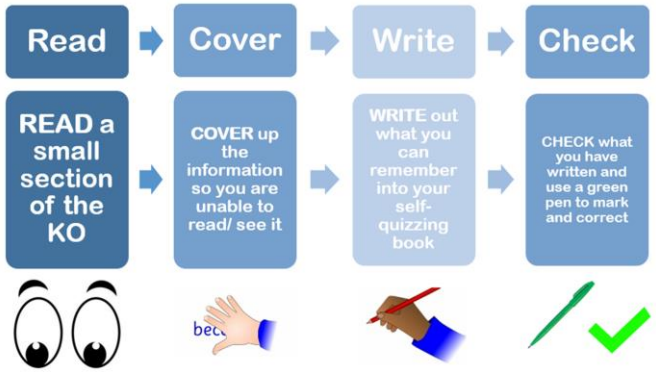
Year 9
Knowledge Organiser: Cycle 2

Name: _____

Tutor group: _____



Article 29:
Education must develop every child's personality, talents and abilities to the full. ***UNCRC***

Your Knowledge Organiser

- 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.

Using Your Knowledge Organiser for Revision

- 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

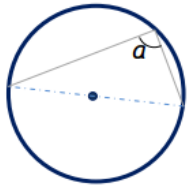
Using Your Knowledge Organiser for Revision

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.**
- **Have a question on one side, the answer on other.**
- **Have a keyword on one side, a definition or image on the other.**
- **Be 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 have' **NOT** 'would of'
'Could have' **NOT** 'could of'
'May have' **NOT** 'may of'
'Should have' **NOT** 'should of'
'Might have' **NOT** 'might of'

Great Big Nevers!
Gonna – going to
Ain't – am not
We / they was – we / they 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 **was** very cold today.

subject — verb
I always **eat** breakfast in the morning.

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

I tried to speak slowly **but** (connective) I was far too excited.

Dan is very organised **and** (connective) he always helps others.

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

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

She told a joke, (comma) **which was hilarious,** (comma) 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

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?

Number and Algebra

Ascending
Descending
Denominator
Numerator
Solve
Solution
Decimal
Percentages
Binary
Integer

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 3D

Sphere
Cylinder
Tetrahedron
Prism
Cone
Pyramid

Shape

Names 2D

Quadrilaterals
Parallelogram
Trapezium
Rectangle
Rhombus

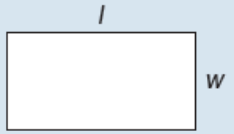
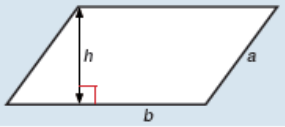
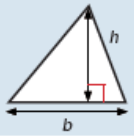
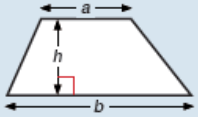
Triangles
Equilateral
Right-angle
Isosceles
Scalene

Keywords

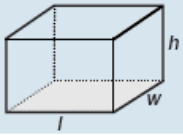
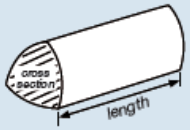
Circle
Polygon
Interior angles
Exterior angles
Acute angle
Right angle
Obtuse angle
Reflex angle
Vertically opposite angles
Corresponding angles
Alternate angles
Co-interior angles
Pythagoras
Trigonometry
Parallel
Perpendicular

Maths 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 = $\pi r^2 h$	

Important Formulae

Compound measures

Speed

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

Pressure

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

Density

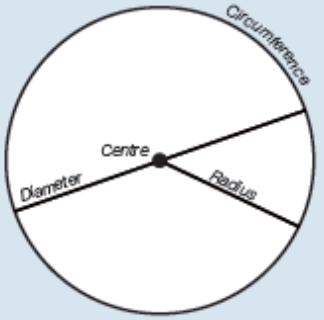
$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Circles

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

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

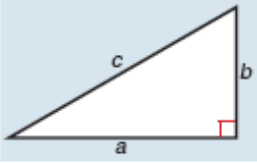
Area of a circle = $\pi \times$ radius squared $A = \pi r^2$



Pythagoras

Pythagoras' Theorem

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



Trigonometric ratios (*new to F*)

$$\sin x^\circ = \frac{\text{opp}}{\text{hyp}}, \cos x^\circ = \frac{\text{adj}}{\text{hyp}}, \tan x^\circ = \frac{\text{opp}}{\text{adj}}$$

http://hegartymaths.com

hegartymaths

Science Core Knowledge

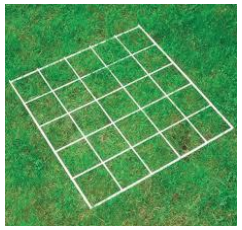
1. How Science Works Keywords

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 to do sampling and find the amount of a species in a certain area. Quadrats are placed on to the ground.

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

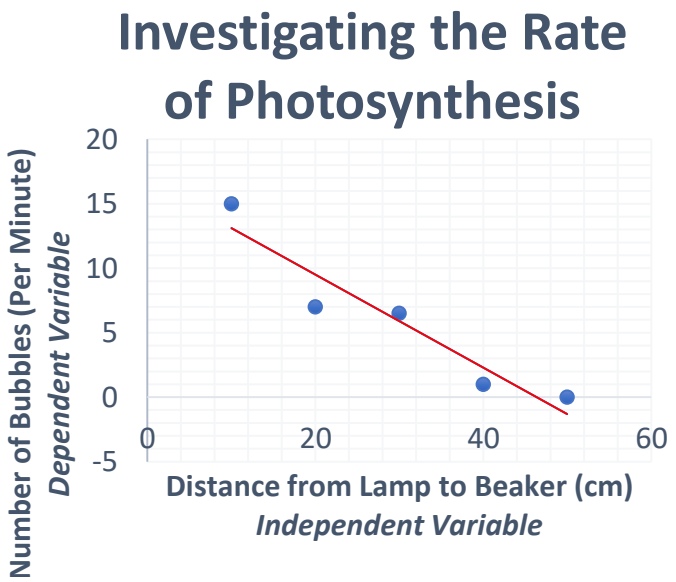
Measuring tape – used in sampling alongside the quadrat. Placed on to the ground to make a transect line to measure against.

Science Core Knowledge

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 variables 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



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 - Databases

Database Keywords	Definition
Data	Values, typically letters or numbers; 'text' – writing; 'date / time' – date or time; 'currency' – euro, pound, dollar; 'autonumber' – number increases by one each time; 'yes/no' – only yes or no can be entered.
Fields	A category of data in a database, e.g. First Name or Date of Birth.
Mail merge	A method of creating lots of documents customised with data from a database, e.g. one letter sent to multiple people. The address of each person is read from and stored in a database.
Query	A search or question performed inside a database.
Table	Consists of related records, e.g. Students.
Primary Key	A field that contains data that is unique for each record.
Record	Consists of related fields, e.g. Paul Smith who is 1.8 m, achieved a grade 9 and is in the basketball team.

Homework Checklist for first term		
1	Use this to revise	https://www.bbc.com/bitesize/guides/zswnb9q/revision/1
2	Homework – Idea Badges	Big Data, Personal Statement , Projects Advertising , CRM, Jargon Buster, Money Management
3	Keywords from KO	You could also use Quizlet to practice
4	Extension – Work	Research where databases are used in everyday life

Using query operators		
Query Operator	**Meaning**	**Example**
<	Less than	<1.65
<=	Less than or equal to	<=40
>	Greater than	>1.9
>=	Greater than or equal to	>=30
=	Equal to	=”M”
BETWEEN	Tests for a range of values	BETWEEN 18 AND 25
AND	All criteria must be satisfied	
OR	At least one of the criteria must be satisfied	“medium” OR “overweight”
NOT	All criteria are satisfied except for the ones specified	NOT “bald” AND NOT “fair”

Dance

This is a recall of knowledge studied at the end of Year 8

Dance Key Terminology

1	Acceleration	Speeding up the movement.
2	Contrast	Movements or shapes that have nothing in common.
3	Complementary	Movements or shapes that are similar to but not exactly the same.
4	Highlight	Important moments of the dance.
5	Mental rehearsal	Thinking through or visualising the dance.
6	Pathways	Designs traced in the space. This can be in the air or on the floor.
7	Contact	Working with others using touch or lifts.
8	Space	The 'where' of movements such as levels, directions, pathways and patterns.
9	Safe execution	Carrying out actions safely.
10	Physical skills	Aspects enabling effective performance such as posture, alignment, balance, coordination, mobility, flexibility, stamina, strength, extension and isolation.

