser are linked together



Compare it

Compare two aspects of your knowledge organiser. How are they different? How are they the same?

Compare it



Extend it

Write down 5 key words from the knowledge organiser.
Define those key words and use them in a sentence.

Extend it

Key words:



Extend it

Collect or draw ten pictures to represent the information on the knowledge organiser.

Extend it



Extend it

Write 50 words to explain the content on your knowledge organiser.

Extend it



Create it

Create it

Create a
'foldable'
To show what
you have
learnt from the
knowledge
organiser.



Create it

Create it

Question 1:

Answer:

Question 2:

Answer:

Question 3:

Answer:

Create a short
test about what
we have been
learning about
so far.

Write the model
answers in your
book.



Create it

Create it

Create a series
of flashcards
with the key
information on
from your
knowledge
organiser



Create it

Create it

Learning Question:

--	--

Create a set of
Cornell notes
detailing key
ideas from the
knowledge
organiser.

Year 8 Knowledge Organisers

Computing

Year 8 - Binary / Denary Conversion – Knowledge Organiser

Converting from binary to denary

To convert a binary number to denary, start by writing out the binary place values. In denary, the place values are 1, 10, 100, 1000, etc – each place value is 10 times bigger than the last. In binary, each place value is 2 times bigger than the last (i.e. increased by the power of 2). The first few binary place values look like this:

16	8	4	2	1
1	0	0	1	1

$$16 + 2 + 1 = 19$$

To convert a binary number into a denary number, add the numbers in the column headings for the columns that contain a 1.

There is a 1 in 16, 2 and 4 columns, so add these together to find the denary number of 19.

Why do computers use binary numbers?

ON corresponds to 1 and OFF corresponds to 0. All computer programs, must therefore be translated into binary code for the computer to understand and execute the instruction.

Note : Humans cannot use this system easily.

Keywords for Binary :

Binary	A binary number is made up of just 2 digits and is known as base 2.
Denary	A denary number is made up of 10 digits and is known as base 10.
Data	The characters, or symbols, on which operations are performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on media.
Convert	To change the form, character, or function of something
Hexadecimal	Hexadecimal (or hex) is a base 16 system used to simplify how binary is represented.

1001100110101001
101001101011010
111011110101001
100010110010010
001001000010001

Converting Denary to binary

1. To convert 13 to a binary number, set the table.

13

16	8	4	2	1

2. Add a 0 in the first column heading

13

is under 16 so the first digit will be 0

16	8	4	2	1
0				

3. As 13 is over 8 place 1 in the column heading 8.

13

is over 8 so the next digit will be 1 then subtract 8 from 13

16	8	4	2	1
0	1			

4. Now $13 - 8 = 5$, so to make 5 I need 4 and 1.

16	8	4	2	1
0	1	1		

5. Place a 0 in the empty column.

16	8	4	2	1
0	1	1	0	1

Year 8 Knowledge Organisers

Drama



Role on the wall for your scripted character:



Characterisation	
Rehearsal	
Artistic intentions	
Social Context	
Set	
Props	
Wings	
Stage layout - SL, SR, CS, US DS	
Cross Cutting	
Marking the Moment	
Audition	
Playwright	
Willy Russell	
Script	
Genre	
Monologue	
Duologue	
Blocking	
Director	
Actor	

Year 8 Knowledge Organisers

Enterprise



8 Tips for Healthy Eating!

1. Eat more fibre
2. Eat more fruits and Vegetables
3. Eat more oily fish
4. Eat less salt
5. Eat less fat
6. Eat less sugar
7. Choose wholegrains
8. Drink 6-8 glasses of water per day

The Eatwell Guide

The Eatwell Guide is a guide that shows you the different types of food and nutrients we need in our diets to stay healthy.

Why is the Eatwell Guide important?

The Eatwell Guide shows you how much (proportions) of food you need for a healthy balanced diet.

What are the consequences of a poor diet?

A poor diet can lead to diseases and can't stop us from fighting off infections.

What are the sections on the Eatwell Guide?

1. Fruit and vegetables
2. Potatoes, bread, rice, pasta and other starchy food
3. Dairy and alternatives
4. Beans, pulses, fish, egg, meat and other proteins
5. Oils and spreads

How many portions of fruit and vegetables should we eat, daily?

As a minimum, we should eat at least 5 portions each day.

How many glasses of water should we drink daily?

As a minimum, we should drink 6-8 Glasses of water each day.

MACRONUTRIENTS

Nutrient	Sources	Functions
Protein	Meat, Fish, Eggs, Beans, Peas	Growth and repair of body cells, Energy
Fat	Two Types: Saturated: Butter, Cheese, Chips, Crisps Unsaturated: Olive Oil, Salmon, Avocado, Mackerel	Energy, Heat and Insulation (Bad type of fat) Energy, lubrication of joints, insulation (Good type of Fat)
Carbohydrate	Two Types: Starch: Bread, pasta, Rice, Potato. Sugar: Fruit, Sweets, Chocolate, Honey	Slow Release of energy- lasts throughout the day Fast release of energy – does not last long
Fibre (Cannot be digested)	Wholemeal Bread, Wholemeal Pasta, Wholemeal Rice, Skin of Fruit and Vegetables	Maintain a Healthy Digestive System.

