Year 9
Knowledge Organiser: Cycle 3

Name: _____

Tutor group: _____
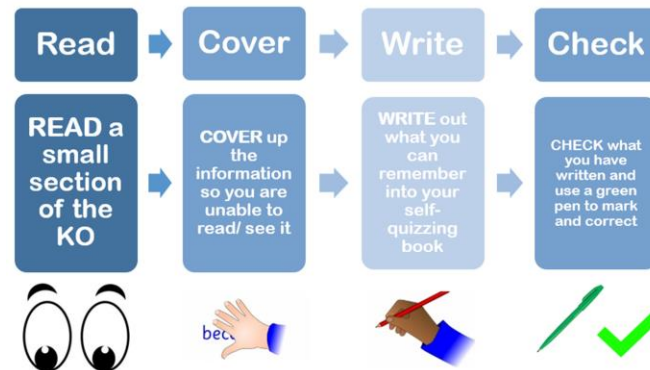
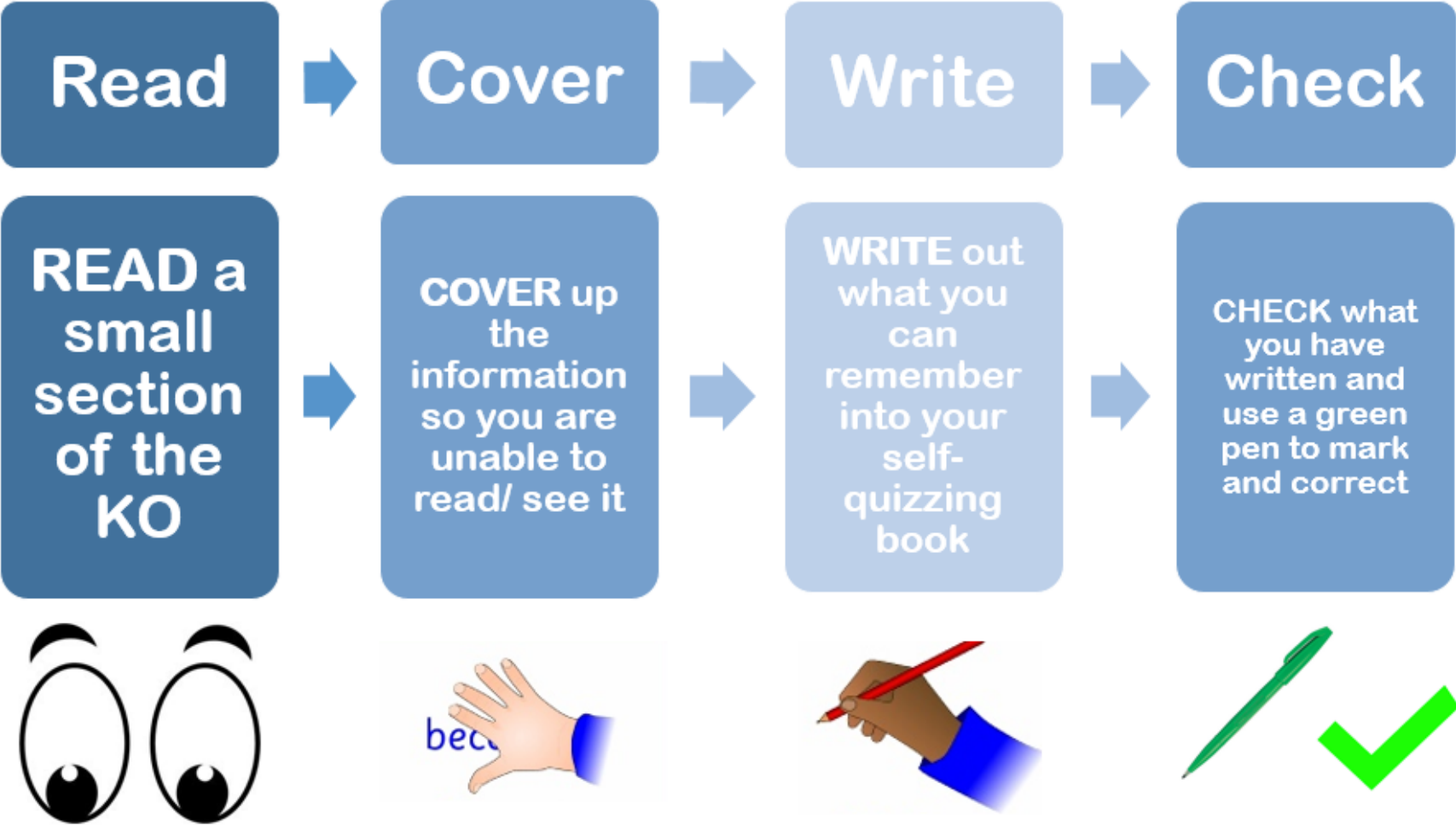| Read	Cover	Write	Check
READ a small section of the KO	COVER up the information so you are unable to read/ see it	WRITE out what you can remember into your self-quizzing book	CHECK what you have written and use a green pen to mark and correct

Knowledge Organisers contain critical knowledge you must know. This will help you recap, revisit and revise what you have learnt in lessons in order to remember this knowledge for the long-term.

You must have this book for every lesson – it is part of your equipment.

- Students remember 50% more when they test themselves after learning.

- You can use your book to help **memorisation**.

- **Read** a section of your Knowledge Organiser.

- **Cover** it up.

- **Write** out what you've remembered.

- **Check** the Knowledge Organiser to see if you're right.

- **Repeat** this process.

- Do this **every day** to help commit the information to your **long-term memory**.
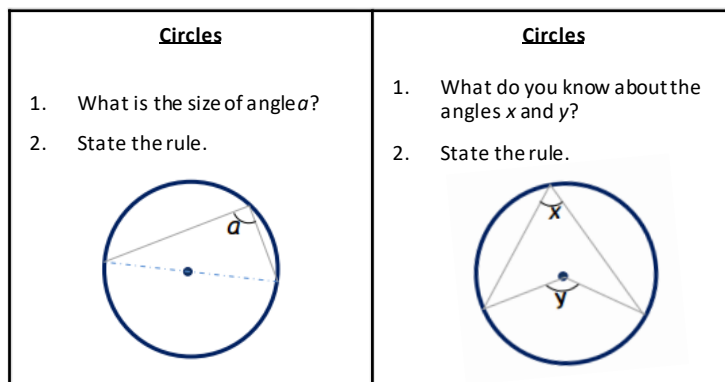
How to Use the Book for Self-Quizzing

Read	Cover	Write	Check
READ a small section of the KO	COVER up the information so you are unable to read/ see it	WRITE out what you can remember into your self-quizzing book	CHECK what you have written and use a green pen to mark and correct

Research shows that students remember 50% more when they test themselves after learning something.

You can use your 100% book to create **flashcards**.

These should be:

- **double-sided**
- **a question on one side, the answer on other**
- **a keyword on one side, a definition or image on the other**
- **used for self-testing.**

Circles	Circles
1. What is the size of angle a? 2. State the rule.	1. What do you know about the angles x and y? 2. State the rule.

Q1 What is **emulsion**? Oil, water, droplet, shake, immiscible, bond, mixture.	Q2 What is **one similarity** between an **alkene** and an **unsaturated** fat?
Q3 What is the name for the **test** for **unsaturated fat** or **alkene**? Describe what you would **see**.	Q4 Describe two ways that **saturated** fat and **unsaturated fat** (oil) are **different**.
Q5 What is **the advantage** of cooking food in **oil**? **Explain** your answer.	Q6 **Describe** what an **emulsifier** molecule does.
Q7 Name the **two parts** of an **emulsifier** molecule.	Q8 What is the difference between a **monounsaturated** fat and **polyunsaturated** fat? **Mono** = one **Poly** = many

Feedback

Your teachers will give you feedback about your learning and progress in many different ways. These will include:

➢ Verbal feedback about something you are working on in the lesson (practical or written work).

➢ Verbal feedback through asking questions.

➢ Guided independent self-assessment.

➢ Guided peer assessment.

➢ Instant/quick written comments or identification of SPAG errors on your work as you complete it.

➢ Written feedback on your work and setting R4 or extension questions for you to complete.

➢ Knowledge quizzing/short tests that give you a score (i.e. 15/20).

➢ Longer tests that may also give a score (i.e. in %) as well as feedback about the content you need to re-learn/refresh.

You will be expected to respond to feedback in the following ways:

✓ Correcting all SPAG errors and copying out spellings as directed by your teacher.

✓ Answering R4 questions and completing extension questions/tasks in green pen.

✓ Giving peer feedback when it is expected by the teacher, using the format provided.

✓ Setting yourself targets when required, to ensure that you keep developing your knowledge and skills.

✓ Focusing on the areas of knowledge that you need to learn and quizzing yourself on these for homework.

✓ Showing that you take pride in your work by presenting it neatly.

✓ Always asking for help if you don't understand the work or what to do.

The Literacy Mat

Connectives

Adding Ideas
Furthermore, in addition, similarly, also, and, too.

Showing Difference
But, however, on the other hand, although, whereas, alternatively, arguably.

Evaluating
Consequently, surprisingly, significantly, interestingly, unexpectedly.

Listing
Firstly, secondly, last, then, next, finally.

Common Mistakes

Correct Capital Letters
To start EVERY sentence.
For 'I' (as in 'I went').
For ALL names.
Film/book names.
NeVeR To be uSed RanDomLy!

Would HAVE' vs 'Would OF'
NEVER use '**of**' after a modal verb:

'Would <u>have</u>' **NOT** 'would of'
'Could <u>have</u>' **NOT** 'could of'
'May <u>have</u>' **NOT** 'may of'
'Should <u>have</u>' **NOT** 'should of'
'Might <u>have</u>' **NOT** 'might of'

Great Big Nevers!
Gonna – going to
Ain't – am not
We/they was – we were
Gotta – have got to
Innit – isn't it
Gotten – got
Coz/cause – because

Homophones
To/too – I went to school. (towards). I ate too much (more than enough). I am happy too (also).
Their/there/they're – They're (they are) over there (that place) reading their (belonging to them) books.
Your/you're – Your work is great (belonging to you). You're awesome (you are).

Correct Sentences

Simple Sentence – **must contain a verb and a subject.**

subject   verb
Matt <u>was</u> very cold today.

subject   verb
<u>I</u> always <u>eat</u> breakfast in the morning

Compound Sentence – two **simple sentences** joined by a **connective**.

connective
I tried to speak slowly <u>**but**</u> I was far too excited.

connective
Dan is very organised <u>and</u> he always helps others.

Complex Sentence – contains a **simple sentence** and one or more '**subordinate clauses**' (extra information!).

subordinate clause   comma
When he handed in the homework, the teacher knew he had worked hard on it.

comma   comma
She told a joke, **which was hilarious,** to her friends.   subordinate clause

Proof Reading

Follow this checklist when proof-reading or editing your work, especially assessments!

1. Check your presentation: Underline your date, title and any subtitles. Check that your work is laid out in paragraphs.

2. Skim read: Make sure capital letters and full stops are 100% accurate.

3. Skim read again: Check that your complex sentences have accurate commas.

4. Skim read again: Check the spelling of words you are not sure about (neighbour/dictionary/teacher/literacy mat).

5. Read a final time but carefully: Do **ALL** of your sentences make sense? Is there a better, clearer way of explaining/describing something?

Apostrophe Rules

1. Contractions
The apostrophe is put in the place of missing/omitted letters:
I will becomes I'll / should not becomes shouldn't etc.