Challenge: Improve your Understanding of Dance

1	Mood	How the dance makes us feel? How does the dance affect the mood?
2	Meaning	What is meant by the performance? The theme, the style, the intent.
3	Style	What characteristic can you see in the dance style?
4	Narrative	Does the dance tell a story?
5	Audience skills	The ability to give accurate feedback to allow others to improve.
6	Effective warm up	How to include a range of exercises to avoid injury and improve physical skills.

Building Blocks of Dance

1	Actions	What the dancer is doing. You need to name a variety of actions.
2	Space	Where the actions take place. You need to know how the space is used effectively.
3	Relationships	Who the dancer is performing with. You need to be able to name a variety of relationship content.
4	Dynamics	How the action is performed. The speed and quality of the movements.

Features of Production

1	Performance environment	Where the dance takes place? Site sensitive, end stage or proscenium arch.
2	Lighting	How is the choreographer using lighting to support their intention? What colours are used and why?
3	Costume	What are the dancers wearing? How does this impact on the dance idea?
4	Dancers	How many dancers are performing? Are they performing solos, duets or in an ensemble?
5	Aural setting	What can you hear? What instruments are playing? What significance does this have on the dance idea.
6	Use of props	What props are used? How do these props enhance our understanding of the dance work?

Drama

Devising Theatre: Generating ideas for scenes and characters

1	**Stimulus:** A piece of written text or imagery that is used to inspire ideas for a scene or whole performance.
2	**Verbatim Text:** Using exact words from a real person in your performance. You can find verbatim text from interviews and quotes online or in print.
3	**Role on the Wall:** You draw the outline of human figure on a piece of paper. Inside the outline you write everything you know about the character and any ideas you have to develop your understanding of them.
4	**Writing in Role:** A drama strategy that asks students to write from a character's perspective, typically in a familiar format like a diary entry; a letter, email, or text; a newspaper headline; or a letter to an editor.
5	**Hot Seating:** A character is questioned by the group about his or her background, behaviour and motivation. Even done without preparation, it is an excellent way of fleshing out a character. It also can help develop plot idea.

Devising Theatre: Drama techniques to deliver and shape your performance

1	**Narration:** The act of telling the story to the audience.
2	**Direct Address:** Speaking directly to the audience and not towards another character on stage.
3	**Choral speaking:** When all members of the cast say the same thing at the same time. This can signify that you want to emphasise what is being said or that all the actors are playing one character (known as group role).
4	**Thought tracking:** Speaking the thoughts of the character out loud to the audience using direct address.
5	**Placards:** A printed or handwritten notice or sign used in the performance to deliver information about the plot, characters, themes or messages.
6	**Soundscape:** Using the actors on stage to make the background soundtrack to the scene to add atmosphere.
7	**Repetition:** Repeating a particular line or movement again and again. This can help show that is significant to the key themes and / or messages of your performance.
8	**Slow motion:** Changing the speed of what is happening on stage so that it is slower than real life. This can make sure the audience focus on specific detail that could be missed at normal speed. It also helps highlight that the moment is significant.
9	**Choral Movement:** The same movement, gestures or actions that are performed by more than one actor at the same time. This can signify that you want to emphasise what is being said or that all the actors are playing one character (known as group role).
10	**Movement sequence:** Creating a series of *freeze frames* that link together with *transitions*. You could also include moments of *choral movement* and *body as prop*. This helps to get ideas and narrative across quickly using imagery. This works well if you add music to create atmosphere. Text can also be spoken over the top to create further meaning.

English

Year 9 Writing

1. Fiction Writing

1a. Literary Terminology

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.

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.

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.

2. Non-Fiction Writing

2a. Key Terminology

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.

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

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

<u>Plan1</u>

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.

<u>Plan 2</u>

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

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

3. Writing about the effect.

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

4. Literary techniques

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 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. Apostrophe 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 an an apostrophe and another 'so 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 belong 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

Introduction

The importance of preparing, storing and cooking food safely to prevent spoilage and contamination that could cause food poisoning.

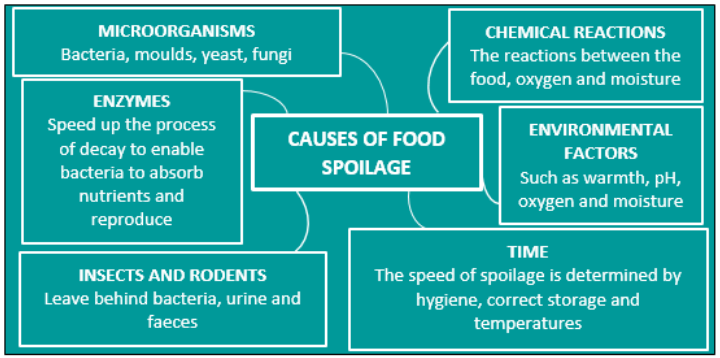
Keywords

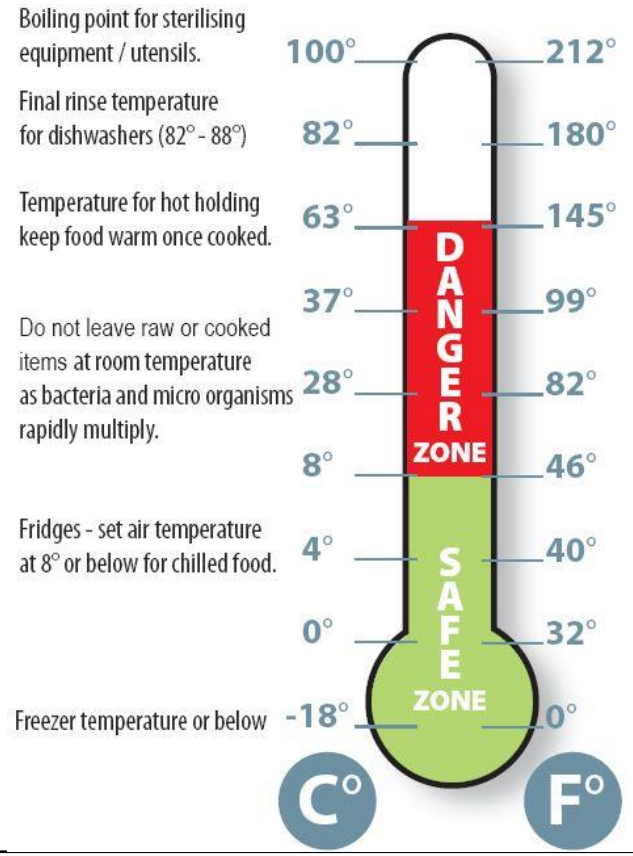
1. Use by date
2. Best before date
3. Frozen food
4. Chilled food

Key Points

1. Bacteria is found everywhere and needs the right temperature, warmth, time, nutrients, pH level and oxygen to grow and multiply.
2. Microorganisms (bacteria) are used to make a wide range of food products.
3. Bacteria are used to make cheese, yogurt and bread.
4. The most important bacteria in food manufacturing are Lactobacillus species.
5. Bacterial contamination is the presence of harmful bacteria in our food, which can lead to food poisoning and illness.
6. As a food handler you must do everything possible to prevent this contamination.

Key Points





Exam Questions

- What are the different sources of bacterial contamination?
- Name three bacteria responsible for food poisoning.
- List the four conditions needed for rapid bacterial growth.
- What are the main symptoms of food poisoning?
- What are the food safety principles when buying and storing food?
- What temperature should a fridge be?
- What temperature should a freezer be?
- What is the danger zone temperature?

Stretch

Why is the ever-increasing reliance on processed foods a concern regarding food safety?

Further Links

www.foodsafety.com

https://youtu.be/flxmB8NKMzE

Food Preparation and Nutrition

Keywords

Enzymic Browning	Aeration
Creaming	Foam
Denaturation	pH level

Key Points

Proteins: Determine the texture of food. Proteins are shaped like coils that react to certain items.