MICRONUTRIENTS

Nutrient	Sources	Functions
Vitamins	Water Soluble:	
	Vitamin A: Carrots, eggs, meat	Healthy eyes, skin, hair
	Vitamin D: Oily fish, sunlight	Strong bones and teeth
	Vitamin E: Nuts, olives, green veg	Helps form red blood cells
	Vitamin K: Cabbage, Spinach	Helps blood clotting
Minerals	Fat Soluble:	
	Vitamin B: Eggs, Meat, Poultry	Healthy nervous system
	Vitamin C: oranges, Kiwi	Helps absorb iron, prevent flues
	Calcium: Milk, Butter, Dairy	Strong bones and teeth
	Iron: Red Meat, Dark Green Vegetables, Nuts	Helps formation of red blood cells to carry oxygen around the body.

What is cross contamination?

Cross contamination is spreading bacteria from one place to another.

What are the four C's to help prevent spreading bacteria?

- Clean
- Cook
- Chilling
- Cross contamination

Why do we use different coloured chopping boards when preparing food?

To prevent the spreading of bacteria (to avoid cross contamination).

COLOUR CODED CUTTING BOARDS

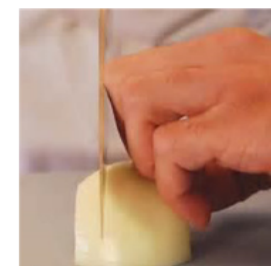


Cutting Techniques

To demonstrate safety skills when using knives, there are two cutting techniques we should use:



Bridge hold



Claw grip



Health & Safety when using the cooker:

- Turn pan handles in *away* from edge of cooker
- Always turn hob off when not in use.
- Never leave food cooking on the hob unattended.
- Be careful not to let food boil dry.
- Never touch an electric hob when turned off, it may still be hot.
- Don't leave metal spoons in pans when cooking as they can become very hot.
- Always use oven gloves when removing food from the oven.

Health & Safety in the Food Room: Personal Hygiene

Wash hands in soapy water.
Tie long hair back.
Wear an apron and tuck tie in.
Roll back sleeves.



- How do we keep safe in the food room?
- What hygienic practices must we follow?
- Knife safety
- Uses of the cooker (hob + oven)
- Weighing and measuring
- How to store food correctly in the fridge

A **food diary** is a way to track your eating and develop a healthy eating plan. You log all of the food and drink you consume, each day.

Tips for reducing food waste

- Check and make a list before food shopping.
- Plan meals for the week in advance.
- Don't impulse buy foods
- Check use by dates to ensure plenty of time.
- Freeze foods if not being used by use by date.
- Use up foods which are about to go out of date e.g. make over ripe fruit into smoothies or cakes.



Uses of eggs in recipes

Use	Definition and Recipe
Coat	To cover foods with egg and then breadcrumbs. The egg helps the breadcrumbs stick. Scotch eggs, fishcakes.
Glaze	Protein in egg browns when heated leaving a glossy finish. Pies, biscuits, breads
Aeration	Eggs add air to mixtures due to their liquid and protein content. Cakes, mousses
Thicken	Protein in eggs coagulates upon heating making mixtures thicken. Bread and butter pudding, custard.

How the body uses nutrients:

Protein – growth and repair – found in meats/fish/eggs/pulses
Carbohydrates – energy – found in bread/pasta/rice/potatoes
Calcium – strong bones and teeth – milk/cheese/yoghurt
 Vitamins and minerals – boost immune system – found in fruit/vegetables
Fats – protects vital organs, keeps you warm – found in oil, butter, dairy products, sweets and chocolates.

Key Words

	1. Teaspoon (tsp): is used as a measure for small quantities such as spices or salt.		8. Dishcloth is used to wash the dirty equipment.
	2. Grams (g): is used as a form of measuring solids.		9. Tea towel is used to dry the washed equipment.
	3. Tablespoon (tbsp.): is used as a measure for larger quantities such as flour		10. Oven gloves are used to protect your hands from being burnt.
	4. Millilitres (ml): is used as a form of measuring liquids.		11. Coagulation the thickening of an egg mixture.
	5. Grate – using a grater to prepare cheese, vegetables or fruit		12. Seasoning adding different herbs and spices to improve the flavour of a dish.
	6. Bridge hold is used to protect your fingers when cutting. Pass the knife through the bridge made by your fingers and thumb		13. Creaming method the method usually used to make cakes, where the butter and sugar is creamed together.
	7. Enzymic browning: the process where fruit and vegetables turn brown due to them being exposed to oxygen (oxidisation).		14. Rubbing in method is a method whereby you rub using your fingers together usually butter and flour to create a breadcrumb like mixture, usually the base for scones.

Staple foods of a diet are **pasta, rice and potatoes**.
 The main dairy products are: **milk, cheese and butter**.
Eggs are a good source of **protein**.
Nuts and seeds are also sources of **protein**.