2. Possession
If something belongs to someone, we put an apostrophe, then an 'S':
Toby's football / The dog's collar / The door's handle.
But if the name already ends in an 'S', you just put an apostrophe:
Chris' guitar / Jess' book / Mr Jones' classroom.

3. Plural Possession
If something belongs to a group, we just put an apostrophe at the end.
The class' whiteboard / The boys' shoes.

4. It's vs Its
'It's' should ONLY have an apostrophe if it is being shortened from 'it is'.
NEVER for possession: Its legs were long and hairy.
Never use an apostrophe for plurals! Carrot's / Ball's / CD's

The Literacy Mat: Common Spellings

accommodation	daughter	improvise	performance	soldier
actually	decide/decision	industrial	permanent	stomach
alcohol	definite	interesting	persuade/persuasion	straight
although	design	interrupt	physical	strategy
analyse/analysis	development	issue	possession	strength
argument	diamond	jealous	potential	success
assessment	diary	knowledge	preparation	surely
atmosphere	disappear	listening	prioritise	surprise
audible	disappoint	lonely	process	survey
audience	embarrass	lovely	proportion	technique
autumn	energy	marriage	proposition	technology
beautiful	engagement	material	questionnaire	texture
beginning	enquire	meanwhile	queue	tomorrow
believe	environment	miscellaneous	reaction	unfortunately
beneath	evaluation	mischief	receive	Wednesday
buried	evidence	modern	reference	weight
business	explanation	moreover	relief	weird
caught	February	murmur	remember	women
chocolate	fierce	necessary	research	
climb	forty	nervous	resources	
column	fulfil	original	safety	
concentration	furthermore	outrageous	Saturday	
conclusion	guard	parallel	secondary	
conscience	happened	participation	separate	
conscious	health	pattern	sequence	
consequence	height	peaceful	shoulder	
continuous	imaginary	people	sincerely	
creation				

Maths Core Knowledge

hegartymaths

http://hegartymaths.com

Data

- Mean
- Median
- Mode
- Range
- Scale
- Proportion
- Discrete data
- Continuous data
- Frequency
- Cumulative frequency
- Upper quartile
- Lower quartile
- Interquartile range
- Distribution
- Correlation
- Scatter graph

Shape

Names 2D

Quadrilaterals	Triangles
Parallelogram	Equilateral
Trapezium	Right-angle
Rectangle	Isosceles
Rhombus	Scalene

Keywords

Circle
Polygon
Interior angles
Exterior angles
Acute angle
Right angle
Obtuse angle
Reflex angle
Vertically opposite angles
Corresponding angles
Alternate angles
Co-interior angles
Pythagoras
Trigonometry
Parallel
Perpendicular

Maths Lesson Essentials!

- Have you written and underlined the date and title?
- Have you written the question and shown your working out?
- Have you shown your units?
- Have you brought your calculator?
- Have you marked your answer in green pen?
- Does your answer make sense?

Shape

Names 3D

Sphere
Cylinder
Tetrahedron
Prism
Cone
Pyramid

Number and Algebra

Ascending	Solution
Descending	Decimal
Denominator	Percentages
Numerator	Binary
Solve	Integer

Maths Core Knowledge
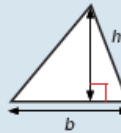
Areas
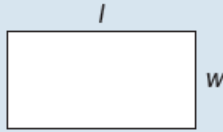
Rectangle = $l \times w$	
Parallelogram = $b \times h$	
Triangle = $\frac{1}{2} b \times h$	
Trapezium = $\frac{1}{2}(a + b)h$	
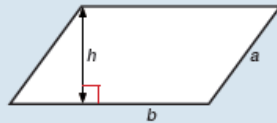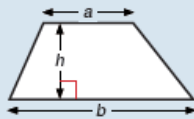
Volumes
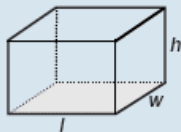
Cuboid = $l \times w \times h$	
Prism = area of cross section × length	
Cylinder = $\pi r^2 h$	
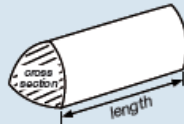
Compound measures

Speed
$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

Pressure
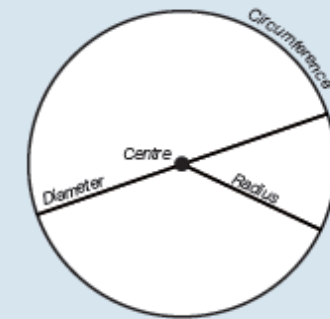$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Density
$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Circles

Circumference = $\pi \times$ diameter, $C = \pi d$

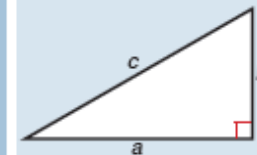Circumference = $2 \times \pi \times$ radius, $C = 2\pi r$

Area of a circle = $\pi \times$ radius squared $A = \pi r^2$

Pythagoras

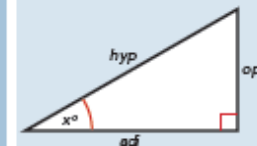### Pythagoras' Theorem

For a right-angled triangle,
$a^2 + b^2 = c^2$

Trigonometric ratios (*new to F*)

$\sin x° = \dfrac{\text{opp}}{\text{hyp}}$, $\cos x° = \dfrac{\text{adj}}{\text{hyp}}$, $\tan x° = \dfrac{\text{opp}}{\text{adj}}$

http://hegartymaths.com

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Science Core Knowledge

1. How Science Works Keywords

| Keyword	Definition
Evidence	A set of data that proves a prediction or hypothesis.
Hazard	Something that could be dangerous.
Risk	Chance of something dangerous happening.
Prediction	Something you think will happen.
Hypothesis	Why you think something will happen.
Variables	Something that changes.
Independent variable	The variable that is changed or controlled in an experiment to test the effects on the dependent variable.
Dependent variable	The variable being tested and measured in an experiment.
Control variable	Something that is constant and unchanged during the experiment.
Repeatability	Closeness of repeats of results to each other.
Reproducibility	Agreement of results from different groups testing the same factor.
Accuracy	Closeness of a measured value to a standard or known value.
Precision	Closeness of two or more measurements to each other.
Reliability	The degree to which the result of a measurement can be depended on to be accurate.

2. Key Equipment

Measuring cylinders – 10 ml cylinders will allow measurement to the nearest 0.1 ml.
100 ml cylinders will allow measurement to the nearest 1 ml.

Thermometers – digital thermometers allow measurement to 1 decimal place, whereas alcohol thermometers only allow measurement to the nearest degree.
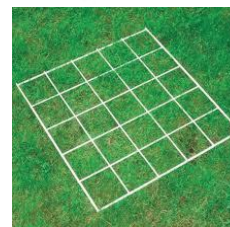
Quadrats – are used for sampling and to find the amount of a species in a certain area. Quadrats are placed onto the ground.

Metre ruler – used in multiple investigations in the lab. Allows us to measure to the nearest cm.

Measuring tape – used in sampling alongside the quadrat. Placed onto the ground to make a transect line to measure against.
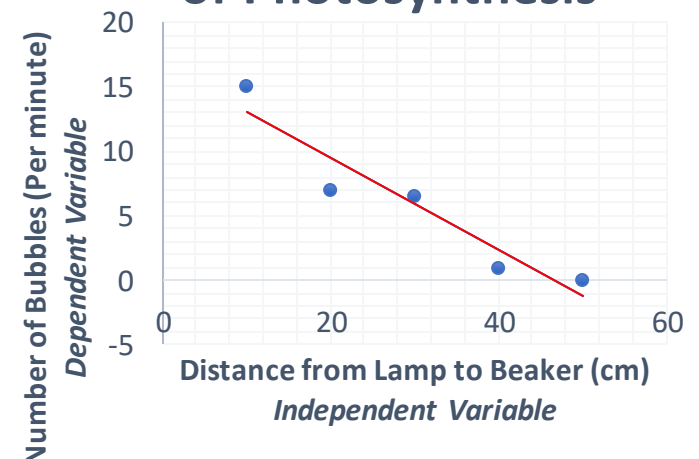
3. Graphing, Analysis and Evaluation Keywords		
Keyword	**Definition**	**Example**
Hypothesis	An educational guess based on what you already know.	The rate of photosynthesis will increase as the lamp moves closer to the beaker.
Independent Variable	The variable that can be changed by the scientist, it is the cause. Found on the x-axis.	Distance from lamp to beaker (cm)
Dependent Variable	The variable that the scientist observes, it is the effect. Found on the y-axis.	Number of bubbles (per minute)
Control Variable	The variable that must always be kept the same.	Temperature, the size of the pond weed, amount of water
Line of Best Fit	A line that goes roughly through the middle of all the scatter points on a graph.	The red line on the graph above shows the line of best fit for the data plotted.
Calculations	Use the correct equation to be used based on the variables of the experiment. Use correct units.	Calculation for mean of number of bubbles per minute: Trial 1 + Trial 2 + Trial 3 ÷ 3 15 + 14 + 15 ÷ 3 = 14.6
Results Analysis	Identify patterns in data. Describe what the table and graph show.	As the lamp is getting closer to the beaker, more bubbles are produced.
Conclusion	Answer your original question. State whether or not the hypothesis was supported.	The results prove that the rate of photosynthesis is effected by the distance of the light source. As the lamp was moved closer to the baker, more bubbles were produced.
Evaluation	Suggest an improvement for the equipment used. Suggest an improvement for the method used.	Use an LED lamp. Measure the volume of oxygen produced.

Distance from lamp to beaker (cm)	Number of bubbles (per minute)			Mean number of bubbles
	Trial 1	Trial 2	Trial 3	
10	15	14	15	14.6
20	7	7	7	7
30	7	7	6	6.7
40	1	2	1	1.3
50	0	0	0	0

Investigating the Rate of Photosynthesis

Number of Bubbles (Per minute) *Dependent Variable*

Distance from Lamp to Beaker (cm) *Independent Variable*

Art

Practical Skills Visited

Colour
Nuances of tone and colour within objects

Drawing
Continued reinforcement of basics of shape and shading
Complex shapes and compositions, detail
Highlight and reflections
Drawing for recording ideas in different ways

Painting
Use of acrylics
Use of different surfaces / mixed media work
Painting on a larger / smaller scale – painting to suit scale

Printing
Collagraph

3D
Sculpture / installation

Photography
Using photographs and edits to support practical work

Literacy
Writing about Art and own ideas in details with a focus on evidencing ideas and thoughts through annotation in the sketchbook

Vocabulary

- **Installation** – artwork created by putting objects together in a particular way
- **Contemporary Art** – art that is being created in society today
- **Mixed media** – using different media together
- **Annotation** – adding useful notes to your work to explain ideas
- **Development** – showing progression within a project and showing links between artists you study and your own work
- **Refinement** – improving your ideas by trying them out in order to create a successful final piece
- **Collagraph** – a print that is created by building up a surface and then printing from this
- **Acrylic** – a thick, water-based paint, often used as an alternative to oil paint

Stretch / Further Reading

1. Complete at least one drawing a week from real life of ANYTHING using a different media – pencil, pen, thread, crayon, etc. This will greatly improve your drawing skills.

2. Find out about installation Art – which artists first starting working in this way?

3. Take photographs that relate to your projects, this will make your work more personal and GCSE in style, preparing you for GCSE and also making your work stand out from the rest.

4. Visit a gallery / museum: Pallant House in Chichester is a good start. London – The National Gallery, Tate Britain, Tate Modern, The British Museum and the V&A Museum are just a few that are free.