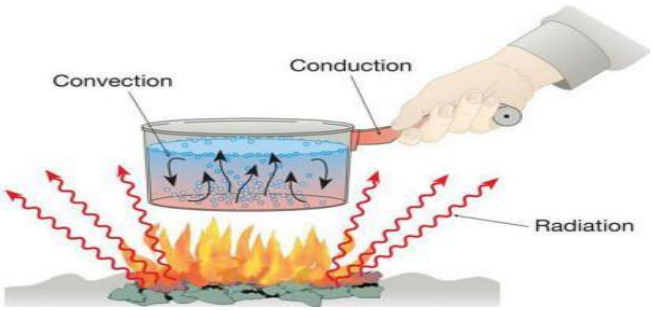
- Heat, salt and acids make coils unwind, producing a soft texture and loose bonds.
- Tight bonds result in coagulation, forming a denser texture (like custard).
- Kneading proteins produces tight bonds (bread dough).
- Coagulation causes proteins to lose water.

Carbohydrates: **Starch:** Breads, pasta, grains, starchy vegetables, fruits. Starch molecules soften in moisture. Absorbing moisture makes them swell, causing liquids to thicken. Starch cells stick to one another and trap moisture.

Carbohydrates: Sugar: Water molecules are attracted to sugar so the presence of significant sugar in a cake will help capture and hold on to liquid. This results in a more moist cake.

Leavening: When sugar is creamed with butter, the sugar crystals help drive air into the mixture.

Key Points



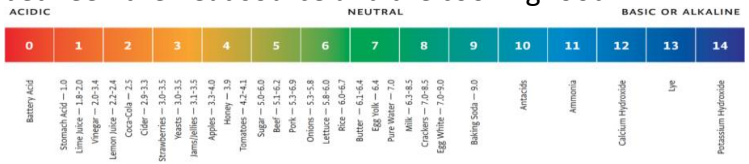
How convection works:

- Water coming to a boil and circulating in the pot.
- Running cold water over frozen food, which transfers heat into the food to thaw it more quickly.
- Room temperature air moving around frozen food to thaw it.

How conduction works:

- The transfer of heat from one object to another by direct contact.
- Touching a burner on a stove and being burned.
- Pancakes; grilling steak, chicken breasts or pork chops.
- Using iced water to blanch vegetables after steaming to keep them from losing their colour.

Radiation: Radiation is the process where heat and light waves strike and penetrate your food through electromagnetic energy. There is no direct contact between the heat source and the cooking food.



Acids and alkalis: pH range measures level of acid / alkali in food. pH scale is 1–14: 1 being the most acidic, 7 is neutral (water). 1–6 acid; 8–14 alkaline.

Exam Questions

- Give three ways proteins can be denatured.
- Explain how starch can be used to thicken sauces.
- What does the term aeration mean?
- Name the process that makes biscuits browner and crispier when they are baked.
- What is the name of the protein that gives bread dough its elasticity?
- Explain how to prevent gluten molecules from forming long strands.
- Explain why margarine has more plasticity than lard.

Stretch

Explain how foam formation happens in whisked egg whites.

Explain how emulsifiers can be used to keep oil and water in a stable emulsion.

Further Links

https://www.stem.org.uk/gcse-food-preparation
https://www.ifst.org/lovefoodlovescience

LEARN VOCAB — French — BUILD SENTENCES

Time expressions	
Avant	Before
Autrefois	In the past
Quand j'étais petit(e)…	When I was younger…
Maintenant	Now
De nos jours	Nowadays
À l'avenir	In the future
Après les examens	After the exams

Nouns (places) + Verbs	
Assister à un festival	To see a festival
Déménager à l'étranger	To move abroad
Rester chez moi	To stay in my town
Aller à un concert	To go to a concert

Nouns (places)	
Un club de jeunes	A youth club
Une grande surface	A hypermarket
Des magasins	shops
Des espaces verts	Green spaces

Nouns (music)	
Les musiques du monde	World music
Le raï	Algerian pop music, popular in France
Chansons (par)	Songs (by)
Les chansons tristes	Sad songs
La musique démodée	Old fashioned music

Verb-phrase (past tense)	
Dans ma ville il y avait…	In my town there was…
J'habitais…	I used to live in…
C'était…	It was…
J'ai vu	I saw
J'ai assisté à	I attended a

Verb-phrase (present tense)	
Mon genre de musique préféré est…	My favourite music is…
Je préfère écouter de la…	I prefer listening to…
Dans ma ville il y a…	In my town there is…
J'habite à…	I live in…
Je n'aime pas habiter à…	I don't like living in…
J'y habite depuis toujours	I've always lived there
On peut…	You can…

Verb-phrase (conditional tense)	
Je voudrais…	I would like…
J'aimerais bien…	I would really like…
Ça serait…	It would be…
Je rêve d'une ville où il y aurait…	My dream town would have…

CORE QUESTIONS	
1) C'était comment ton région autrefois?	What was your region like in the past?
2) Quel genre de musique aimes-tu? Pourquoi?	What is your favourite type of music? Why?
3) Où voudrais-tu habiter à l'avenir?	Where would you like to live in the future?

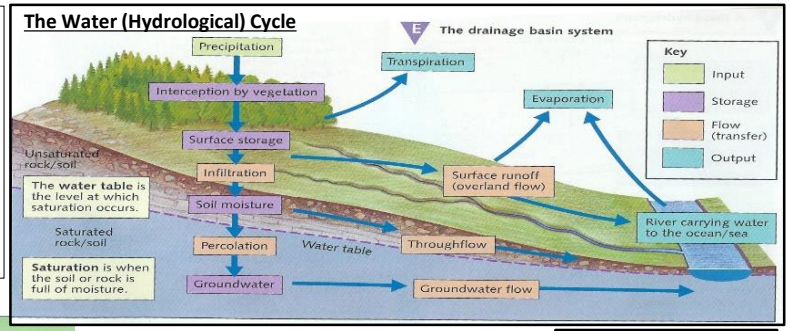
Adjectives	
Formidable	Incredible
Absolutement fou	Totally crazy
Incroyable	Unbelievable
Abrutissant	Mind-numbing
Affreux	Awful
Cauchemardesque	Nightmarish

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
Afin 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

Geography

Drainage Basin: An area of land drained by a river and its tributaries.
Watershed: The dividing line between two drainage basins.
Source: Where a river begins (high attitude).
Mouth: Where the river enters the sea.
Tributary: A river or stream flowing into a larger river or lake.
Meander: A bend in a river.
Confluence: Where a smaller river meets another river.

The Water (Hydrological) Cycle



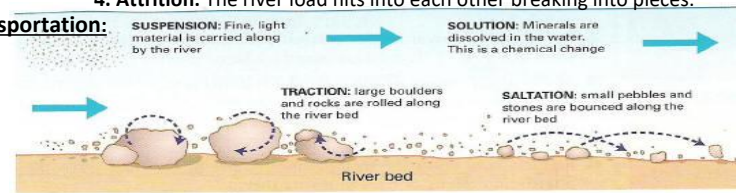
Cross Profile

Course	Channel shape	Valley shape	Cross profile
Upper	Narrow, shallow	V shaped, steep gradient, narrow valley, river takes up valley floor	
Middle	Wider deeper channel	U shaped, gentle sloping valley sides, valley is wider	
Lower	Very wide and deep channel	Open U shaped, almost flat, river only takes up a small proportion of the channel	

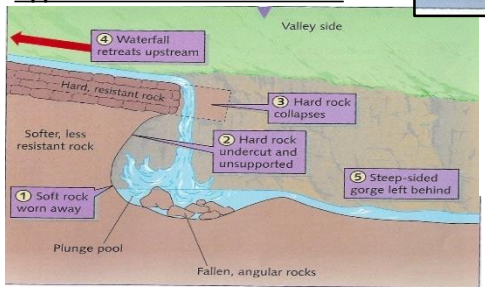
Erosion:

1. **Hydraulic Action:** The force of the water.
2. **Solution/Corrosion:** The acids in the water causing erosion.
3. **Abrasion:** Material in the river scrapes along the river bed/banks.
4. **Attrition:** The river load hits into each other breaking into pieces.