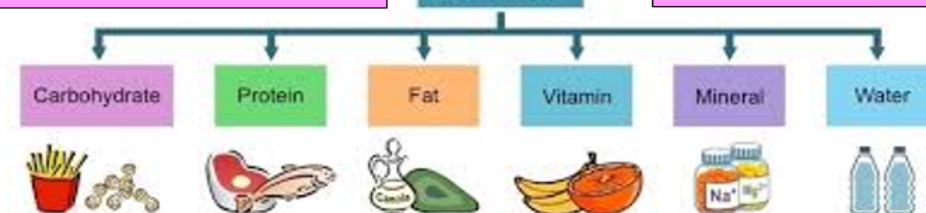
What 6 nutritional facts can be found on food labels?

What are the recommended calories for male and female?

What is a balanced diet?

What is a composite dish?

What is dietary fibre?
Why is it important?



NUTRIENTS

Carbohydrates:

Sources?

Types – what are they made up of?

How are they used in the body?

Fat + sugar:

Saturated and unsaturated fat

Sources?

What are they required for in the body?

Amounts required?

Effect on the body if too much consumed?

Protein:

Sources?

What are they required for in the body?

Vitamins:

Sources?

What are they required for in the body?

Minerals:

What are minerals?

What are they required for in the body?

Key words:

Peeling = remove the outer covering or skin from (a fruit, vegetable, or prawn)

Slicing = using a knife to cut into slices

Weighing = using measuring scales to accurately measure an amount of food

Measuring = using a jug for example to measure an amount of liquid or food

Boiling = **cooking in water** at or near boiling point.

Simmering = cooking in water just below boiling point, while bubbling gently.

Coring = remove the tough central part and seeds from (a fruit).

Bridge = a safe method to use a knife

Claw = a safe method to use a knife

Year 8 Knowledge Organisers

History

How much was European Nationalism to Blame for Global Conflict in the 20th Century?

Word	Definition
Nationalism	To identify with one's own nation and support it at the expense of other nations.
Militarism	The belief that a country should have a strong military.
Imperialism	A policy of expanding a country's power through colonisation or the use of military force.
Alliance	A union between countries to help one another.
Diplomacy	The activity of managing international relations between various nations.
Treaty	An official agreement between states, often completed at the end of a war.
Rivalry	Competition to achieve the same objective or superiority in the same field (eg. Military size, empire size)
Communism	A theory and political system when all property is owned by a community equally and contributes.
Territory	An area of land under the rule of a state
Genocide	The deliberate killing of a large group of people especially a particular nation or ethnic group

Nation/Empire	Description
Holy Roman Empire	Previous country to Germany from 600-1806 AD
Prussia	A northern part of the old Holy Roman Empire which led the formation of a new Germany 1871.
Balkans	Southern Europe (Serbia, Bosnia, Bulgaria, Romania) ruled by the Ottoman Turks until 1875.
Ottoman Empire	Empire of Turkey, ruled the Balkans in Europe.
Austro-Hungarian Empire	Austrian and Hungarian Empire which included land in Czechoslovakia, Bosnia and Croatia.

Date	Event
1803-1815	Napoleonic Wars
1853	Crimean War
1859	Italy created
1870	Franco-Prussian War
1871	German Empire created
1882	Triple Alliance Formed
1907	Triple Entente Formed
June 1914	Assassination of Franz Ferdinand
July 1914	Beginning of the First World War
1917	Russia leaves the war and USA joins on the allied side
1918	End of the First World War
1919	Treaty of Versailles is signed by Germany and the allies
1919-23	Period of unrest in Germany
1929	Wall Street Crash (USA), starts the Great Depression.
1930-39	The Great Depression, mass unemployment globally. 6 million jobless in Germany.
1933	Hitler elected Chancellor of Germany. He promises jobs.
1933-39	Hitler rearms Germany and builds up the military.
1938	Anschluss - Germany unites with Austria
1938	The Munich Conference – Germany given part of Czechoslovakia by France and Britain in return for peace.
1938	Hitler invades all of Czechoslovakia
1939	Hitler signs the Nazi-Soviet Pact with the USSR
1939	Hitler invades Poland. Britain and France declare war. WW2 starts
1940	Dunkirk, Fall of France, Battle of Britain,
1944	D-Day – France liberated from the Nazis. Allies push into Germany.
1945	Hitler commits suicide. End of the Second World War.