LINKS
Drawing
https://www.studentartguide.com/articles/realistic-observational-drawings

Artists

This year your teacher will be being more creative and choosing artists specifically for you and your class. You need to ensure that you read about the artists fully to understand them and be able to say HOW they influence the work that you create.
LINKS
How to analyse and use artists work
https://www.bbc.com/bitesize/guides/zymtv9q/revision/1

Computing – Web Design / HTML

Start Tag	End Tag	HTML Example	Resulting Text
		Defines bold text.	Defines **bold** text.
<i>	</i>	Defines <i>italicized</i> text.	Defines *italicized* text.
<u>	</u>	Defines <u>underlined</u> text.	Defines underlined text.
_		Defines subscripted text (i.e. O₂)	Defines subscripted text (i.e. O_2)
[	]	Defines superscripted text (i.e. E=mc²)	Defines superscripted text (i.e. $E = mc^2$)
 		Defines a New line	Defines a New line
		Change the font color Note: The # provided is the RGB number for the desired font color.	Change the font color
		Bullet point list - Item1 - Item2 - Item3 Note: The tags indicate a bullet point list, and each list item is identified by the - tags.	Bullet point list: • Item1 • Item2 • Item3

Homework Checklist for the First Term

1	More info	https://www.ictlounge.com/html/year_8/webdesign_main.htm
2	Homework – Idea Badges	Animation, Graphic Design, Junior Web Designer, Making Websites, Video Editing Save images to your OneDrive for your website.
3	Keywords	Use Quizlet to practice.
4	Extension work	You can build a basic website in Word and save as Html. Make a website on a free webservice.

Dance

These facts will be needed for weekly homework

How does lighting support choreographic intent?

1	Colour	Symbolic colours such as red to show danger
2	Placement	From above to spotlight the main idea
3	Direction	Side lights to create mood
4	Angles	Also to create mood and to represent exits
5	Shadows	To add mood and mystery
6	Black out	To make the dancers appear and disappear

Set Works

1	Itzik Galili	*A linha Curva*
2	Lucy Bennett	*Artificial Things*
3	Kenrick H20 Sandy	*Emancipation of Expressionism*
4	Wayne McGregor	*Infra*
5	James Cousins	*Within Her Eyes*
6	Christopher Bruce	*Shadows*

Which keyword belongs where?

1	Technical skills	Action content, dynamic content, relationship content, spatial content.
2	Expressive skills	Projection, focus, musicality, phrasing, communication of artistic intent.
3	Physical skills	Posture, alignment, stamina, mobility, extension, balance.

How does costume support choreographic intent?

1	Footwear	Describe the style and significance of the footwear	
2	Masks	Used to hide the face or enhance an emotion	
3	Make up	To highlight the face and create a character	
4	Texture	The feel, appearance or consistency of a surface or substance	
5	Material	The matter from which a thing can be made	
6	Define character	Costume will help to make your character come alive: consider walking in trainers compared to high heels	
7	Sculpt the body	Dance clothing can be tight to the skin to allow movement to be seen	
8	Decoration	Clothing can be purposeful or used as decoration	
9	Colour	Colour implies meaning to an audience. Wearing a blue top can suggest coldness	
10	Compliments other features	Costume can match the lighting and the set design	

Drama

Abstract Techniques – often useful in Devised Drama	
1	**Conscience alley:** Actors stand in two lines to make an 'alleyway' and they speak the inner thoughts/conflict of a character who walks in between.
2	**Physical puppetry:** One actor does controlling movements like a puppet master controlling another actor's movements as if with strings to show power and control.
3	**Marking the moment:** A significant moment in the drama is highlighted and emphasised for the audience, either through freeze frame or slow motion or both.
4	**Split scene and cross-cutting:** Two or more scenes performed on stage at the same time, often with one scene frozen or muted while the other takes the main focus and then this switches.

Scripted Drama	
1	**Playwright:** The writer who wrote the play. Consider their intentions for their audience.
2	**Character lines:** The words intended to be spoken by the actors playing the roles in the play.
3	**Stage directions:** The information within the script written in *italics* to give the actors and directors specific instructions about the characters, set and/or the action on stage and how to play/show it.
4	**Cues:** The lines or moments that you use as a signal to yourself (as a performer) to enter the scene or begin your speech or line.
5	**Dramatic irony:** When the audience knows something that the characters themselves (onstage) do not know *e.g. in Blood Brothers when the characters Mickey and Eddie first meet, the audience knows they are brothers but the characters have no idea.*
6	**Subtext:** The underlying meaning (not always explicitly said/stated).

Re-cap the theatre practitioners – Can you remember who is who?

Antonin Artaud: The Theatre of Cruelty
Steven Berkoff: Physical Theatre and Exaggerated Characters/Comedy
Bertolt Brecht: Political Theatre/Epic Theatre
Konstantin Stanislavski: Naturalism

Year 9 Writing

1. Fiction Writing	2. Non-Fiction Writing

1a. Literary Terminology

Term	Definition
1st person narrator	Written from the perspective of 'I'.
omniscient narrator	An all seeing, all wise narrator
symbolism	The use of symbols to represent ideas or qualities
motif	Repeated image or idea.
foreshadowing	A warning or indication of a future event.
allegory	A story that can be interpreted to reveal a hidden meaning, usually a political or moral one.
oxymoron	A figure of speech in which apparently contradictory terms appear in conjunction
personification	The attribution of a personal nature or human characteristics to something non-human.
antithesis	Character or ideas that are the opposite of each other.
extended metaphor	Comparison between two unlike things that continues throughout a series of sentences in a paragraph.
pathetic fallacy	When the weather reflects the feelings of the character and/or mood of the piece.
alliteration	The occurrence of the same letter or sound at the beginning of adjacent or closely connected words.
in medias res	When a piece of writing starts in the middle of the action without exposition.
semantic field	A group of words that share a similar theme or concept.

2a. Key Terminology

Term	Definition
bias	An inclination or prejudice for or against one person or group
humour	The quality of being amusing or comic.
tone	The choice of writing style the writer employs to convey specific feelings, emotions or attitudes.
empathy	The ability to understand and share the feelings of another.
anecdote	A short amusing or interesting story about a real incident or person.
irony	A state of affairs or an event that seems deliberately contrary to what one expects and is often amusing as a result.
sarcasm	The use of irony to mock or convey contempt.
perspective	An attitude towards or way of regarding something; a point of view.
imperatives	Phrases used to give orders, commands, warning or instructions.
syntactic parallels	Repetition of sentences or clauses to emphasise a theme or idea.
asyndetic list	Where there are no conjunctions between each item.
syndetic list	Where there is always a conjunction between each item.
anaphora	The repetition of a word or phrase at the beginning of successive clauses.
hypophora	A rhetorical device that involves asking a question and then quickly answering it.

1b. 5 Part Story Structure for Narrative Writing.

Exposition	Rising Action	Climax	Denouement	Resolution
This is where you outline your setting, introduce your main characters and the time in which your story is set.	The author puts the character into a complicated situation and forces them into an irreversible situation.	The story reaches a crucial moment. The tension builds reaching a peak.	The story explores the consequences of the climax. The tension starts to ease.	The story's central problem is finally resolved leaving the reader with a sense of completion.

2b. Forms of Non-Fiction Writing

Article	Letter	Essay	Speech	Leaflet
Clear/apt/original title Strapline/subheading Subheadings Introductory paragraph	Dear Sir/Madam or name Addresses Date Paragraphs Yours sincerely/faithfully	An effective introduction and conclusion.	Clear address to audience Rhetorical indicators that an audience is being addressed throughout A clear sign off.	Clear/apt/original title Organisational devices such as inventive subheadings or boxes Bullet points

1c. Ideas to structure a piece of Descriptive writing.

Drop: How can we drop the reader into the action.

Shift: Will we shift in time, mood or place? Decide where you want to take your piece of writing.

Zoom in: What tiny detail shall we zoom in on and write a lot about?

Zoom out: Returning to the main scene what shall we focus on?

Leave: Write a one-line paragraph that finishes off your piece.

2c. Ideas to structure a piece of Non-Fiction writing.

Plan1

Introduction outlining your point of view/argument
Point 1 (your 1st reason for or against)
Point 2 (your 2nd reason for or against)
Point 3 (your 3rd reason for or against)
Conclusion: briefly concluding your argument with a strong statement.

Plan 2

Introduction outlining your point of view/argument
Point 1 (how the issue affects you locally)
Point 2 (how the issue affects the country)
Point 3 (how the issue affects the world)
Conclusion: briefly concluding your argument with a strong statement.

English

Year 9 English Reading Analysis

		3. Writing about the effect.	4. Literary techniques

1. What, How and Why prompts

What is the writer doing?

- The writer is...
- In the novel ...the writer uses...to...
- The writer creates an atmosphere of...by using...

In Chapter 3 of, Of Mice and Men the writer uses sound imagery to create a contrast between the men outside the barn and the quiet, content atmosphere within the barn.

How are they doing this? How do they use the language/language techniques/structure to do this? How do key words/phrases show this?

- For example [add quotation] the use of...
- The adjective/alliteration/simile/metaphor...
- This suggests/implies/demonstrates/presents/highlights/
- The writer uses...coupled with...to highlight...

For example, 'From outside came the clang of horseshoes on the playing peg and the shouts of men,' the use of onomatopoeia creates a sense of excitement and movement. This is contrasted in the next line 'But in the barn it was quiet and humming and lazy and warm.' The repetition of and builds up the atmosphere of lazy content in the barn.

Why are they doing this? Why did they choose that language? Why might they want us to interpret it in different ways?

- This may suggest...Alternatively it may suggest...
- The writer wants to create a feeling of...Additionally it may suggest...

This may suggest that the men outside the barn are enjoying a happy and relaxed game whilst inside the barn there is potentially nothing that concerns the majority of the men. Alternatively, the 'clang' and 'shouts' outside suggest the active minds of the men whilst the 'quiet' and 'humming' of the barn hint that something more sinister might be taking place in there.

2. Useful vocabulary to analytical writing:

To describe a writer's intentions:
- portrays
- depicts
- represents
- demonstrates

To give an example or quotation:
- for example
- for instance
- specifically, when
- in particular

To add information:
- furthermore
- in addition
- also
- additionally

To compare and contrast:
- whereas
- in comparison
- similarly
- in contrast

To conclude:
- in conclusion
- in closing
- given these facts

3a. How the reader feels:

Suspicion
Outrage
Disgust
Curious
Calm
Joyous
Anxiety
Irritation
Compassion
Respect
Horror
Concern

3b. Evaluative Vocabulary

Subtle
Pivotal
Significant
Compelling
Powerful
Dramatic
Challenging
Dramatic
Insignificant
Questionable
Crucial
Emphatic

4a. Language Techniques:

Superlative: an adjective showing the highest quality or degree

Hyperbole: A deliberate over exaggeration

Imagery: vivid description of a particular scene

Auditory imagery: vivid description of sounds

Tactile imagery: vivid description of tactile environment

Kinaesthetic imagery: vivid description of movement.