Transportation:



Upper course feature – Waterfall

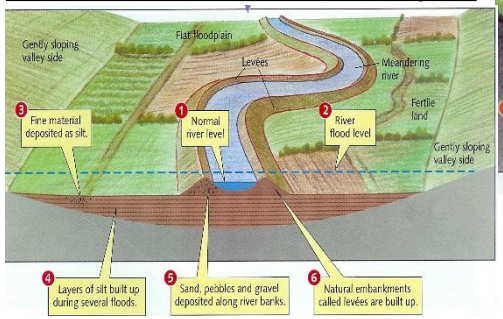


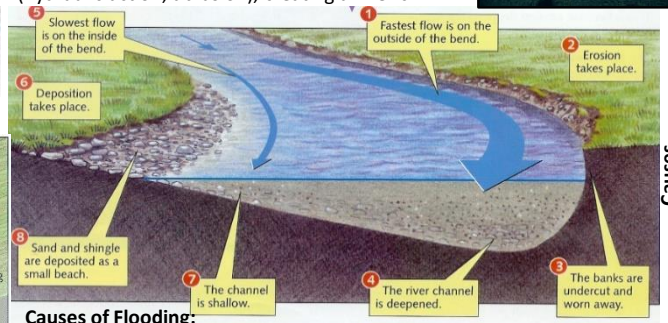
Middle Course Feature – Meander

Meanders are constantly changing shape / position eroding in a **lateral** direction.
Deposition happens on the **inside,** slow part of the bend = **slip-off slope** (river beach).
Erosion occurs on the outer, faster bend (hydraulic action, abrasion), creating a river cliff.

Oxbow Lake

Lower Course Feature – Levees and Floodplains



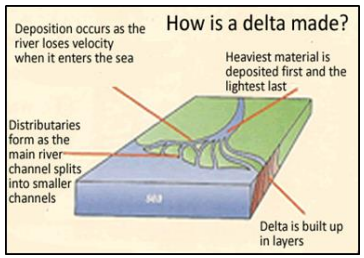


The river **floods** and water covers the flood plain. The transported material, **silt**, is deposited. Material transported as **solution** and **suspension** will travel further out, increasing soil **fertility**. Heavier material carried by **traction**, is dropped on the river bank, and form a **levee**.

Causes of Flooding:

Physical – Steep slopes, impermeable rock, saturated ground, snow melt, heavier than average rainfall, meanders, low lying ground.
Human – Deforestation, impermeable surfaces, e.g. tarmac / concrete, urbanisation, storm drains, bridges and pinch points, climate change leading to changes in intensity of rainfall and rising sea levels.

Factors that lead to loss of energy so cause deposition:
- Shallow water
- The end of a rivers journey, near the mouth
- Volume of water decreasing



Flood defences – Hard engineering methods:

Dams and reservoirs – control the flow of the river.
Widening and deepening the river **–** so it can hold more water.
Embankments (levees) – raise the height of the river banks so it can hold more water.
Overflow channels – take excess water away from populated areas.
Straightening the channel – to allow the river to move more quickly past certain locations.

Flood defences – Soft engineering methods:

Afforestation – planting trees to increase interception.
Flood zonation – placing certain buildings in particular flood return periods.
Flood warnings – sirens and messages that warn people to evacuate.

	Town of Boscastle, Cornwall, south west of the UK, HIC, 16 August 2004	South Asia, Bangladesh, LIC, July and August 2007
Causes	Physical factors: A massive downpour of rain (1.4 million litres of rain) in 2 hours. The soil was already saturated (previous rain) which meant increased surface run-off. Gradient was steep at Bodmin Moor and it contains impermeable rock. Confluence of the River Jordan and Valency. Human factors: Building on flood plains, Boscastle has some deforestation. Narrow span bridge across causing bottle neck for debris and river flow.	Physical factors: Heaviest rain in 50 years – 900 mm in July. This saturated the soils. Snow melt from glaciers of the Himalayas. Low-lying country – 80% lies on floodplains and is 1m below sea level. Human factors: Building on flood plains, deforestation to use wood for fuel and to build houses for the increasing population in areas such as Nepal. This reduced interception and caused more surface run-off.
Effects	Social: Nobody died, 6 injured, 58 properties damaged – stayed in caravans for 6 months during repairs. Economic: 25 businesses flooded costing £25 million. Four bridges destroyed – decline in tourism and negative impacts for business. Environmental: 75 cars washed into the river, causing fuel to leak into both the river and sea, damaging habitats.	Social: 2,000 deaths, 25 million homeless. Economic: Many farms flooded, losing jobs and income. 44 schools destroyed, roads destroyed. Environmental: 60% of country was under water – leading to farm land being contaminated with sewage. Secondary Effects: Flood water left mud and raw sewage, as a result 10,000 people caught water-borne diseases like cholera. Unemployment, children lost out of schooling. Flooded fields meant a reduced production of rice and so rice prices (rice staple diet) rose considerably.
Responses	Immediate Responses: Seven helicopters were scrambled from various counties in the south. Community centre used for evacuation for local people and tourists. Long-term Responses Rivers were artificially widened and deepened. Rivers were straightened. Car park rebuilt on higher ground. Bridge spans made wider. Culvert built for flood relief.	Immediate Responses: No warning system. Many people didn't evacuate areas flooded, as they wanted to stay with their belongings. Destroyed roads slowed down people trying to evacuate. International charities distributed food, water and medical aid. Long-term Responses: International charities have funded the rebuilding of homes. Some homes and flood shelters rebuilt on stilts. Some embankments built along rivers – didn't really work. Provision of flood shelters for people, crops and animals. Flood warning system through speakers in villages.

Geography

Rivers fluency sheet

Background:

1. Rivers affect the landscape and the lives of people who live near them.
2. Rivers are found within their own drainage basin and have their own distinct features. ***(A)***
3. As a river moves from its source in the upper course, to its mouth in the lower course, its profile changes. ***(B)***
4. There are many different river processes which can impact the landscape. ***(C, D)***
5. Processes of erosion and deposition can lead to the formation of different river landforms. ***(E, F, G)***
6. Flooding is a key feature of rivers, and drainage basin processes play a significant role in this. By altering the drainage basin of a river, we can interfere with these processes. ***(H)***
7. There are many famous examples of floods. Today many strategies have been put in place in an attempt to manage the flood risk. ***(I)***

A.	**Drainage basin features *(6)***
Drainage basin	An area of land drained by a river and its tributaries.
Source	The start of a river.
Mouth	Where the river enters the sea or lake.
Tributary	A small river than joins a larger river.
Confluence	The point at which two or more rivers meet.
Watershed	The dividing line between two drainage basins.

B.	**River profile *(3)***
Upper course	The narrow, steep, upper part of a river, contains waterfalls.
Middle course	The wider, deeper channel, contains meanders and oxbow lakes.
Lower course	The widest, flattest part of the river, near the mouth, contains the floodplain.

C.	**Types of erosion *(4)***
Hydraulic action	The sheer force of the river causing the bed and banks to erode.
Abrasion	Material carried by the river erodes by scraping along the bed and banks.
Attrition	Eroded material carried by the river, hits into each other breaking down into smaller pieces.
Solution	The acids in the water causing erosion.

E.	**Waterfall – upper course *(2)***
Plunge pool	A pool which forms at the bottom of a waterfall, undercutting the hard rock above.
Gorge	A steep sided valley left behind when a waterfall retreats up stream.

F.	**Meander – middle course *(2)***
Slip-off slope	The sloping bed of a meander, from the inside (shallow) to the outside (deep).
River cliff	The undercut bank on the outside bend of a meander.

G.	**Floodplain – lower course *(2)***
Silt	The fertile, eroded material transported by a river.
Levees	Banks found at the side of a river in the lower course.

D.	**Other river processes *(5)***
River load	The material which the river is transporting.
Transportation	The movement of material by the river.
Deposition	When a river loses energy so drops its load.
Lateral erosion	When erosion moves across the land, causing the bends of meanders to widen.
Vertical erosion	Erosion which takes place downwards into the land.

H.	**Drainage basin processes *(6)***
Precipitation	Liquid that falls from the sky, e.g. rain, snow, hail.
Interception	When the leaves of trees stop precipitation reaching the ground.
Surface run-off	The movement of water overland back into a river.
Surface storage	Water stored on the surface in lakes or puddles.
Infiltration	The movement of water from the surface into the soil.
Through flow	The movement of water through the soil back into the river.

I.	**Case study example: Boscastle**		
Where / when?	Cornwall in the south west of the UK, happened in August 2004. A tourist destination.		
	Cause *(3)*	**Effect *(4)***	**Response *(3)***
	1. Very heavy rainfall, 89mm in just 1 hour. 2. Steep slopes of Bodmin Moor caused surface run-off. 3. Impermeable ground meant precipitation could not infiltrate.	1. 25 businesses ruined, costing £25 million in lost trade. 2. Four bridges destroyed. 3. Homes damaged costing £500 million to repair. 4. 75 cars washed away.	1. Immediate – seven helicopters sent in to rescue people from the roofs of buildings. 2. Long-term – river widened and deepened. 3. Long-term – bridges made wider.