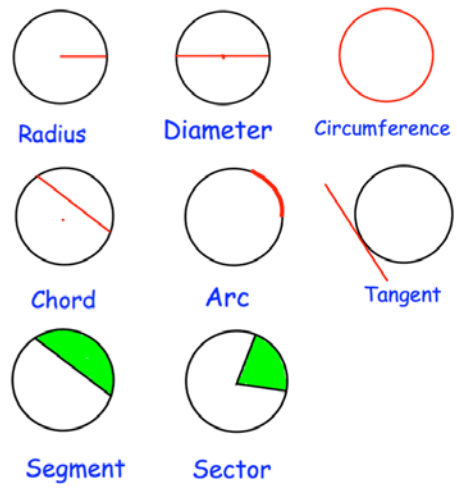
Year 8 Knowledge Organisers

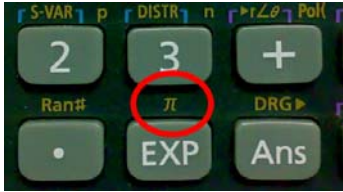

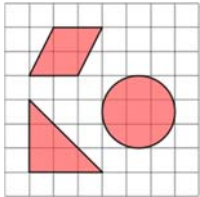

Maths

Circles, Pi and Pythagoras



Knowledge Organiser

Topic/Skill	Definition/Tips	Example
1. Circle	A circle is the locus of all points equidistant from a central point.	
2. Parts of a Circle	<p>Radius – the distance from the centre of a circle to the edge</p> <p>Diameter – the total distance across the width of a circle through the centre.</p> <p>Circumference – the total distance around the outside of a circle</p> <p>Chord – a straight line whose end points lie on a circle</p> <p>Tangent – a straight line which touches a circle at exactly one point</p> <p>Arc – a part of the circumference of a circle</p> <p>Sector – the region of a circle enclosed by two radii and their intercepted arc</p> <p>Segment – the region bounded by a chord and the arc created by the chord</p>	<p>Parts of a Circle</p> 
3. Area of a Circle	$A = \pi r^2$ which means 'pi x radius squared'.	<p>If the radius was 5cm, then:</p> $A = \pi \times 5^2 = 78.5cm^2$
4. Circumference of a Circle	$C = \pi d$ which means 'pi x diameter'	<p>If the radius was 5cm, then:</p> $C = \pi \times 10 = 31.4cm$

5. π ('pi')	<p>Pi is the circumference of a circle divided by the diameter.</p> $\pi \approx 3.14$	
6. Perimeter	<p>The total distance around the outside of a shape.</p> <p>Units include: mm, cm, m etc.</p>	<p>8 cm</p>  <p>5 cm</p> $P = 8 + 5 + 8 + 5 = 26cm$
7. Area	<p>The amount of space inside a shape.</p> <p>Units include: mm^2, cm^2, m^2</p>	
8. Area of a Rectangle	<p>Base x Height</p>	<p>9 cm</p>  <p>4 cm</p> $A = 36cm^2$

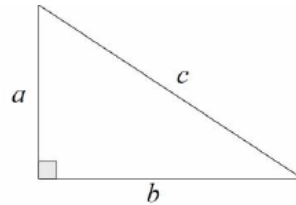
Circles, Pi and Pythagoras



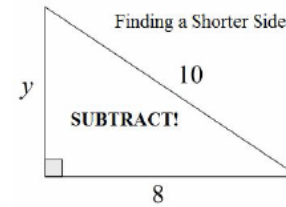
9. Pythagoras' Theorem

For any **right angled triangle**:

$$a^2 + b^2 = c^2$$



Used to find **missing lengths**.
a and b are the shorter sides, c is the **hypotenuse (longest side)**.



$$a = y, b = 8, c = 10$$

$$a^2 = c^2 - b^2$$

$$y^2 = 100 - 64$$

$$y^2 = 36$$

$$y = 6$$

MathsWatch References and Worksheet Links:

52 – Perimeters

53 – Area of a Rectangle

116 – Circle Definitions

117 – Area of a Circle

118 – Circumference of a Circle

150a – Pythagoras' Theorem (A Simple Approach)

150b – Pythagoras' Theorem (An Algebraic Approach)


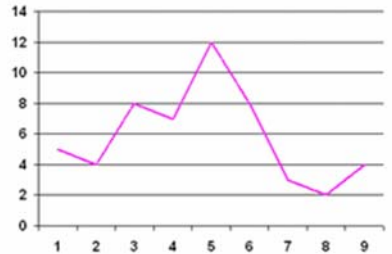
Record Breaking and Personal Challenge



Knowledge Organiser

Topic/Skill	Definition/Tips	Example
1. Types of Data	<p>Qualitative Data – non-numerical data</p> <p>Quantitative Data – numerical data</p> <p>Continuous Data – data that can take any numerical value within a given range.</p> <p>Discrete Data – data that can take only specific values within a given range.</p>	<p>Qualitative Data – eye colour, gender etc.</p> <p>Continuous Data – weight, voltage etc.</p> <p>Discrete Data – number of children, shoe size etc.</p>
2. Mean	Add up the values and divide by how many values there are.	<p>The mean of 3, 4, 7, 6, 0, 4, 6 is</p> $\frac{3 + 4 + 7 + 6 + 0 + 4 + 6}{7} = 5$
3. Median Value	<p>The middle value.</p> <p>Put the data in order and find the middle one.</p> <p>If there are two middle values, find the number half way between them by adding them together and dividing by 2.</p>	<p>Find the median of: 4, 5, 2, 3, 6, 7, 6</p> <p>Ordered: 2, 3, 4, 5, 6, 6, 7</p> <p>Median = 5</p>
4. Mode /Modal Value	<p>Most frequent/common.</p> <p>Can have more than one mode (called bi-modal or multi-modal) or no mode (if all values appear once)</p>	<p>Find the mode: 4, 5, 2, 3, 6, 4, 7, 8, 4</p> <p>Mode = 4</p>
5. Range	<p>Highest value subtract the Smallest value</p> <p>Range is a 'measure of spread'. The smaller the range the more <u>consistent</u> the data.</p>	<p>Find the range: 3, 31, 26, 102, 37, 97.</p> <p>Range = 102-3 = 99</p>