Alliteration: words close to or next to each other that start with the same sound

Onomatopoeia: Words used to imitate sound

Personification: Non-human things that are given human characteristics

Simile: A comparison using like or as

Sibilance: repetition of the 's' sound

4b. Structural techniques:

Contrast: the deliberate positioning of two or more objects/events/characters who have distinctly different characteristics

Listing: a number of connected items written one after the other to emphasise a particular quality

Shifts in focus: the change of focus in or between paragraphs

Zooming in and zooming out: the narrowing and the widening of narrative focus

Cyclical structure: the end of the extract/novel returns to the same topic as the opening

Chronological structure: arranged in order of time

Shifts in tense: moves from past to present tense or vice versa

Dialogue: the speech of a character indicted by speech marks

English

1. Punctuation Marks

Full Stop — Used at the end of a sentence	**Question Mark** — Used at the end of an interrogative sentence to form a question.	**Exclamation Mark** — Used at the end of an interrogative sentence to form a question.	**Comma** — Use to separate clauses in a sentence.
Speech Mark — Used to show when a character speaks.	**Colon** — Used to separate two independent clauses when the second explains or illustrates the first	**Semi Colon** — Used separate two independent clauses that are about the same topic	**Apostrophe** — used in three ways to show contraction, plural or possession.
Hyphen — can take the place of commas, parentheses, or colons—in each case to slightly different effect	**Slash** — used to separate numbers, letters or words.	**Ellipsis** — Use in non-fiction to show omission. In fiction show hesitancy or long pause.	**Parenthesis** — Used to add extra information in a sentence

2. Apostrophes Rules

To show contraction:
Used to show when letters are omitted from words.
- Do not = don't
- Could not = couldn't
- They are = they're

To show possession:
Can be used to show that one thing belongs to or is connected to something.
- The cat's tail was fluffy

Cat is a singular noun so you need to add an apostrophe and 's' to show that the tail belongs to the cat
- Charles's cat was naughty

Charles is a singular noun so, even though it ends in an 's' already, you need to add an apostrophe and another 's' to show that the cat belongs to Charles.
- The brothers' feet were muddy.

Bothers is a plural noun that ends in an 's' so you don't add another 's' after your aposptrophe. You just add the apostrophe to show the feet belongs to the brothers.
- The children's toys were broken

Children is a plural noun but it doesn't end with an 's' so you need to add an apostrophe and 's' to show that the toys belong to the children.

3. Sentence Types

Simple	Consists for one independent clause. (An independent clause contains a subject and verb and expresses a complete thought. Examples: • I like coffee. • Mary likes tea.
Compound	Is two (or more) independent clauses joined by a conjunction or semi-colon. Each of these clauses could form a sentence alone. • I like coffee and Mary likes tea. • Mary went to work but John went to the party. • Our car broke down; we came last.
Complex	Consists of an independent clause plus a dependent clause. A dependent clause starts with a subordination conjunction or a relative pronoun and contains a subject and a verb but does not express a complete thought. • We missed our plane because we were late. • Our dog barks when she hears a noise.
Minor	Consist of a fragment, or incomplete clause that still conveys meaning. • Hello. • The more, the merrier.

4. Word Types

Noun: A name, place or thing	**Verb:** A being, doing or having word	**Adjective:** A word that describes the noun
Abstract Noun: An idea or concept e.g. bravery, courage, love	**Modal Verb:** A word that shows necessity or possibility	**Pronoun:** A noun that can be substituted for a name.
Concrete Noun: A noun that can be identified through one of the five senses (taste, touch, sight, hearing, or smell)	**Adverb:** A word that describes a verb	**Preposition:** The position or location of a word.

Key Stage 3 Grammar

Food Preparation and Nutrition

Keywords

1. Halal
2. Vegetarian
3. Ovo-lacto vegetarian
4. Vegan
5. Lacto vegetarian
6. Ethical
7. Diabetes
8. Coeliac
9. Gluten
10. Malnutrition
11. Lactose intolerance
12. Allergy
13. Anaphylaxis

Key Points

1. If you can't tolerate certain foods you have to change your diet.
2. Some religions have their own dietary laws and rules.
3. Diabetes is a condition caused because the pancreas doesn't produce any or enough insulin.
4. Coeliac disease is a condition where people have an adverse reaction to gluten.
5. Lactose intolerance is caused when the body is unable to digest lactose (a sugar found in milk and diary products).
6. An allergy to nuts can cause anaphylaxis.
7. The reasons why people become vegetarian include religion, dietary laws, ethical reasons, health or family.

Key Points
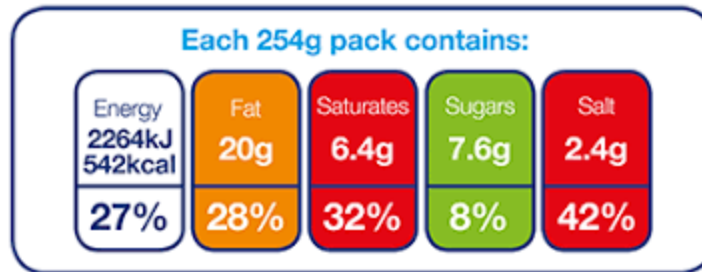
The use of colour helps you to easily see whether they are high in saturated fat, sugar and salt. Red = high, Amber = medium, Green = low

Exam Questions

1. What religions traditionally do not eat pork?
2. Which foods can people with coeliac disease not include in their diets?
3. Why is it important to use codes when tasting foods?
4. What is triangular testing?
5. What information must be included on food labels by law?
6. What does PAL mean?
7. Explain the different factors that affect people's food choices.

Stretch

Know which information is legally required for a food label.

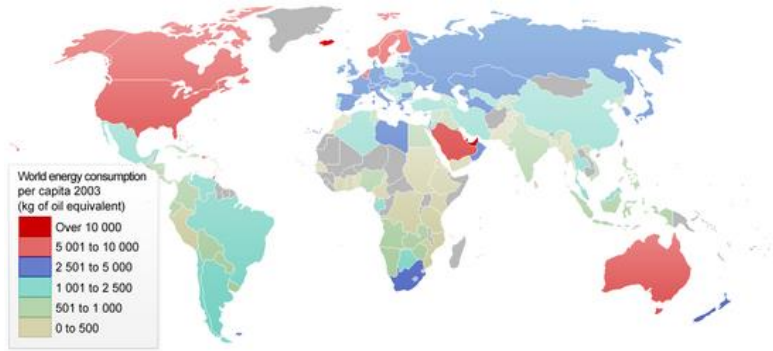Explain how this information will help the consumer.

Further Links

https://www.nhs.uk/conditions/coeliac-disease/

https://www.bbc.co.uk/bitesize/guides/z7fw7p3/revision/1

LEARN VOCAB ... *BUILD SENTENCES*

High Level Sentence Starters

French	English
Pour qu'on puisse améliorer le monde., on peut	To make the world a better place, you can...
Bien que la situation actuelle soit mauvaise, il faut quand-même	Although the situation is bad, we should...
Ce que je trouve le plus important, c'est qu'on devrait	The most important thing, is that we should...

Nouns (transport)

French	English
En voiture	By car
En train	By train
En car	By coach
À vélo	By bike
À pied	On foot

Nouns + Verbs

French	English
Économiser de l'energie	Save energy
Ramasser l'eau de pluie	Collect rain water
Recycler du papier	Recycle paper
Prendre une douche au lieu d'un bain	Take a shower instead of a bath
Arroser les fleurs	Water the flowers
Acheter des produits Bio	Buy organic products
Faire la grève manifester	Go on strike protest
Faire du bénévolat	Do volunteering

Verb-phrase (past tense)

French	English
Autrefois on (n')avait (pas) le droit de....	In the past, you were (not) allowed
Au vingtième siècle, les élèves devaient...	In the 20th Century, school children had to...
Aux filles, il était interdit de...	For girls, it was forbidden to...

Verb-phrase (present tense)

French	English
Chez moi il y a	Where I live there is...
Je fais le tri	I recycle...
Ma famille ne se déplace pas en voiture	My family doesn't use a car
Mon ami voyage...	My friend travels...
J'éteinds la lumière	I turn off the lights
Il faut...	You must...
Je ramasse...	I collect...

Verb-phrase (conditional tense)

French	English
On devrait...	You should...
On pourrait...	You could...
Il faut...	You must...
Dans un monde idéal, on devrait...	In an ideal world, we would...

Core Questions

French	English
1) Quels droits les enfants avaient-ils autrefois?	Which rights did children have in the past?
2) Quels sont les problèmes de l'environnement à Bognor?	Which environmental problems are there in Bognor?
3) Où voudrais-tu habiter à l'avenir?	What should we do in the future to protect the environment?

Adjectives

French	English
Avoir accès à une éducation	Receive an education
Trouver un boulot	Have a job
Gagner de l'argent	Earn money
Être sages avec les adultes	Be polite to adults

French	English
ça vaut la peine	it's worth it
il faut que je sois honnêt(e)	I must be honest
J'en ai marre	I've had enough
si quelqu'un me demandait, je dirais...	if someone asks me, I would say...
je m'en interesse	I'm interested in it
où qu'on aille, quoi qu'on fasse	no matter what we do...
ça m'enerve	it gets on my nerves
je m'en préoccupe	I'm concerned about it
j'en ai peur	I'm afraid of it
Pour que je puisse...	so that I can/could
tu fais des blagues?	seriously?
si j'avais du choix, je voudrais...	if I had a choice I would like...
cela m'ennuie à mourir !	It's dead boring!
quel que soit le prix à payer	whatever the cost

20

Geography

Which countries consume the most energy and what are the impacts of this?

World energy consumption per capita 2003 (kg of oil equivalent)
- Over 10 000
- 5 001 to 10 000
- 2 501 to 5 000
- 1 001 to 2 500
- 501 to 1 000
- 0 to 500

1. The map shows that energy consumption is **unevenly** distributed, with the **highest rates** of consumption taking place in the **developed countries**. The **lowest rates** of consumption are in **developing countries**; for example, the countries of **central Africa**.
2. Energy is important for **industry, transport and homes**.
3. **Social well-being** will be **negatively impacted without** energy as people will not be able to heat homes or turn lights on during the night.
4. If you do not have enough energy, **economic well-being** in the country can be **negatively impacted**. This is because industries cannot operate, meaning there are fewer jobs which could stop the country from developing. Furthermore, people cannot travel to jobs in other places, as the lack of energy makes travelling difficult.

How is the UK's energy mix changing?

UK electricity generation 2009
- Other 2%
- Oil 1%
- Renewables 6%
- Nuclear 13%
- Gas 46%
- Coal 32%

UK electricity generation 2020
- Oil 1%
- Other 9%
- Gas 29%
- Renewables 31%
- Coal 22%
- Nuclear 8%
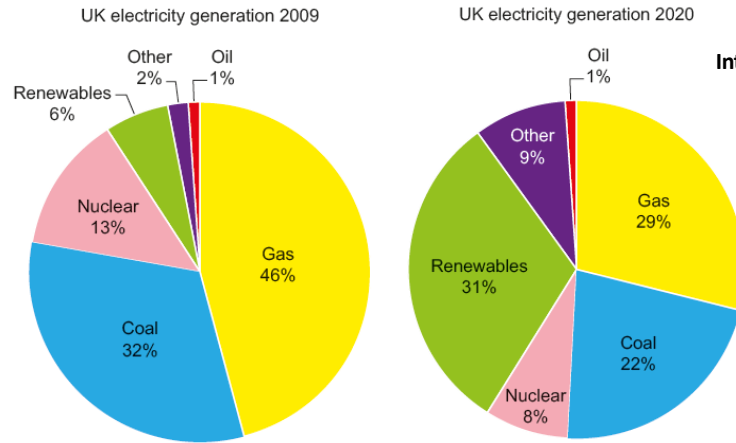
Interpretation of the pie charts:

As can be seen from the pie charts, the UK's energy mix is **changing**. From 2009–2020 there is a **decrease** in the use of **coal and gas** and a significant **increase in renewable energies** and nuclear energy.