Time expressions	
Früher	Before
In der Vergangenheit	In the past
Als ich junge war…	When I was younger…
Heute	Now
Heutzutage	Nowadays
In der Zukunft	In the future
Nach den Prüfungen	After the exams

Nouns (places) + Verbs	
Ein Festival sehen	To see a festival
Im Ausland wohnen	To live abroad
In meiner Stadt bleiben	To stay in my town
Ein Konzert sehen	To see a concert

Nouns (places)	
Einen Jugendklub	A youth club
Ein Hallenbad	A swimming pool
Geschäfte	shops
Radwege	Cycle paths

Nouns (music)	
Weltmusik	World music
Lieder (von)	Songs (by)
traurige Musik	Sad music
Altmodische Musik	Old fashioned music
Unterhaltsame Musik	Entertaining music
Deprimierende Musik	Depressing music

Verb-phrase (past tense)	
In meiner Stadt gab es…	In my town there was…
Ich wohnte in…	I used to live in…
Es war…	It was…
Ich sah	I saw
Ich ging	I went

Verb-phrase (present tense)	
Meine Lieblingsmusik ist…	My favourite music is…
Ich höre lieber…	I prefer listening to…
In meiner Stadt, gibt es…	In my town there is…
Ich wohne in…	I live in…
Ich lebe nicht gern in…	I don't like living in…
Meiner Stadt hat…	My town has…
Man kann…	You can…

Verb-phrase (conditional tense)	
Ich möchte…	I would like…
Ich würde gern…	I would really like…
Das wäre…	It would be…
Meine Traumstadt hätte…	My dream town would have…

CORE QUESTIONS	
1) Wie war deine Region früher?	What was your region like in the past?
2) Was ist deine Lieblingsmusik? Warum?	What is your favourite type of music? Why?
3) Wo möchtest du in der Zukunft wohnen?	Where would you like to live in the future?

Adjectives	
Ausgezeichnet	Incredible
Total verrückt	Totally crazy
Unglaublich	Unbelievable
Todlangweilig	Dead-boring
Schrecklich	Terrible
Halbtraumhaft	Nightmarish

BOOSTER PHRASES!	
Es lohnt sich	It's worth it
Wir können es uns nicht lesten	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 mir fragt	If someone asks me

History - The Holocaust

In 1933 550,000 Jews lived in Germany, **under 1%** of the population. Over **5 million** lived in Russia and Poland. Over **60%** of the worlds Jews lived in Europe in 1933. *What does this tell you about Hitler's 'Jewish problem'?*

Anschluss – The joining of Austria with Germany in 1938; overturning the ToV. Persecution of Austrian Jews increased dramatically after it.
Anti-Semitism – Discrimination against Jews as a religious group or race.
Aryan – Meaning pure German blood. Hitler believed they would make Germany great again.
Concentration camps – Prison camps set up by the Nazis in 1933, firstly for political opponents (communists), then minorities from criminals, homosexuals, gypsies, Jews. Some later became extermination camps. (Learn 5).
Eugenics – The study of races. The Nazis' distorted science such as Darwin's survival of the fittest.
Euthanasia – The killing of those with disabilities or diseases.
Gestapo – Hitler's spy network, which relied on informants.
Ghettos – Parts of cities reserved for Jews from 1939, they were unhygienic places to live, had a lack of water and healthcare. They acted as prisons as they had large walls and curfews.
Kristallnacht – The Night of Broken Glass, people encouraged by the SS burned down synagogues, humiliated Jewish people and many were killed.
Lebensraum – Living space in the east (e.g. Poland) where Hitler was planning to build his 1,000 year Reich for the master / superior race (Herenvolk).
Minorities – Anyone considered non-Aryan, disabled people, homosexuals, Roma.
Nuremberg Laws – A series of laws reducing German Jews human rights, such as their ability to marry Germans, to vote, and to be recognised as a citizen.
Pogrom – A violent attack on Jewish communities, these had been occurring all over Eastern Europe & Russia since 1900.
Roma – Known as gypsies, they were persecuted especially when the Nazis' moved East during WWII.
SA – Known as Hitler's bully boys in the early days they helped him gain power by intimidating people.
SS – Hitler's elite part of the army, also responsible for the workings of the concentration camp network under Himmler.
Sterilisation – Preventing men and women from breeding by an operation.
Swastika – The Nazi flag and symbol.
Synagogue – A Jewish place of worship.
Systematic – Purposeful and considered. Laws made persecution more systematic in 1935. The gassing of Jews became systematic in 1935 meaning this was racial genocide against the Jews.
Untermenschen – Anyone considered an undesirable in Hitler's Germany; disabled, Roma, homosexuals and Jews.

Hitler is made Chancellor. January 1933	**Boycott of Jewish shops. April 1933**	**The Nuremburg Laws. September 1935**	**The Anschluss. March, 1938 Kristallnacht. November 1938**	**WWII breaks out, Hitler invades Poland. September 1939**	**Polish Jews made to wear yellow star in ghettos. November 1939**	**Mass deportation of Western European Jews to concentration camps. February 1942**	**Hungarian Jews sent to Auschwitz were systematically gassed. 1944**	**Liberation of Auschwitz by the SU. January 1945**

Key themes:

Religious: Primarily, Jews were persecuted because of their religion; this had existed since the 14th century. However it had developed into a racial prejudice. Hitler blamed the Jews for signing the ToV and stabbing the German people in the back.
Economic: Initially persecution was kick-started by boycotting Jewish shops. Due to the small numbers of shops this was unsuccessful and many Germans chose to shop there regardless of the SA bully boy tactics.
Political: In 1935, The Nuremburg Laws limited German Jews rights; this was a significant turning point in the persecution of the Jews and foreshadowed how systematic the state persecution would become. In 1938 The Anschluss meant a lot more Jews were now part of Germany. They were persecuted.
Social: Kristallnacht was the biggest pogrom, people burned and killed Jewish men and many were imprisoned in concentration camps. This had been encouraged by the SS and the state.
The outbreak of WWII: was a turning point it meant that the Jewish problem increased as they inherited more Jews as well as fight a war. Persecution increasingly became more systematic leading to the creation of death camps in 1942.

Maths

Indices and Index Notation

If a number is the square, or cube, or some other power of another number, then we can use index notation as an alternative way of writing the number. E.g. $4 = 2 \times 2 = 2^2$

2^2 is the number in index notation or index form.

Keywords for Indices

Index	The small number written behind and above the base number, which indicates what power we must raise it by. Also called the exponent.
Indices	The plural of index. When we multiply powers of the same number, we add together the indices.
Power	Powers of a number are made by multiplying the number by itself a set number of times. E.g., the third power of 2 or 2^3 is 8.

Index Laws

<u>Multiplying</u>

When you multiply powers of the same number you add together the indices. E.g. $5^3 \times 5^4 = 5^7$

<u>Dividing</u>

When you divide powers of the same number you subtract the indices. E.g. $7^5 \div 7^3 = 7^2$

<u>Raising a power to a power</u>

When raising a power to another power you multiply the indices. E.g. $(8^3)^4 = 8^{12}$

<u>Special Indices</u>

Anything to the power zero equals 1. E.g. $9^0 = 1$

Anything to the power 1 is itself. E.g. $10^1 = 10$

The power ½ or 0.5 is the square root. E.g. $16^{½} = 4$

Expanding and Factorising

Expanding and factorising are the processes of removing or including brackets. Expanding brackets is essentially multiplication, and factorising is done by dividing.

Keywords for Expanding and Factorising

Brackets	Symbols used to group numbers in arithmetic or letters and numbers in algebra and indicating certain operations as having priority.
Expression	A collection of terms which can contain variables (letters) and numbers. E.g. *4pq-12p*
Expand	To multiply out brackets in an expression.
Factor	A number that divides another number exactly. 4 and 3 are factors of 12.
Factorise	To express a number or expression as a product of its factors.
Coefficient	A factor in an algebraic term. E.g. in the quadratic expression $3x^2 + 4x - 2$ the coefficients of x^2 and x are 3 and 4 respectively.

Expanding a single bracket

Multiply the term on the outside of the bracket by each term on the inside of the bracket.

3(2a + 5) means 3 x (2a + 5), which is the same as 3 x 2a + 3 x 5, that is 6a + 15.

Expanding a double bracket

Multiply each term in the first bracket by each term in the second bracket then simplify.