6. Frequency Table	A record of how often each value in a set of data occurs .	<table><tr><th>Number of marks</th><th>Tally marks</th><th>Frequency</th></tr><tr><td>1</td><td> </td><td>7</td></tr><tr><td>2</td><td> </td><td>5</td></tr><tr><td>3</td><td> </td><td>6</td></tr><tr><td>4</td><td> </td><td>5</td></tr><tr><td>5</td><td> </td><td>3</td></tr><tr><td>Total</td><td></td><td>26</td></tr></table>	Number of marks	Tally marks	Frequency	1		7	2		5	3		6	4		5	5		3	Total		26
Number of marks	Tally marks	Frequency																					
1		7																					
2		5																					
3		6																					
4		5																					
5		3																					
Total		26																					
7. Bar Chart	<p>Represents data as vertical blocks.</p> <p>x – axis shows the type of data</p> <p>y – axis shows the frequency for each type of data</p> <p>Each bar should be the same width</p> <p>There should be gaps between each bar</p> <p>Remember to label each axis.</p>	<table><thead><tr><th>Number of pets owned</th><th>Frequency</th></tr></thead><tbody><tr><td>0</td><td>3</td></tr><tr><td>1</td><td>8</td></tr><tr><td>2</td><td>12</td></tr><tr><td>3</td><td>1</td></tr><tr><td>4</td><td>2</td></tr></tbody></table>	Number of pets owned	Frequency	0	3	1	8	2	12	3	1	4	2									
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3	1																						
4	2																						
8. Pie Chart	<p>Used for showing how data breaks down into its constituent parts.</p> <p>When drawing a pie chart, divide 360° by the total frequency. This will tell you how many degrees to use for the frequency of each category.</p> <p>Remember to label the category that each sector in the pie chart represents.</p>	<table><thead><tr><th>Sport</th><th>Degrees</th></tr></thead><tbody><tr><td>Football</td><td>144°</td></tr><tr><td>Netball</td><td>80°</td></tr><tr><td>Hockey</td><td>60°</td></tr><tr><td>Tennis</td><td>40°</td></tr><tr><td>Squash</td><td>36°</td></tr></tbody></table> <p>If there are 40 people in a survey, then each person will be worth $360 \div 40 = 9^\circ$ of the pie chart.</p>	Sport	Degrees	Football	144°	Netball	80°	Hockey	60°	Tennis	40°	Squash	36°									
Sport	Degrees																						
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9. Pictogram	<p>Uses pictures or symbols to show the value of the data.</p> <p>A pictogram must have a key.</p>	
10. Line Graph	<p>A graph that uses points connected by straight lines to show how data changes in values.</p> <p>This can be used for time series data, which is a series of data points spaced over uniform time intervals in time order.</p>	

MathsWatch References and Worksheet Links:

15 – Tally Charts and Bar Charts

62 – Averages and the Range

63 – Data (Discrete and Continuous)

64 – Vertical Line Charts

127a – Venn Diagrams (Introduction)

128a – Pie Charts

128b – Stem and Leaf Diagrams

129 – Scatter Diagrams

Year 8 Knowledge Organisers

English

First! Think FLAPS:

- Form
- Language
- Audience
- Purpose
- Structure



What **form** of writing are you being asked to use?
Which **language features** must you include?
Who is the writing for?
Why are you writing/what are you trying to achieve?
Which **structural features** must you use?
You **MUST** use the right **tone** and level of **formality** and you must not drift away from your **purpose** for writing!

Their Opinion

DUCK! AKA 'Weaving'

I understand why some people believe...

Some people may think...

I know how some people feel about...

Some people think this is a good idea because...

SQUASH IT 'Counter Punch'

However,

But,

Although this might be the case,

Never the less,

In contrast to this

YOUR OPINION

JAB/Right Hook/Uppercut etc.

I believe that...

On the other hand,

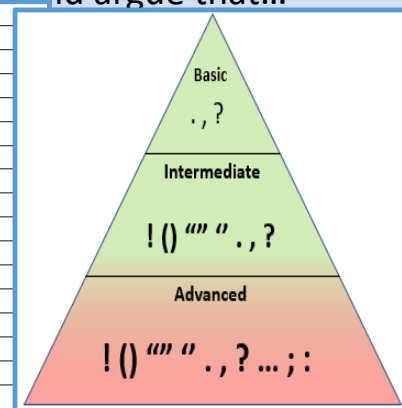
Have they considered...?

I feel strongly that...

I would argue that...



Techniques
Facts
Opinions
Rhetorical questions
Repetition
Rule of 3
Emotive language
Statistics
Tone (sarcastic/humorous/exaggeration)
Metaphor
Alliteration
Adjectives
Similes
Sentence variety (complex sentences & one word sentences)
Structure – paragraphs/ script form/ stage directions in brackets
Inflated language
Varied vocabulary – WOW words
I, you we – personal pronouns/ direct address
Effective verbs (modals – should have, could have, would have and imperatives)
Effective sentence openers –ly/-ing/-ed and discursive markers/ connectives

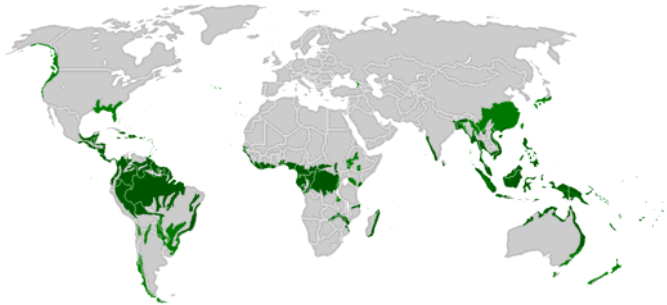


Don't forget to PLAN

Year 8 Knowledge Organisers

Geography

Tropical Rainforest Knowledge Organiser



Location: Mostly on the equator and up to 23.5° either side. The rainforest is more common in the southern hemisphere. It is not found in Europe or Antarctica. Examples include the Amazon Rainforest and the Borneo Rainforest.