Why is the UK's energy mix changing?

Coal and gas are beginning to **run out**, which means the government has had to look for alternative methods of getting energy.

Due to the reduced amount of coal and gas, **extracting** these non-renewable resources is much more **difficult**. This means the cost of these have gone up, meaning they are becoming too **expensive** for people.

Why is energy consumption uneven?

Some countries do not have energy reserves; whilst others do not have the technology to exploit their resources. For some countries the only way to access energy resources is to **import** them, which is **expensive**.
Consumption of resources therefore **depends on wealth** and their **availability**.
Developed countries and **emerging countries** either have their **own supply** of energy resources or can afford to **import**, therefore, consumption is high, and quality of life is high.
However, in **developing countries** they **cannot afford** to **exploit** their resources or **import** from other countries, so consumption is still relatively low, resulting in a poorer quality of life.

Energy consumption TWh/y
- Oil
- Coal
- Gas
- Nuclear
- Renewable
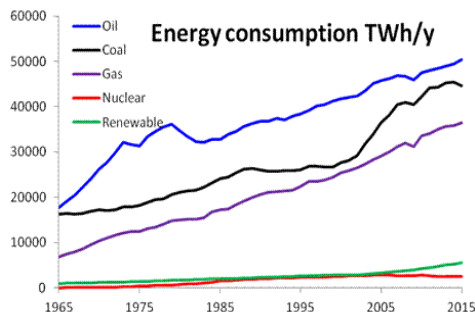
Consumption of energy is growing world-wide:
1. Generally, the **consumption** of energy is **growing world-wide**.
2. Most countries are developing and becoming richer.
3. As the countries become more developed, consumption increases.
4. Non-renewable energy consumption is still increasing rapidly world-wide. The impact of this can be seen on the next page.

Key terms:

Imports – Goods brought into a country.

Energy consumption – The amount of energy or power used.

Non-renewable energies – Energy, which is finite, is not sustainable and takes a long time to replenish.

Renewable energies – Energy, which is infinite, sustainable and is easily replenished.

Fossil fuels – Another name given to oil, gas and coal (non-renewable energy sources). They are known as fossil fuels because they have developed due to the decomposition of fossilised plants and animals over millions of years.

Well-being – When a person feels comfortable, healthy and happy.

Extraction – To remove a product / resource from the ground.

Disposable income – The amount of money people have left to spend on themselves, after they have paid for all their bills.

NIMBY – This is an abbreviation for 'Not In My Backyard;' this can often refer to people who support things such as renewable energy, but only if they are not placed near their homes. This behaviour often makes it difficult to get planning permission to build things such as wind turbines.

Non-renewable energy:

Non-renewable energy sources are **finite**, which means they will **run out** one day.

This energy has normally been produced by the decomposition (breaking down) of fossilised plants and animals.

This process takes millions of years.

Most non-renewables are referred to as fossil fuels and burning them produces **greenhouse gases** (CO_2).

Coal

Gas

Types:

The three main non-renewable energy sources are **oil, gas and coal**. However, **nuclear energy** is also included as a non-renewable. Fracking is a new method of extracting gas from the ground.

Opportunities:

1. These energies have been used for a long time, so they are **efficient** as technology has been made to maximise their energy output. This means they produce a **large amount of energy**, using a small amount of fuel.
2. **Oil** can be turned into petrol and diesel. These are the most **effective** way to power **transport** efficiently.
3. **It is easy to transport** this type of energy. For example, gas pipes from Russia and Scandinavia deliver gas to the UK. Fuel tankers can transport non-renewable energy sources, meaning they are easy to import.
4. A significant amount of **jobs** created in the extraction of these resources. This produces huge amounts of taxes for the local area e.g. offshore oil and gas, off the coast of Aberdeen in Scotland.

Challenges:

1. The cost of **extracting** fossil fuels can be **expensive**. As the reserves run out, extraction becomes more difficult, which means costs increase.
2. The burning of **fossil fuels** produces CO_2 and greenhouse gases that cause **climate change**.
3. Accidents such as **oil spills** or **nuclear disasters** can leak toxic chemicals into water sources, soils and the atmosphere, **killing animals** and posing a significant **risk to human health.**
4. **Nuclear waste** is **expensive** to **dispose** of as it is highly dangerous. This pushes up the cost of producing electricity.
5. The UK is **reliant** on **importing** much of its gas and oil from places like Russia. This can be an issue when the countries have disagreements, leading to some believing that **Russia could 'turn off our lights'.**
6. **Reducing coal mining and oil/gas** extraction will lead to the **loss of jobs**, and an increase in unemployment in certain areas.

Renewable energy:

1. These are **infinite** resources, which means they will **not run out.**
2. The energy is **sustainable and is replenished**.
3. This type of energy production does not require fossil fuels, so therefore **greenhouse gases are not produced**.

Wind

Solar

Types:

The most commonly used renewables are **wind, solar,** biomass (burning certain plants e.g. oil rape seed) and **hydroelectric power** (produced by water turning turbines in a dam). Tidal energy is also used at some coastal locations, where there is large tidal movement.

Opportunities:

1. They will not run out, meaning countries such as the UK can be **self-sufficient** and will not need to rely on imports from other countries.
2. **No greenhouse gases** are produced during operation, meaning a reduced impact on climate change.
3. Once they have been built set up **energy bills will come down** in the long term because they require little upkeep.
4. **New jobs** can be created in industries producing these renewable technologies, reducing unemployment in the UK.

Challenges:

Both wind and solar energy are **unreliable**, meaning that little energy is produced during certain times e.g. on a calm day or at night. This means that countries will still need to use some fossil fuels (non-renewables).

Wind turbines are said to be **ugly** and this can create **NIMBYism**, as people are worried that the value of their property will decrease. If they are placed offshore at the coasts, people worry that tourist numbers will reduce meaning lost income for hotels etc.

The **initial cost** of installing some renewables can be **expensive**, meaning a short-term increase in energy bills.

Wind turbines can be **dangerous for animals**; for example, they can impact migrating birds. Birds and bats have been killed by the rotating blades.

Hydro-electric power requires the damming of a river and the creation of a reservoir. The reservoir can displace communities.

Fracking in the UK:

What is fracking? Fracking is a process whereby gas trapped in shale rock is released. A drilling pipe is placed into the ground. Water mixed with sand is pumped into the drilling pipe at high pressure. This widens cracks in the ground, allowing trapped gas to escape.

Opportunities of fracking in the UK:

1. Blackpool is one area where large fracking sites could be established. Fracking sites around Blackpool could earn **Blackpool Council £1.7m per year**.
2. The UK has enough shale gas that we would **no longer need to import gas** from abroad, this would **decrease energy bills by 2%,** meaning people could have more disposable income. It would also mean the UK would be **self-sufficient**.
3. Many **jobs** will be **created** in the areas where fracking sites are established. For example, in the north west of the UK, where there are high levels of unemployment. This means the government will make more through taxes.

Challenges:

1. Fracking is known to cause **mini earthquakes** in areas where the sites are located, some of these can be high on the Richter scale. There is a fear that this could damage people's properties and result in an **increase in insurance costs** in the areas impacted.
2. The water, which is pumped into the ground, can get into the water table. This **pollutes the water** and makes it dangerous to human health. It could also result in poisoning wildlife.
3. Countryside areas (**rural areas**) will be **destroyed**; for example, Roseacre Wood, near Blackpool. This will **ruin views** for locals and potentially reduce tourist numbers, which could result in lost income for businesses nearby. Also, habitats would be lost.
4. There will be an increase in **noise and air pollution** from the heavy machinery and vehicles. The air pollution could lead to **breathing disorders** in the local area.
5. With the visual, noise and air pollution, **house prices** near the proposed sites would **decrease**. This would result in homeowners losing huge sums of money. In Roseacre Wood, a **10% reduction** is predicted from the average house value of £300,000. This is a £30,000 loss.
6. With fracking, gas will still be used, releasing **greenhouse gas emissions (CO_2)** and contributing to climate change.

German

High Level Sentence Starters

Um die Welt zu verbessern, kann man...	To make the world a better place, you can...
Obwohl die Situation sehr schlecht ist, soll man...	Although the situation is bad, we should...
Das Wichtigste ist, dass [add TOMP here].........(verb at end)	The most important thing, is that...

Nouns (transport)

Mit dem Auto	By car
Mit dem Zug	By train
Mit den Öffentliche Verkehrsmitteln	By public transport
Mit dem Fahrrad	By bike
Zu FuB	On foot

Nouns + Verbs

Energie sparen	Save energy
Wasser sparen	Save water
Papier recyceln	Recycle paper
Tierarten retten	Save the animals
Duschen statt baden	Take a shower instead of a bath
Bäume pflanzen	Plant trees
Öko-tasche benutzten	Use eco-friendly bags
Geld fur eine Hilfsorganisation sammeln	Raise money for a charity
Freiwillige Arbeit machen	Do volunteering

Verb-phrase (past tense)

Fruher durfte man (nicht)..	In the past, you were (not) allowed
Im zwanzigsten Jahrhundert, sollten die Schuler...	In the 20th Century, school children had to...
Mädchen durften nicht...	Girls couldn't ...

Verb-phrase (present tense)

In Bognor gibt es...	In Bognor there is...
Ich trenne den Mull..	I recycle
Meine Familie benutzt kein Auto	My family doesn't use a car
Mein Freund fährt...	My friend travels...
Ich schalte die Lichte aus	I turn off the lights
Man soll...	You should...

Verb-phrase (conditional tense)

Man sollte...	You should...
Man könnte...	You could...
Man muss...	You must...
In einer idealen Welt würden wir...	In an ideal world we would...

Core Questions

1) Welche Rechte hatten in der Vergangenheit Kinder auf der Welt?	Which rights did children have in the past?
2) Welche Umweltprobleme gibt es in Bognor?	Which environmental problems are there in Bognor?
3) Was sollen wir in der Zukunft machen um die Umwelt zu schützen ?	What should we do in the future to protect the environment?

Adjectives

Eine Ausbildung bekommen	Receive an education
Einen Beruf haben	Have a job
Geld verdienen	Earn money
Höflich mit den Erwachsenen sein	Be polite to adults

Booster Phrases!