(a + 3)(a + 4) means axa + ax4 + 3xa + 3x4, that is $a^2 + 4a + 3a + 12$, simplifies to $a^2 + 7a + 12$.

Substitution and Formulae

Substitution is replacing a variable (a letter) in an algebraic expression or formula with a number.

A formula (formulae is the plural of formula) is a piece of algebra designed to help you work out an unknown quantity from some other things which you do know.

E.g. the formula for the area of a triangle is:

$$\boldsymbol{Area} = \frac{\boldsymbol{base \times height}}{\boldsymbol{2}} \textbf{ or } \boldsymbol{A} = \frac{\boldsymbol{b \times h}}{\boldsymbol{2}}$$

If I know the base and height of a triangle I can **substitute** these values into the **formula** to find the area.

Keywords for Substitution and Formulae

Formula	An algebraic relationship connecting two or more variables e.g. $A = \pi r^2$ A and r are variables
Variable	A number represented by a letter in a piece of algebra. A variable can take different values at different times.
Expression	Contains letters (variables) and/or numbers but no equals sign e.g. $3m + 2n$
Equation	Contains an equals sign, one letter (the unknown), and numbers. Solve to find the value of the unknown. e.g. $7x - 9 = -4$
Identity	True for all values of the unknown e.g. $4d = d + 3d$
Substitute	To replace unknowns with numbers
Subject	The variable (shown by a letter) on its own on one side of the equals sign e.g. $M = 3n - 5$ (M is the subject)
Rearrange	To change the subject of a formula.

Maths

Equations and Inequalities

Equations are algebra with an equals sign and an unknown value represented by a letter, often an "x". These can then be solved to find the value of the unknown.

An inequality is very similar to an equation but replaces the equals sign with an inequality sign.

Important Symbols

=	Equals
<	Is Less than
>	Is Greater than
≤	Less than or equal to
≥	Greater than or equal to

Solving Equations

We solve equations by carefully performing inverse operations until all that remains is the unknown on one side of the equals sign, and a value on the other. We must always do the same thing to both sides of the equation.

A useful order to help solve linear equations is:

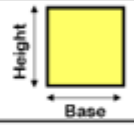
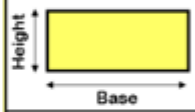
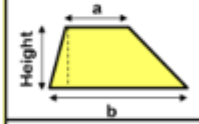
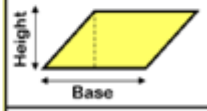
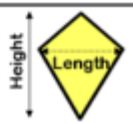
Fractions	Multiply both sides of the equation by the denominator of any fractions.
Brackets	Expand any brackets.
Letters	If the equation has letters (unknowns) on both sides then remove the letters from the side with the least letters. Subtract (or add) the same amount from/to both sides of the equation.
Numbers	Get the unknowns on their own by subtracting (or adding) the same amount from/to both sides of the equation.
Divide	If the unknown has a coefficient, e.g. 3x, then divide both sides of the equation by the coefficient to get the value of just one lot of the unknown.

Perimeter and Area

Perimeter is the outer edge or rim of a flat shape. We normally find the length of a perimeter by adding together the lengths of all the sides of the shape.

An area is the amount of space contained within a flat shape. Areas can sometimes be worked out or estimated by counting squares, but we normally use a formula which is specific to the type of shape whose area we want to find.

Formulae for Areas

Shape	Name	Formula for Area
	Square	Base x Height
	Rectangle	Base x Height
	Triangle	Base x Perpendicular Height ÷ 2
	Trapezium	$\frac{(a+b) \times \text{height}}{2}$
	Parallelogram	Base x Perpendicular Height
	Rhombus	Length x Height ÷ 2
	Kite	Length x Height ÷ 2

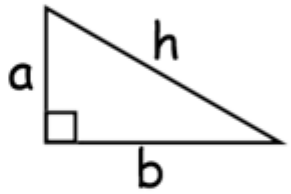
Pythagoras Theorem

Pythagoras theorem is a formula for finding the length of one side of a right-angled triangle, if we know the other two.

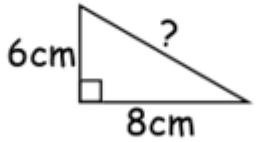
Written in algebra it looks like this:

$$a^2 + b^2 = h^2$$

Sometimes the *h* is written as a *c* but the letter *h* reminds us that this side must be the **hypotenuse**. The **hypotenuse** is the longest side of a right-angle triangle and is the only side which does not touch the right-angle. This diagram might help.



Here is an example to help you understand.



So **a** can be 6cm, **b** can be 8cm and **h**, the hypotenuse is unknown.

$$a^2 + b^2 = h^2$$
$$6^2 + 8^2 = h^2$$
$$36 + 64 = h^2$$
$$100 = h^2$$
$$\sqrt{100} = h$$
$$10 = h$$

Music

Rehearsal Skills

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

2. Have Specific Goals – Create specific, attainable goals before you practice.

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.

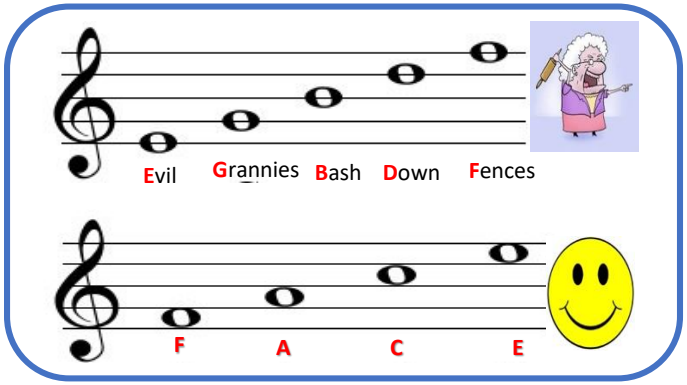
6. Slow It Down – Muscle memory. Never make mistakes. Learn it right the first time.

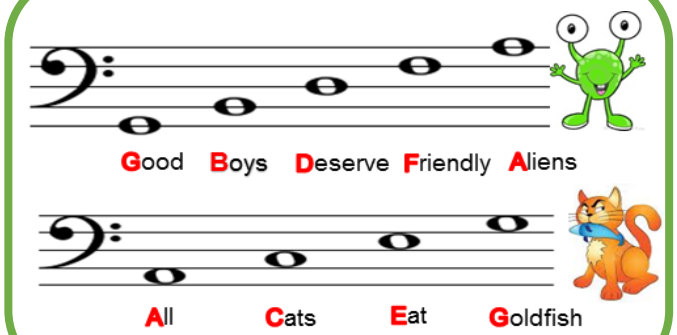
7. Break It Down – Identify musical sections. Don't always start at the beginning. Help memorisation.

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.

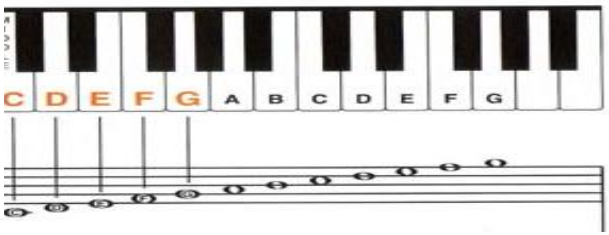




Keywords

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



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**

Product Design

Area: The 2-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.

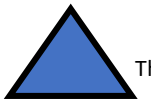
Area of a rectangle = width × length

Area of a circle = πr^2

π=3.142

The radius is half the diameter

The circumference of a circle =πD



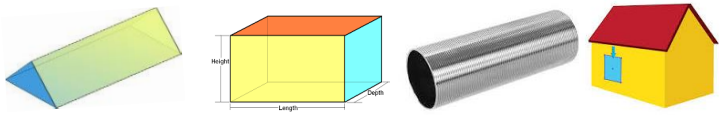
The area of a triangle = $\frac{\text{base} \times \text{height}}{2}$

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

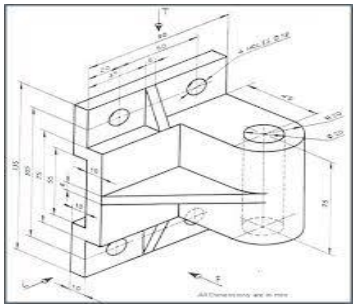
Applications: This could be useful to work out the volume of a material and therefore its cost – or the amount of paint or other liquid used.

For any solid with a linear cross section (the same shape all way along), the volume is just the end area times the length!