The case study we use is the Amazon Rainforest.

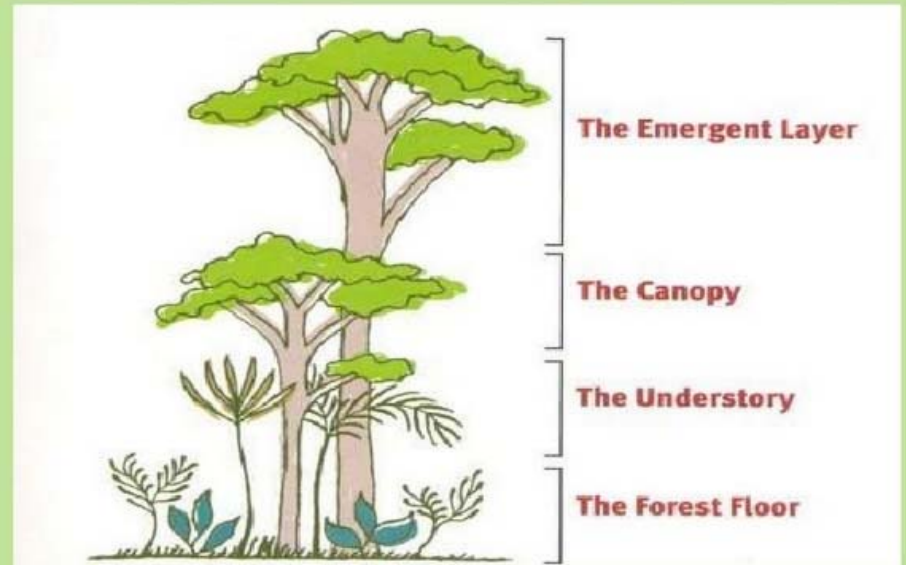
Climate	Rain almost every day, varying temperatures throughout the year from 25°C-30°C. Very humid. Some months have over 300mm of rainfall. No real seasons.
Soil	Latosols. Poor quality, shallow and acidic soil. Iron oxide stains the top layer red. Heavy rainfall washes away the nutrient layer. Generally infertile but the nutrient layer is constantly being replaced and the plants roots are shallow therefore quickly absorbed.
Vegetation	Orchid, Banana Tree, Bamboo Tree, Coconut Tree, Liana
Animals	Pythons, Jaguars, Vampire Bats, Iguanas, Frogs, Macaws, Monkeys, Grasshoppers
Human Uses	Wood, Mining, Industry, Cattle Ranching, Medicine, Homes, Tourism

Adaptation	Use
Buttress Roots	A set of roots which provide further stability for a tree as the soil is shallow.
Stilt Roots	Roots which provide support as they are anchored in the shallow soils.
Red Leaves	Protects the plant from sunlight. They act as a sunscreen by reflecting red light.
Lianas	They use other trees to climb up into the canopy to maximise the exposure to sunlight.
Leaf Angling	Leaves are arranged at different angles so that a plant avoids shading its own leaves.
Drip Tips	Leaves have a waxy surface to enable excess rainwater to run-off easily, preventing the growth of algae.
Epiphytes	They live on the surface of other plants.
Thin Bark	The bark is thin and smooth as the trees don't need to prevent moisture as there is plenty of water in the air.

Effects of deforestation:

- Changes in Biodiversity: Removal of the forest causes the loss of plant species. Animals are forced out as their food supply and habitat are destroyed. Many species have become extinct.
- Changes in Hydrology: The water cycle is disrupted as interception and transpiration are reduced and surface run off is increased. Flooding is more frequent.
- Changes in Soils: The soil is easily eroded as there are no roots to anchor it. Torrential rain removes nutrients.
- Changes in Climate: Transpiration is reduced and evaporation is increased. The climate becomes drier. More carbon dioxide is released.
- Impact on Humans: Indigenous tribes are forced away.

Rainforest Layers



Emergents	50m or taller. Usually supported by buttress roots.
The Canopy	A dense layer. Trees are 20-30m high. Many hardwood trees such as Mahogany.
The Understory	Dark and humid area containing saplings and shrubs.
The Forest Floor	Covered with ferns and a deep layer of litter – fallen leaves and branches.

Management & Sustainable Development:

- Rubber Tapping: This doesn't damage the trees. It collects latex rubber from the trees
- National Parks: Preserves the flora and fauna.
- Sustainable Logging: Trees are replanted as trees are cut down and there is a quota for removal.
- Agroforestry: Smaller plants and trees are planted in and amongst the larger trees, quickly replacing nutrients and reducing soil erosion.