Es lohnt sich	it's worth it
Wir können es uns nicht leisten	we can't afford it
es macht Spaß	it's fun
ich bin gut darin	I'm good at it
ich interessiere mich dafür	I'm interested in it
ich freue mich darauf	I'm looking forward to it
es kommt darauf an	it depends
es geht mir auf die Nerven	it gets on my nerves
ich mache mir Sorgen darüber	I'm concerned about it
ich habe Angst davor	I'm afraid of it
alles hat einmal ein Ende	everything comes to an end
nicht mal im Erst	seriously?
wenn ich die Wähl hätte, würde ich ...... -en.	if I had a choice I would...
wenn man mich fragt	if someone asks me

23

Second World War (WW2)

	Date	Key Events
1	1 September, 1939	Germany invades Poland
2	3 September, 1939	Britain and France declare war on Germany (*start of WW2*)
3	January, 1940	Rationing introduced across the UK
4	May to June, 1940	Dunkirk evacuated and France surrenders to Germany Germany uses blitzkrieg to take over much of Western Europe
5	July, 1940	Germany launches air attacks on Great Britain (*The Battle of Britain and the Blitz begins*) Germany, Italy and Japan signed the Tripartite Pact creating the axis alliance
6	7 December, 1941	The Japanese attack the US navy in Pearl Harbor. The next day, the USA enters the war fighting with the allies
7	6 June, 1944	D-day and the Normandy invasion. Allied forces invade France and push back the Germans
8	30 April, 1945	Adolf Hitler commits suicide
9	7 May, 1945	Germany surrenders and victory in Europe is declared the next day
10	August 1945	Atomic bombs dropped on Hiroshima and Nagasaki in Japan by the US, killing approximately 226,000 people
11	2 September, 1945	Japan surrenders signaling the end of WW2
12	July, 1954	Rationing ends in the UK

Leaders

1	Adolf Hitler	Leader of the Nazi Party and Chancellor of Germany, 1933–1945 (*also referred to as the Führer meaning leader*)
2	Winston Churchill	UK Prime Minister, 1940–1945 (and again from 1951–1955)
3	Neville Chamberlain	UK Prime Minister, 1937–1940 (*infamous for failed attempts to satisfy Hitler's demands prior to the war*)
4	Franklin D. Roosevelt	US President, 1933–1945 (*took the US into the war following the Perl Harbor attacks*)
5	Harry S. Truman	US President, 1945–1953 (*responsible for the decision to drop Atomic bombs on Japan*)
6	Joseph Stalin	General Secretary of the Communist Party and Leader of the USSR, 1929–1953

'History will be kind to me for I intend to write it.'
Churchill

'It is not truth that matters, but victory' – Hitler (performing a Nazi salute)

	Term	Definition
1	Allies	Countries who fought on the British side (including: USA, Great Britain, France, Russia (1941–1945))
2	Evacuee	Someone who was evacuated, moved from a danger area to a safer place (*normally from the cities to rural areas*)
3	Blackout	System of ensuring no lights were visible after dark so that buildings could not be spotted by enemy planes
4	Rationing	The controlled distribution of scarce resources (*mainly food and clothing*)
5	Air raid shelter	A building to protect people from bombs dropped by planes Anderson Shelter: Made of corrugated iron. Usually at the end of the garden Morrison Shelter: Metal cage used inside the house. Could double as a kitchen table
6	Trenches	A long, narrow ditch used for troops to shelter from enemy fire or attack
7	Axis	Countries that fought on the German side (including: Italy, Germany, Japan, Russia (1939–1941))
8	Nazi	Member of the fascist German political party that came to power in 1933. Symbol of a swastika
9	Blitz	Series of aerial bombing raids on the UK, mainly cities including London, Bristol & Nottingham
10	Holocaust	Mass murder of Jews and other groups of people by the Nazis
11	Fascism	Right-wing political view associated with not allowing opposition and total control by a dictator
12	Blitzkrieg	Translated as 'lightning war'. German quick strike invasion of Western Europe
13	Luftwaffe	The German Air Force (responsible for the Blitz)
14	Enigma	A machine used by the Nazis to send coded messages

Above left: Enigma machine
Above right: Swastika (symbol of Nazis)
Below: Remains of a house after a bombing raid during the Blitz

Maths

Properties of shapes

When answering questions involving shapes it is essential to understand the properties that each shape has. This may help you to identify a shape or to work out the size of an angle or the length of a side.
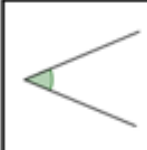
Keywords for Properties of Shapes

Point	A single place which may be identified by coordinates and may lie along a side or at a vertex of a shape.
Side	A straight-line segment forming part of the perimeter of a 2d shape.
Edge	An edge is the 3d equivalent of a side on a 2d shape. It is where 2 faces of a 3d shape meet.
Vertex/ Vertices	A vertex (plural vertices) is a corner of a 2d or 3d shape. The location of one or more angle. Where 2 sides or edges meet.
Face	A face is a flat surface forming part of the outer surface of a 3d shape.
Plane	A plane is a continuous flat surface. We sometimes refer to drawing graphs on the XY or cartesian plane. A 3d shape might rest on a plane or be dissected by a plane.
Parallel	Two straight lines or sides (or faces and planes in 3d) are parallel if they are always the same distance from one another, even if they were extended.
Perpendicular	Two straight lines or sides (or faces and planes in 3d) are perpendicular if the smallest angle between them is 90°.
Polygon (regular polygon)	A 2d shape made up of straight line segments. A regular polygon is a shape with every side the same length and every angle the same.

Angles

Where two sides or lines meet, they make an angle between them. The angle is a measure of how much you would have to turn one side to make it lie on top of the other. We measure angles in degrees. The symbol for degrees is °. There are 360° in one complete turn and 180° in a half-turn.

It is important to know the names we use to classify these angles.

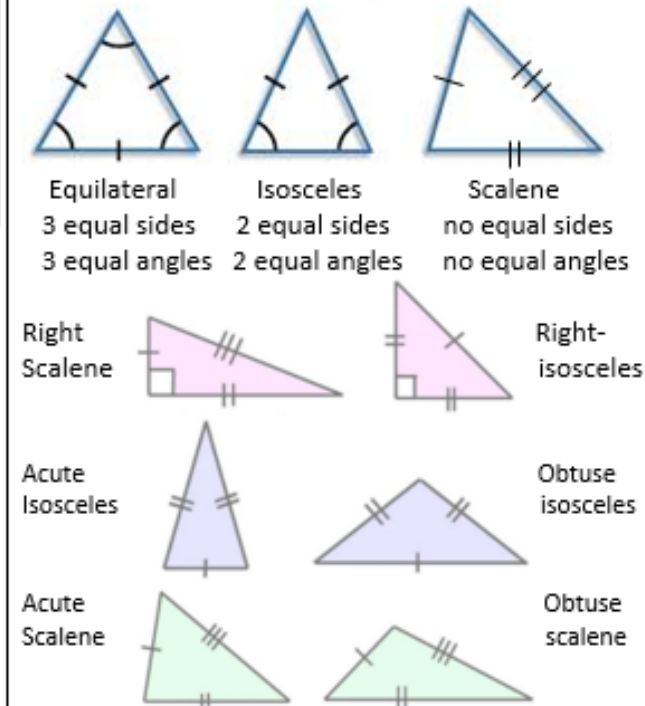| **Acute angle**		**Half-turn**	
Less than 90 degrees		Exactly 180 degrees	
Right angle		**Reflex angle**	
Exactly 90 degrees		Between 180 and 360 degrees	
Obtuse angle		**Full-turn**	
Between 90 and 180 degrees		Exactly 360 degrees	

Regular polygons

Three sided polygons are called **triangles**.
A regular triangle is called an **equilateral** triangle.
Four sided polygons are called **quadrilaterals**.
A regular quadrilateral is called a square.
Here are a few more regular polygons.

5 sides	6 sides	7 sides	8 sides
regular pentagon	regular hexagon	regular heptagon	regular octagon

Types of Triangle

Triangles can be sorted by their properties. All triangles are **equilateral**, **isosceles** or **scalene**. This depends upon how many sides of the triangle have the same length.

An **equilateral** triangle has all three sides the same length. It also has three identical 60° angles.

An **isosceles** triangle has two sides the same length. The third side could be longer or shorter than these. It has two identical "base angles" which are at the ends of the odd side.

A **scalene** triangle has all three sides of different lengths. Each of the angles are different too.

The **isosceles** and **scalene** triangles can also be classed as **right-angled**, **acute** or **obtuse** depending on the size of their largest angle.

Equilateral	Isosceles	Scalene
3 equal sides	2 equal sides	no equal sides
3 equal angles	2 equal angles	no equal angles

Right Scalene

Right-isosceles

Acute Isosceles

Obtuse isosceles

Acute Scalene

Obtuse scalene

Symbols for showing properties of shapes

You will need to know the names and properties of all the different quadrilateral types. You will also need to know the different symbols that are used to tell you the properties of the shapes.

The arrow symbols denote that those sides are parallel to one another. The single arrows are parallel to the single arrows and the double arrows are parallel to the double arrows.

The dashes show that two or more sides are of equal length. The boxes in the corners show right-angles.

The dashes on the curves at the angles show equal angles.

Not all properties are shown on diagrams as it gets very crowded.
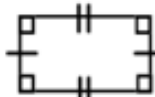
Formulae for circles

Area = pi x radius x radius

Circumference = pi x diameter

$$A = \pi r^2$$

$$C = \pi d$$
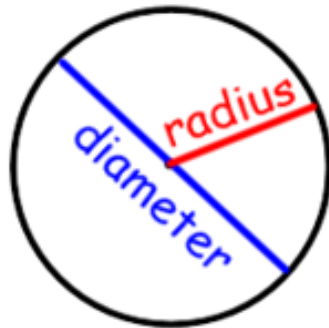
Pi (π) is an irrational number which means the decimal digits go on forever in no pattern. To use it in calculations either use the π button on your calculator or the value 3.142
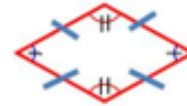
Properties of quadrilaterals

Square: Four equal sides and four Right-angles. Opposite sides are Parallel.
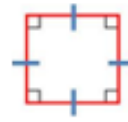
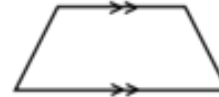**Rectangle**: Two pairs of equal, opposite, parallel sides. Four right-angles.
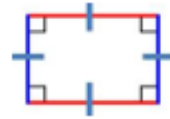
Rhombus: Four equal sides. Opposite sides are parallel. Opposite angles are equal.

Parallelogram: Two pairs of equal, opposite, parallel sides. Opposite angles are equal.
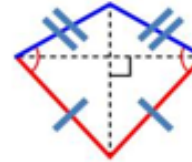
Trapezium: One pair of parallel sides.

Isosceles Trapezium: One pair of parallel sides. Two pairs of equal angles. Has a line of reflective symmetry.

Kite: Two pairs of adjacent equal sides. One pair of equal opposite angles. Diagonals are perpendicular.

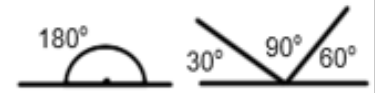**Dart**: Has one interior reflex angle.

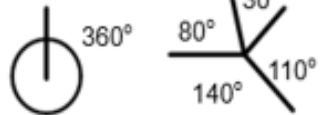**Irregular Quadrilateral**: Does not comply with any of the descriptions above.
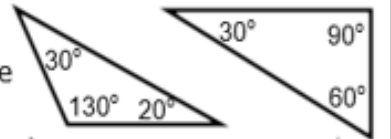
Angle rules / Parallel lines

1. The angles at a point on a straight line add up to 180°.

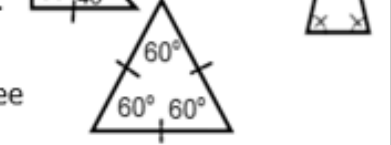2. The angles around a point add up to 360°.

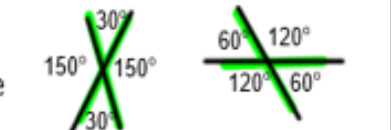3. The interior angles of a triangle add up to 180°.

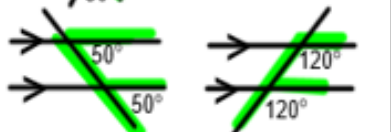4. Isosceles triangles have two equal base angles.

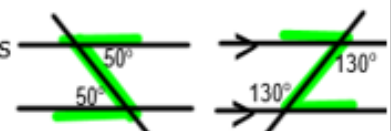5. Equilateral triangles have three 60° angles.