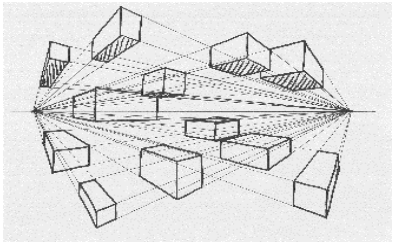


Stretch: What if you have a more complex shape like a house – how would you work out the volume now?

Estimation: You must be able to estimate (accurate 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 if your calculator answer is correct later.



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



Perspective drawing: Often used in architecture. All lines that are not vertical go back to vanishing points.

Literacy – Be able to write an Evaluation

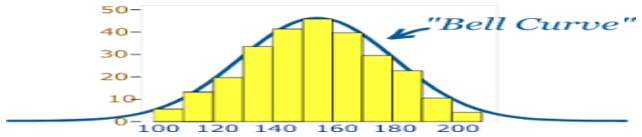
- What skills have you learnt during this project?
- What skills have you developed (improved)?
- What aspects of your project do you think have gone well?
- What aspects have been less successful?
- Compare your finished project to your final design drawing: what changes did you make and why?
- If you were given a chance to revisit the project, what would you do differently?

Distribution curve:

You need to be able to graphically represent data like this.

This is a good way of showing a collection of measurements.

For example, you could have collected the heights of all the students in your year group and represented the data in the yellow graph. From this you could easily see the average and the sizes either side, to help you design products better.



Mean average:

The is 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 2: head size 520 mm

Person 3: 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?

140 ml, 210 ml, 183 ml, 189 ml, 112 ml, 439 ml

2. What is the mean shoe size?

10, 6, 9, 8, 15

You need to also understand that abnormal measurement could effect your averages.

From those last examples can you spot the abnormal measurement that you may like to take out to get a better average?

Product Design

Key Terms

National Grid	System to balance supply and demand by shifting power around the country and turning some energy plants on / off.
Photovoltaic	Cells used to convert light energy from the sun to electrical energy.
Life cycle analysis	The environmental impact that a product has on the environment during its manufacture and life and death.
Hydroelectric	Production of electricity by passing water though a turbine, or a wave through a paddle machine.
Sustainable	The ability to exist constantly.
Renewable energy	A source of energy or a material that can be replenished – hydroelectric.
Carbon footprint	Amount of carbon used throughout the life of a product from raw materials to final end of life.
Portable power source	Non-National Grid power: solar, batteries, petrol generator.

Example Questions:

1. Explain the life cycle of a named product. Include its carbon footprint.
2. Explain how companies can help to reduce global warming.
3. Explain what a finite resource is.
4. For each of the following give an example that we could adopt in school:
   - Reduce
   - Reuse
   - Recycle
   - Repair
   - Reduce
   - Refuse

Carbon-Based Energy Production

Source	What it is and how it is converted into energy	Advantages	Disadvantages
Biomass	• Organic matter derived from organisms, such as wood, crops, rubbish, landfill gas and alcohol fuels • Can be used directly via combustion (of wood or biodegradable wastes) to produce heat, or converted to electricity	• Waste from plants and farming can be used	• Large areas needed to cultivate crops • Emits fumes that add to global warming
Biodiesel	• Made from natural elements such as plants, vegetables and fermented waste cooking oil • Can be used in diesel-powered vehicles without modifying the engine	• Uses waste from plants and farming • Does not give off harmful chemicals	• Large areas needed to cultivate crops
Tidal	• Turbines generate electricity from the movement of tidal water • Artificial tidal barrages are constructed across tidal rivers, bays and estuaries, for example – the water is trapped and then released through turbines as the water levels change	• No emissions • Powerful • Tides are predictable and stable • Barrages can have a secondary purpose such as a bridge	• Lower energy output than fossil fuels • Large barrages may have an ecological impact • Expensive to build • Only available in coastal areas
Wind	• Wind turbines use propeller blades, which spin a shaft to create electricity through a generator	• Freely available • Can be used in remote areas • No emissions	• Could restrict shipping traffic when placed in the sea • Wind can be unpredictable • Wind farms are often regarded as unsightly • Expensive to set up
Solar	• Solar (photovoltaic) panels convert sunlight into electricity • Solar thermal power plants use the sun's rays to heat a fluid that is circulated through pipes, transferring heat to water and producing steam • Steam is converted into mechanical energy in a turbine, which powers a generator to produce electricity	• Reliable source of power in warmer countries • Homes can have their own electricity supply • More electricity is produced in stronger sunshine	• Could change ecology when large solar farms replace traditional farms • Expensive to set up • Effectiveness of power generation depends on geographical location
Hydroelectric	• A dam traps water that flows through tunnels and turns turbines to make electricity	• Large amount of low-cost power • Can have secondary purpose such as a water reserve	• Expensive to set up • Construction may damage the environment

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	• Stable, large-scale and high-power electricity generation • Relatively cheap to convert and extract as ready-made fuel	• Burning gases are highly polluting

Religious Education

Religion and Human Rights – Wealth and Poverty

Keyword	Definition
Wealth	An abundance of valuable possessions or money
Tithe	One tenth of annual produce or earnings
Poverty	Being without money, food or other basic needs of life (being poor)
Relative poverty	A condition where household income is a certain percentage below average income for that country
Absolute poverty	A condition where household income is below a necessary level to maintain basic living standards (food, shelter, housing)
Exploitation	Misuse of power or money to get others to do things for little or unfair reward
Human trafficking	The illegal movement of people, typically for the purposes of forced labour or commercial sexual exploitation
Emergency Aid	Also known as short-term aid; help given to communities in a time of disaster or crisis, e.g. food during a famine, shelter after an earthquake
Long-term aid	Assistance given to a poor country over a long period of time that has a lasting effect
Standard of living	The degree of wealth and material comfort available to a person or community
Quality of life	The standard of health, comfort, and happiness experienced by an individual or group
LEDC	Less Economically Developed Country. A country with a low average income per family and with a low standard of living
Justice	Fairness

CHALLENGE: Go to the link below and extend your knowledge:
https://www.bbc.com/bitesize/guides/z4g9mp3/revision/4

Problems	Explanation
What is the use of wealth?	Christians believe that the wealthy have a responsibility to not only use their money on themselves, but to also give their money away to the poor and to the church for its upkeep and mission. Christians believe that by sharing their wealth they are helping Jesus and showing love to others.
What does the Old Testament say about wealth?	In the Old Testament, God blessed people with wealth in response to their faithfulness to him; God promised that if Israel followed him and obeyed the law he gave Moses, he would bless them: 'The Lord will grant you abundant prosperity' (Deuteronomy 28:11). People thanked God for what wealth they had by giving a tithe, which was a tenth (10%) of their earnings: 'Be sure to set aside a tenth of all that your field produce each year' (Deuteronomy 14:22). Some Christians today still give 10% of their income to the Church.
What does the New Testament say about wealth?	The New Testament focuses on the dangers associated with wealth, greed and selfishness. People can become so involved with money that they forget to love God and forget to love their neighbour. Jesus told a rich young man to sell all he had, give it to the poor and follow him and he would have treasure in heaven. Wealthy Christians should also feel the need to give to the poor. Jesus told the Parable of the Rich Man and Lazarus, in which the rich man ended up in hell because he had not helped the beggar, Lazarus, at the gate. The Parable of the Sheep and the Goats states that those who help the disadvantaged receive the reward of eternal life in heaven, whereas those who ignore the needy are thrown into 'the eternal fire'.
Poverty and its causes	Everyone shares the same basic needs. We all need food, water, clothing, shelter, health care, education and employment to achieve a basic standard of living. Approximately 1 in 8 people on the planet do not have access to these basic needs. There are many causes of poverty. Many poor countries have borrowed money at a high rate of interest to help pay for basic necessities like health care and education, which has resulted in an ever-increasing debt.
Exploitation of the poor	Many people in poverty can be paid very little for their work – because although this is unfair, those in poverty have no other source of income. Those who are poor can also be vulnerable targets of moneylenders; those in poverty may take out financial loans in desperation, but are then forced to pay back huge amounts of interest. Those in poverty are also vulnerable to human trafficking. In order to try and escape to a better life in a richer country, poor people may pay smugglers to help them migrate. However, criminal gangs may then force these migrants to work in poor conditions for little pay, or as prostitutes. These people are then threatened with being taken to the authorities, as they are illegal immigrants.
Giving money to the poor	There are times when people require immediate help with basic needs. Emergency aid can be needed after terrible disasters such as earthquakes or floods and charities can often help by offering temporary shelter, supplies of food and water and emergency healthcare services. However, this support is only usually short-term, and so charities will try to offer long-term aid to provide education, tools and skills to help people get out of poverty themselves.
Christian attitudes to the poor	Christians are guided by the key concept of justice. They believe that people should be treated fairly, and that Christians should show compassion. One way in which Christians might act justly is to buy Fairtrade products which pay a fair amount to farmers who grow the products. In Britain, many Christians are also involved in supporting soup kitchens, food banks and other charities that help those in need. 'Send a Cow' is an initiative that was started by British Christian dairy farmers and involves people paying for cows to be sent to support communities in LEDCs.