Year 8 Knowledge Organisers

Music



The Power of Music *Performing Popular Music*



Name five different genres of music:

Genre	What it sounds like.
.....	
.....	
.....	
.....	
.....	

Name five sections in a song:

Structure	The sections in a song
Eg. <i>Chorus</i>	A section that repeats at different point throughout the song.
.....	
.....	
.....	
.....	
.....	

Draw a flow chart for either one of your performances, include, **names of performers, sections of the song, instruments, dynamics and tempo.**

Key Word Definitions:

Dynamics	
Fortissimo	
Forte	
Piano	
Pianissimo	
Tempo	
Presto	
Moderato	
Grave	
Texture	
Melody	
Chord	
Bassline	
Harmony	

Write down the notes in each chord:

Chord name	Notes in the chord
C Major	
G Major	
A Minor	
F Major	
C ⁷	
G ⁷	

Year 8 Knowledge Organisers

Science

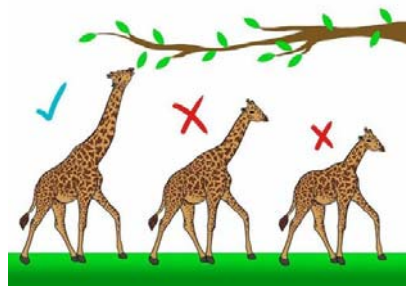
Genes: Evolution and Inheritance



Word Bank

Evolution	Theory that animals and plants developed from species from the past.
Fossil	The remains of plants or animals that have turned to stone.
Extinction	No more remain anywhere in the world.
Population	Group of organisms of the same kind living in the same place.
Competition	Fighting for resources.
Captive breeding	Breeding in a human controlled environment.
Chromosome	Thread like structure containing DNA
Allele	Different form of a gene
Dominant allele	Will always be expressed.

What is the theory of Natural Selection? A process by which species change over time. Species compete for resources. Those that survive pass on their good genes. The unhelpful genes die out.



Do people still agree with Darwin?

Darwin's ideas are now more accepted. This is due to more evidence;

1. Fossils show species have changed over time.
2. Antibiotic resistance shows Natural Selection in microorganisms.
3. Extinction shows that species that do not adapt to change die out.

How does a species become extinct?

- Changes to the environment
- Destruction of habitat
- Outbreak of disease
- New predators
- Increased competition for resources



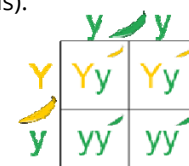
How are humans working to prevent extinction?

Endangered animals are at risk of extinction. To prevent this, humans may choose to use conservation, captive breeding or gene banks. Conservation keeps the animal/plant in its natural environment whereas captive breeding uses human-controlled environments. Gene banks store genetic samples of species for use or research in the future – these may be used to produce new individuals.

How do you inherit characteristics? Your inherited characteristics come from your parents through genetic material stored in the nucleus of your cells. This material is called DNA. DNA contains all the information needed to make organisms. Humans have 46 chromosomes, 23 from each parent. The DNA on these chromosomes is passed onto offspring by sex cells (sperm and egg cells).

How do our parents affect our genetics? For each inherited characteristic, you will have 2 genes. One gene is from your mother and the other gene is from your father. Different forms of the same gene are known as alleles.

Dominant alleles are always expressed (shown with a capital letter), you need 2 recessive alleles (lower case letter) to that characteristic.



How did scientists discover DNA?

1866	Certain characteristics are inherited Gregor Mendel carries out experiments using peas. He notices that certain characteristics such as height and colour are passed on from parents to their offspring.
1869	Nuclein is discovered Friedrich Miescher discovers an acidic substance in the nucleus of a cell. He calls this substance nuclein. This chemical is now called DNA.
1944	Genes are passed from one generation to the next Oswald Avery transfers the ability to cause disease from one type of bacteria to another. He proves that genes are sections of the DNA molecule.

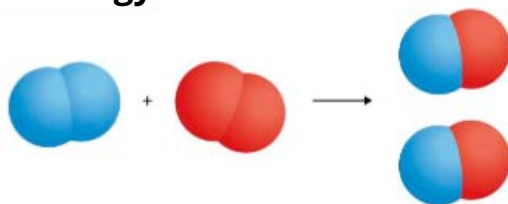
1950	DNA base pairs are discovered Erwin Chargaff finds out that, even though different organisms have different amounts of DNA, all DNA contains equal quantities of the bases A and T, and equal quantities of the bases C and G.
1952	DNA crystals are photographed Maurice Wilkins and Rosalind Franklin use X-rays to take an image of DNA crystals.
1953	Double-helix structure of DNA is identified James Watson and Francis Crick, working at another university, were also studying DNA. When they saw Wilkins and Franklin's image it told them that DNA had a helical shape. Through further investigations, Watson and Crick worked out that the structure of DNA is like a twisted ladder. This is known as a double helix.
1953–2000	Advances in genetics Individual genes that code for genetically inherited disorders such as cystic fibrosis are discovered. The production of genetically engineered food and animal cloning also begin.
2003	Human genome project completed Scientists working across the globe identify around 24 000 genes – the complete set of genes in the human body.