6. Vertically opposite angles are equal.

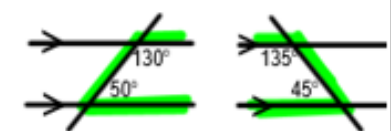7. Corresponding angles are equal.

8. Alternate angles are equal.

9. Co-interior angles add up to 180°.

Music

Rehearsal Skills

1. PRACTISE every day Help your long-term memory – Improve your learning curve.

2. HAVE SPECIFIC GOALS Create specific, attainable goals before you practise.

3. BEGIN WITH THE BASICS Go over technique first – Always have a warm-up plan.

4. FOCUS ON THE TOUGH STUFF Spend your time on what you cannot play – Turn fear into confidence.

5. WRITE IT DOWN Get the most from your practice log – See your goals and accomplishments.

6. SLOW IT DOWN Muscle Memory – Never make mistakes. Learn it right the first time.

7. BREAK IT DOWN Identify musical sections – Don't always start at the beginning. This helps with memorisation.

8. USE A METRONOME Always work on improving your time – Don't stretch time for the Tough Stuff.

9. ACCENTUATE THE POSITIVE Use positive language in the practice room – Focus on solutions, not problems.

10. CHALLENGE YOURSELF Don't give up, and don't always go for the 'easy' option.

Evil Grannies Bash Down Fences

F A C E

Good Boys Deserve Friendly Aliens

All Cats Eat Goldfish

𝅝	Semibreve	4 beats
𝅗𝅥	Minim	2 beats
♩	Crotchet	1 beat
♪	Quaver	½ beat
𝅘𝅥𝅯	Semiquaver	¼ beat

Keywords

Dynamics	Symbol	Definition
Fortissimo	*ff*	Very loud
Forte	*f*	Loud
Mezzoforte	*mf*	Moderately loud
Mezzopiano	*mp*	Moderately quiet
Piano	*p*	Quiet
Pianissimo	*pp*	Very quiet
Crescendo	<	Becoming gradually louder
Decrescendo	>	Becoming gradually quieter

Tempo	Definition
Lento	Slowly
Largo	Slow and stately
Adagio	Leisurely
Andante	At a walking pace
Allegro	Fast
Vivace	Lively
Presto	Very Quickly

Keyboard Notes

Physical Education

Training Methods

1	**Flexibility Training**	Static, Ballistic, PNF
2	**Strength Training**	Free Weights, Circuit, Plyometric
3	**Speed Training**	Hollow, Acceleration, Interval
4	**Aerobic Endurance Training**	Continuous, Fartlek, Interval

Fitness Tests

1	**Body Composition**	BMI, BIA, Skinfold Callipers
2	**Aerobic Endurance**	Multi-stage Fitness Test, Forestry Step Test
3	**Speed**	35 m Sprint
4	**Strength**	Grip Dynamometer
5	**Flexibility**	Sit and Reach
6	**Muscular Endurance**	Sit Up / Press Up
7	**Agility**	Illinois Agility
8	**Power**	Vertical Jump

Principles of Training

1	**Frequency**	How often do you train? (How many times a week?)
2	**Intensity**	How hard do you train? (Heart rate / pyramid, BPM, BORG scale of RPE...)
3	**Time**	How long you train for? (Minimum 30 mins.)
4	**Type**	What type of training method? (e.g. weight, circuit, interval...?)

Additional Principles of Training

1	**Specificity**	Training specific to the individual needs of athlete
2	**Progressive Overload**	Make training gradually harder so body gradually improves and adapts
3	**Adaptation**	Body adapts in response to training
4	**Reversibility**	Body will reverse back if training is stopped for a prolonged time
5	**Variation**	Training must be varied to avoid boredom
6	**Individual Differences**	Training must be suited to each persons needs
7	**Rest and Recovery**	Avoid injuries due to fatigue / tiredness

Components of Fitness

|	
1	**Aerobic Endurance**
2	**Muscular Strength**
3	**Muscular Endurance**
4	**Flexibility**
5	**Speed**
6	**Body Composition**
7	**Power**
8	**Agility**
9	**Balance**
10	**Coordination**
11	**Reaction Time**

Area -
Description: the two-dimensional space taken up by something – for example, the area of a sheet of material like card.
Measured in a size appropriate to the problem – either cm^2 or m^2 for larger problems.

Area of a rectangle = width × length

width

length

Area of a circle = πr^2
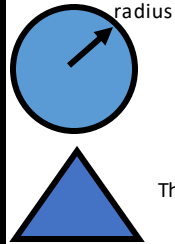
radius

π = 3.142
The radius is half the diameter
The circumference of a circle = πD

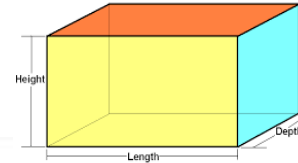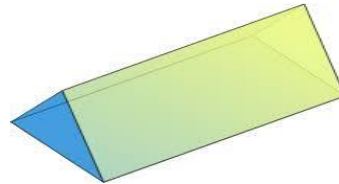The area of a triangle = $\frac{base \times height}{2}$

Volume
Description: the space taken up by something. For example, the volume of a material like wood or plastic – or even gas.
Measured in a size appropriate to the problem – either cm^3 or m^3 for larger problems.

Applications
This could be useful to work out the volume of a material and therefore its cost, or the amount of paint or other liquid used if we use litres or ml instead of cm or metres. For any solid with a linear cross-section (the same shape all way along) the volume is just the end area times the length!

Height

Length

Depth

Volume – examples
For the shapes above, put together some examples and work out the volumes.

Stretch – what if you have a more complex shape like a house – how would you work out the volume now?
Would it not be just the area of a rectangle and that of a triangle times the length?

Estimation – You must be able to estimate (accurately guess) ROUGHLY what the answer to a problem may be. For this, you could round figures up or down and work the easier answer out in your head so you know whether your calculator answer is correct later.

Isometric drawing: used for practising drawing in 3D for design ideas. Ask for isometric paper to practise on!

VP1

VP2

Perspective drawing:
Often used architecture. All lines that are not vertical go back to vanishing points.
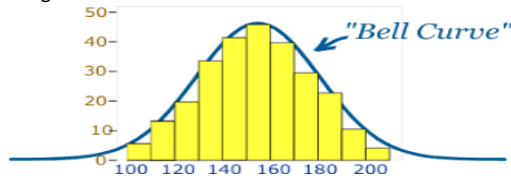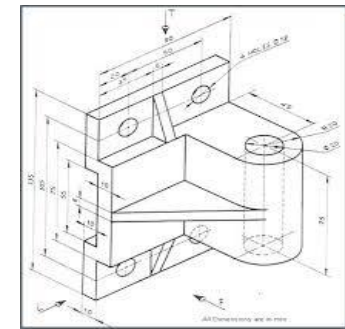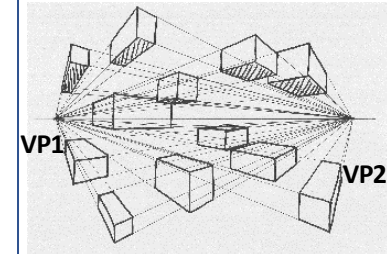
Distribution curve.
You need to be able to graphically represent data like this.
This is a good way of showing a collecting of measurements. For example, collect the heights of all the students in your year group and show the data in the yellow graph.
From this, you can see the average and the sizes either side to help you design products better.

"Bell Curve"

Average or Mean
The adding up all the data you have and dividing by the number of sets of data you have.
Example: you want to know the average head size so you can design a hat that would fit an average person.

Person 1   head size 420 mm   Person 3   head size 520 mm
Person 2   head size 480 mm   Person 4   head size 360 mm

The Average = $\frac{420 + 480 + 520 + 360}{4}$ = 445

For you to do
1). What is the average bottle volume size from 140 ml, 210 ml, 183 ml, 189 ml, 112 ml and 439 ml?
2). What is the mean shoe size? 10, 6, 9, 8, 15

You need to also understand that abnormal measurement could effect you averages. From those last examples, can you spot the abnormal measurement that you may like to take out to get a better average?

Literacy: Be able to write an evaluation
- What skills have you learnt during this project?
- What skills have you developed (improved)?
- What aspects (parts) of your project do you think have gone well?
- What aspects of your project do you think have gone badly?
- Compare your finished project to your final design drawing, what changed did you make and why?
- If you were given a chance to re-do the project, what would you do differently?

Carbon Footprint

A carbon footprint is defined as the total greenhouse gas emissions caused by an individual, event, organisation or product, expressed as carbon dioxide equivalent.
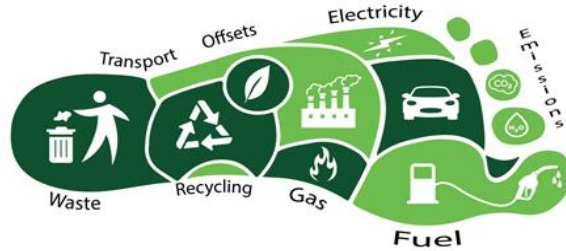
Renewable Energy Resources

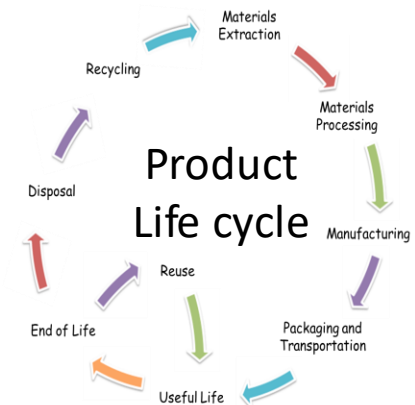| Source	How it is converted into energy	Advantages	Disadvantages
Coal	• Heat energy and hot gases convert water into steam which powers a turbine to create high-voltage electricity • Smaller amounts used as a domestic heat source	• Stable, large-scale and high-power electricity generation • Relatively cheap to extract and convert • Reliable	• Coal power plants emit pollution such as carbon dioxide, sulfur, mercury, selenium and arsenic • Technologies to reduce coal power plant emissions are expensive • Coal mining impacts significantly on the landscape
Oil	• Processed and split into petroleum products such as petrol, paraffin and diesel • In power plants oil is burnt to heat water and produce steam, which propels turbine blades to produce electricity	• Stable, large-scale and high-power electricity generation • Relatively cheap to extract and convert	• Oil power plants are highly polluting • Oil exploration impacts on the landscape • Oil extraction risks environmental disasters
Gas	• Burning gas can power turbines, with the waste heat powering a steam turbine • Natural gas is used in homes for heating or cooking • It has lower emissions than other fossil fuels – its combustion emits carbon dioxide at half the rate of coal	• Stable, large-scale and high-power electricity generation • Relatively cheap to convert and extract as ready-made fuel • Cleaner than coal or oil	• Burning gases are highly polluting

Possible questions

1. For a named product, use the product 'life cycle' circle to explain it's carbon footprint.

2. Use the six Rs to explain three ways that the school could have less of an environmental impact.

Term	Description
Materials Extraction	When raw materials are found in the earth and mined to use in the making of products.
Materials Processing	Raw materials must be treated processed before companies can use them to make products. E.g. Copper is mined, ground, heated and treated to isolate the pure metal.
Manufacturing	Combining components and materials to make a product come together. E.g. Adding components to a circuit board for a product to work electronically.
Packaging and Transportation	When finished products are boxed and moved by plane, truck or rail. Products are boxed for protection and identifies the contents.
Useful Life	When a product has been used for a length of time until it become unusable. You can extend the life of a product by taking care of it.
End of Life	When you no longer need or want a product.
Reuse	When companies accept working products and offer them to organisations.
Disposal	When products are thrown in the rubbish that results in land fill or incinerated.
Recycling	When companies accept products to dismantle and reuse certain raw materials.