Reactions: Types of reaction and energy



Word Bank

Chemical reaction	A change in which a new substance is formed.
Reactants	Start of a reaction.
Products	End substances in a reaction.
Conserved	Quantity of reactants equals products.
Combustion	Reaction with oxygen. Also called burning.
Renewable	Won't run out.
Decomposition	A chemical reaction in which a substance is broken into more than one product.



How can we show chemical reactions using particle diagrams?

Each type of atom is shown in a different colour. Bonded atoms are joined. Atoms of each type on either side of the arrow must be equal.

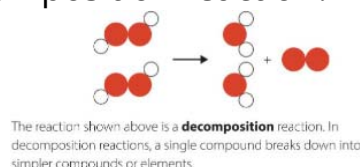
Word equations can also be used which only contain words. Symbol equations use chemical symbols from the periodic table.

How are endothermic and exothermic reactions different?



Endothermic reactions take in energy from the surroundings. Energy enters. These reactions make the surroundings cold.
Exothermic reactions give energy to the surroundings. Energy exits. These reactions make the surrounding warm.

What happens during a thermal decomposition reaction?



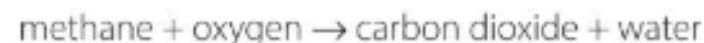
What are bond energies and how are they used to calculate energy changes?

During chemical reactions, bonds are broken and bonds are made. Bond breaking needs energy (it is always endothermic) and bond making gives out energy (it is always exothermic). Some bonds are stronger than others. The energy needed to break a bond is its bond energy. You can use bond energy values to predict if a reaction is endo or exo thermic. If less energy is needed to break bonds than is released on making new bonds, the reaction is exothermic.

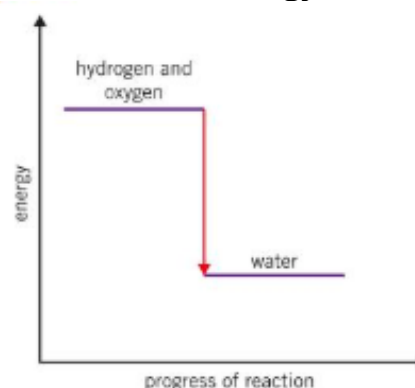


What happens during a combustion reaction?

Combustion is the scientific term for burning. During combustion a substance reacts with oxygen and gives out heat and light. The products of combustion are always carbon dioxide and oxygen.



What can energy level diagrams show about reactions?



Energy level diagrams show energy changes in chemical reactions. In exothermic reactions, the energy in reactants is greater than the energy in products. In endothermic reactions, the energy in the products is greater than the energy in the reactants. The energy diagram to the left is an example of an exothermic reaction. This is the combustion of hydrogen.

Energy; Work, heating and cooling



Word Bank

Work	Transfer of energy
Lever	A machine that pivots about a point.
Force	A push or pull. Measured in N.
Temperature	A measure of motion and energy of particles.
Energy	Measured in J
Radiation	Transfer of energy as a wave.
Insulation	Minimises energy loss.
Infrared	Radiation given off by the sun.

What is work done and how is it calculated?

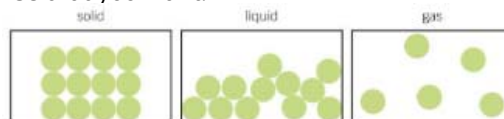
Work is the transfer of energy. Work is done when;

- You lift a book against gravity.
- You slide a book against friction.
- You deform an object (squash, stretch)
- When a force moves or deforms an object, work is done

$$\text{work done (J)} = \text{force (N)} \times \text{distance moved (m)}$$

How do energy and temperature change when a substance is heated?

Temperature is measured with a thermometer and is measured in degrees celcius. There is a difference between energy and temperature. Heating changes the movement of particles. If you heat a solid the particles vibrate more. If you heat a liquid or a gas the particles move faster and vibrate more. Individual particles in a solid, liquid or gas don't get hotter. They move or vibrate faster. The energy that you need to increase the temperature of a material depends on; the mass of the material, what the material is made of and the temperature rise that you want.



Which methods of insulation are best to reduce energy loss?

Transfer method	Way to slow down transfer	Example
conduction	use a good thermal insulator	use plastic for a kettle
convection	use materials that contain pockets of air which can't move	use foam between the walls of your house
radiation	use shiny surfaces to reflect infrared	use a foil blanket to stop a runner's temperature dropping too quickly

How is energy transferred by conduction?



In conduction, particles transfer energy by colliding with other particles when they vibrate. Metals are good thermal conductors because they contain electrons that are free to move. Energy transfer happens until the two surfaces are at the same temperature.

How is energy transferred by convection?

When you heat soup in a hot pan, it all heats up, not just the layer in contact with the pan.

This is convection.

1. The soup that is in contact with the bottom of the pan gets hotter so the particles there move faster.
2. The particles in the hotter soup move further apart, so the soup becomes less dense.
3. The hotter soup rises (floats up) and cooler, denser soup takes its place.

How is energy transferred by radiation?

Very hot things such as burning coal give out light as well as infrared radiation. Some people call IR 'thermal radiation' or heat. The Sun emits lots of different types of radiation, including light and infrared. Both light and IR travel as waves. All objects emit radiation. The type of radiation they emit depends on temperature. How much radiation they emit per second depends on the type of surface.