Product Life cycle

Religious Education

Sikhism

Keyword	Definition
Guru	A spiritual teacher
Sikh	A disciple or learner
Waheguru	God, the wondrous enlightener
Equality	Treating all people the same
Guru Granth Sahib	The Sikh holy book / holy scriptures
Religious tolerance	The belief that all people should be treated the same, no matter what race or religion they come from
Martyr	A person who is killed because of their religious or other beliefs
Mool Mantra	Sikh statement of faith and prayer recited each day. It means basic teaching and is found at the start of every section of the Guru Granth Sahib
Ik Onkar	Symbol that represents the One supreme reality that sustains all
Justice	Fairness; treating people the same
Gurdwara	A Sikh place of worship
Gurmukhi	The language the Guru Granth Sahib is written in. It literally means 'from the Guru's mouth'
Rest Room	The room in the Gurdwara where the Guru Granth Sahib is taken to bed each night as a mark of respect for the Guru
Omnibenevolent	All-loving
Omnipotent	All-powerful
Omniscient	All-knowing
Omnipresent	Always there
Monotheist	Someone who only believes in one God

Belief	Explanation
Guru Nanak	Guru Nanak was the founder of Sikhsim. He believe that everybody was equal and showed this through the story of the Sacred Thread. He believed that there should be religious tolerance. He said that there was only one God.
The Ten Gurus	After Guru Nanak died there was a succession of Gurus. These Gurus lead and taught the Sikhs. Some died for their faith as martyrs.
The Guru Granth Sahib	The Guru Granth Sahib is the Sikh holy scriptures. It is written in Gurmukhi, which literally means 'from the Guru's mouth'. It is made up of the teachings of the Gurus. Sikhs believe that it is the 11th and final Guru. It is recited aloud in the Guru Granth Sahib and every night is 'put to bed' in the Rest Room.
Equality	Sikhs believe that all people should be treated the same; it doesn't matter about their race, religion, gender or the amount of money they have.
Religious Tolerance	Guru Nanak taught that people should be tolerant of other people's religious beliefs; this means that they should be treated the same regardless of their race or religion. Guru Nanak did not oppose Muslims and Sikhs who were living in India at the time when he founded Sikhism.
God – Waheguru	Sikhs believe in one God only – Waheguru, the wondrous enlightener. Waheguru is omnibenevolent, omniscient, omnipotent and omnipresent. The Mool Mantar is found at the start of every section of the Guru Granth Sahib and describes God for Sikhs.

CHALLENGE
Go to the links below and extend your knowledge on:
BBC Bitesize GCSE Sikhism: https://www.bbc.com/bitesize/topics/zws4d2p

My Life, My Religion: Sikhism video clips:
https://www.bbc.co.uk/programmes/b05p6t8s/clips

Religious Education

Sikhism

Keyword	Definition
Khalsa	A groups of Sikhs who made a special commitment to their religion
Amrit	Holy water that is taken as part of the amrit ceremony when a Sikh joins the Khalsa
Vaisakhi	The birthday of the Khalsa, when Guru Gobind Singh made the Panj Piare the first five members of the Khalsa
Amritdhari	A Sikh who has joined the Khalsa
Panj Piare	The five 'beloved ones'; the first five members of the Khalsa
5 Ks	Five symbols that Sikhs wear to show commitment to their faith
Kesh	Uncut hair
Khanga	Comb
Kirpan	Sword or dagger
Kara	Steel bangle
Kachera	Undergarments
Sewa	Selfless service for others
Tan	Physical service; serving others with your body
Man	Mental service; serving others with your mind
Dhan	Material service; serving others with your money or possessions
Langar	A free meal cooked in the Gurdwara, which anyone can attend
Langar Hall	The room in the Gurdwara where Langar takes place
Diwan Hall	Room of prayer where the Guru Granth Sahib is placed during the day

Belief	Explanation
Khalsa	The Khalsa is a group of Sikhs who have made a special commitment to their religion. The Khalsa was started by Guru Gobind Singh at Vaisakhi when he asked who was willing to die for their faith. Five men volunteered and these men became the Panj Piare, the 'beloved ones' and the first members of the Khalsa. A Sikh who commits to becoming one of the Khalsa is called an Amritdhari Sikh. To join the Khalsa and become amritdhari, a Sikh must take amrit (holy water) in a special ceremony.
The 5 Ks	The 5 Ks are five symbols worn by many Sikhs as a way of showing devotion to their religion and to God. The Kara is a steel bangle that reminds Sikhs to make good decisions. The Kesh is uncut hair; Sikhs believe that hair is a gift from God and do not cut it as a sign of respect. Khanga is a comb that reminds Sikhs to keep their mind and body clean. The Kirpan is a sword or dagger which represents the defence of the fait and those who can't defend themselves. The Kachera are undergarments worn underneath clothes that remind Sikhs to be modest.
Bhai Kanhiaya	Bhai Kanhiaya was an inspirational Sikh who during a battle gave water and aid to wounded soldiers on both sides. He inspires Sikhs to treat everyone equally and to help and serve others regardless of their race or religion. The Indian Red Cross is inspired by the example of Bhai Kanhaiya.
Sewa	Sewa is selfless service and should be performed by Sikhs without thinking of reward. There are three types of sewa: Tan, physical service; Man, mental service and Dhan, material service. Langar Week and Khalsa Aid are both special examples of sewa.
Langar	Langar is a free meal cooked in the Gurdwara, which anyone can attend. The meal is usually vegetarian so that no-one is excluded. Langar involves: community because many people come together to eat; equality because everyone sits on the floor (unless there are medical reasons why they cannot do so) and eats the same food regardless of race or religion; sewa (selfless service) because many Sikhs give their time and money to prepare the meal. Langar is held in the Langar Hall in the Gurdwara.
Vaisakhi Day	Vaisakhi Day is a big celebration each year for Sikhs to celebrate the birthday of the Khalsa. There is prayer, langar, and often a parade. Anyone is welcome to attend.

There is no new content taught in Cycle 3, so the information needed can be found in your Cycle 1 and 2 Knowledge Organisers.

The best ways to revise using your Knowledge Organisers are:

- Look / cover / write / check on all keywords.

- Cover the labels to a diagram and write out those labels.

- Make flash cards with a question on one side and an answer on the other.

- Make a quiz and swap with your friend.

Textiles

Specialist technical principles: Specialist techniques and processes

Introduction

The colour, texture, shape, drape and feel of a product will depend on what processing technique has taken place.

Keywords

Pleating – A method of folding fabric. They can be ironed or heat pressed to create a permanent crease.
Gathering – a technique used to shorten a piece of fabric, which gives the impression of fullness through ruffling or bunching.
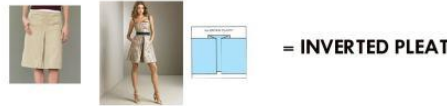**Quilting** – A traditional technique that has differing methods of construction around the world.
Piping – A decorative trim mainly used as an embellishment, but it can also protect a product making the edge tougher and less prone to wear.
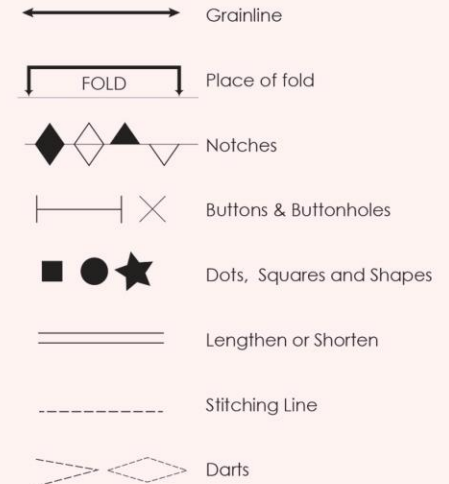
Further links

www.textileschool.com/464/fabric-cutting-techniques/

www.instructables.com/id/how-to-gather-fabric/

= KNIFE PLEATS
= BOX PLEATS
= INVERTED PLEAT

how to gather fabric

Understanding PATTERN SYMBOLS
Grainline
FOLD — Place of fold
Notches
Buttons & Buttonholes
Dots, Squares and Shapes
Lengthen or Shorten
Stitching Line
Darts

Exam Questions

Why is gathering such a popular technique to make curtains?

Stretch

A. A traditional Scottish kilt for the average man uses about 8 m of material. What factors do you think justify this amount of fabric being used?
B. Why is quilting an ideal technique to use scrap and recycled materials?

Keywords

Physical Properties
Absorbency – how well a material may attract an element, usually a liquid such as water or moisture, but could include light or heat.
Density – the mass of material per unit of volume; how compact a material is.
Electrical conductivity – the ability to conduct electricity.
Thermal conductivity – the ability of a material to conduct heat.

Working Properties
Strength – the ability of a material to withstand a force such as pressure, tension or shear.
Hardness – the ability to resist abrasive wear and indentation through impact. Very hard materials can become brittle and can crack, snap or shatter.
Toughness – the ability to absorb energy through shock without fracturing.
Malleability – the ability to deform under compression without cracking, splitting or tearing.
Ductility – the ability to be stretched out or drawn into a thin strand without snapping.
Elasticity – the ability to return to its original shape after being compressed or stretched.

Textiles

New and Emerging Technologies: Society

Introduction

Responsible design companies consider the environment before profit. The areas of design that are considered to be responsible include one or more of the following products that:

- Are made from renewable materials
- Reduce carbon emissions and / or other greenhouse gasses in use
- Reuse existing materials or use recycled materials
- Are designed to be 100% recyclable
- Are designed to help or ease suffering or that promote fair trade
- Are made and sold locally to avoid transportation costs and associated pollution
- Are organisations that are not-for-profit and where all money is reinvested to support good causes.

Keywords

Prosthetic – any artificial body part, such as a limb, a heart or retinal implant

Further Links

https://www.designcouncil.org.uk/sites/default/files/asset/document/the-principles-of-inclusive-design.pdf

Key Facts to Memorise

Design for the disabled

The 1 billion people around the world living with disabilities can benefit from technology to help them live a long, healthy, independent and engaging life:
- Assistive technology, which covers small device such as pencil grips and text-to-speech readers to larger lifting devices and all-terrain wheelchairs that can scale uneven surfaces.
- Prosthetic limb technology where the electrical activity in the body can be harnessed, providing the user with a new degree of control.

Design for the elderly

The average age of the population is increasing. It is important that we address the needs of this part of the population so that elderly people have a purpose and sense of wellbeing:
- Communication and accessible social media or monitoring devices.
- Mobility, including transportation for short distances.
- Independence with mechanical / electronic aids for normal activities at home or away from home.

Exam Questions

Describe two ways in which the TV remote controller could be used for visually impaired users.

Stretch

A. Explain two ways in which new and emerging technologies are improving independence of the elderly.
B. Explain two ways in which new and emerging technologies are allowing individuals who are blind to enter the workplace.

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https://www.dior.com/couture/en_gb/the-house-of-dior/the-story-of-dior?gclid=EAIaIQobChMIt4yKq4C_1wIVYhbTCh3-gwl1EAAYASAAEgLdk_D_BwE

https://www.google.com/culturalinstitute/beta/search?q=dior

https://www.youtube.com/watch?v=rmVmrhafMb0

https://www.biography.com/people/christian-dior-9275315

http://www.micar.com/history-of-dior/