Religious Education

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 which 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 believed 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 Gurdwara 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

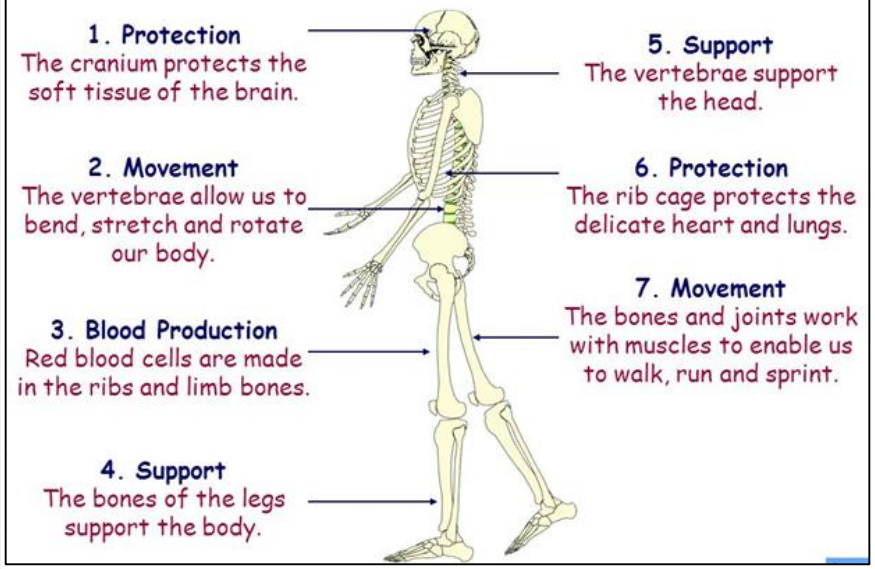
My Life, My Religion: Sikhism video clips:
https://www.bbc.co.uk/programmes/b05p6t8s/clips

Science

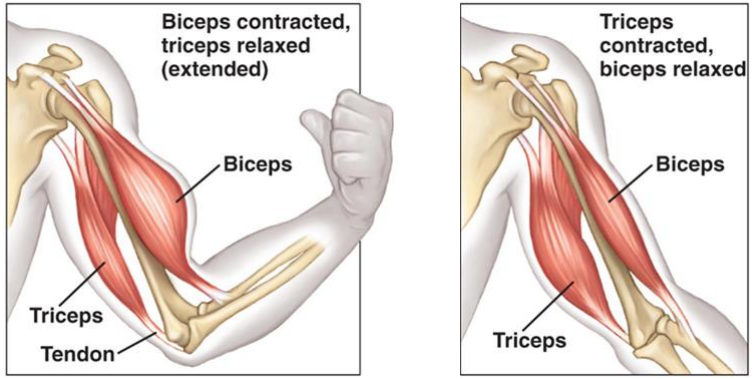
1. Keywords

Respiration	Chemical reaction inside all living cells that releases energy.
Respiratory system	Organs in the body that enable us to get oxygen into the blood and remove carbon dioxide.
Inhalation	Breath in.
Exhalation	Breath out.
Cilia	Tiny hair-like structures on the surface of the cell. Helps to sweep dust, mucus, etc. up the back of the throat.
Gas exchange	Moving oxygen from air into our blood and carbon dioxide in our blood into the air.
Alveoli	Tiny air sacs in the lungs that increase the surface area for gaseous exchange.
Diaphragm	Contracts to draw air into the lungs.
Arteries	Blood vessels that carry oxygenated blood away from the heart.
Veins	Blood vessels that carry deoxygenated blood towards the heart.
Diffusion	The spreading out of particles from an area of high concentration to an area of low concentration.
Aerobic respiration	Reaction in which glucose is broken down using oxygen to produce carbon dioxide and water and release energy for the cells.
Anaerobic respiration	Glucose is broken down to produce lactic acid. A small amount of energy is transferred to the cells.
DNA	Complex chemical that carries genetic information.
Nucleus	Found inside many living cells. Contains genetic information.
Chromosomes	Structures found in the nucleus, made up of genes.
Genes	Short sections of DNA which control characteristics.

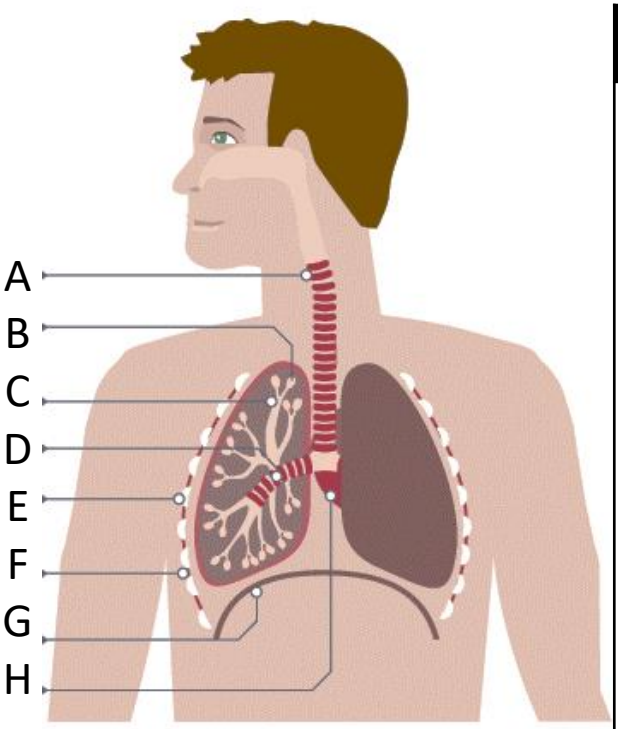
2. Functions of the skeleton



3. Antagonistic pairs

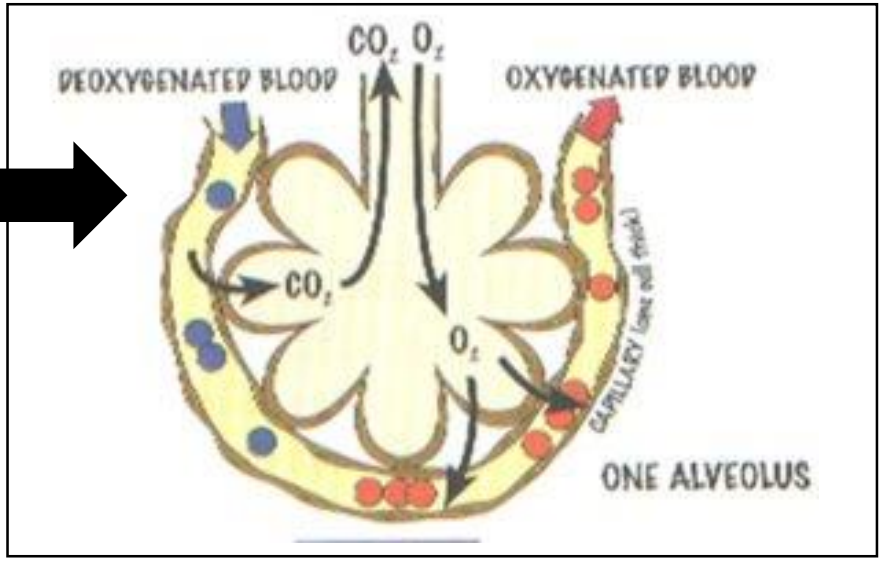


Science



4. Respiratory system

A	Trachea
B	Alveoli
C	Bronchiole
D	Right bronchus
E	Ribs
F	Intercostal muscles
G	Diaphragm
H	Heart



5. Aerobic Respiration

glucose + oxygen → carbon dioxide + water + energy

6. Anaerobic Respiration

glucose → lactic acid (+ energy)

7. Smoking and pregnancy

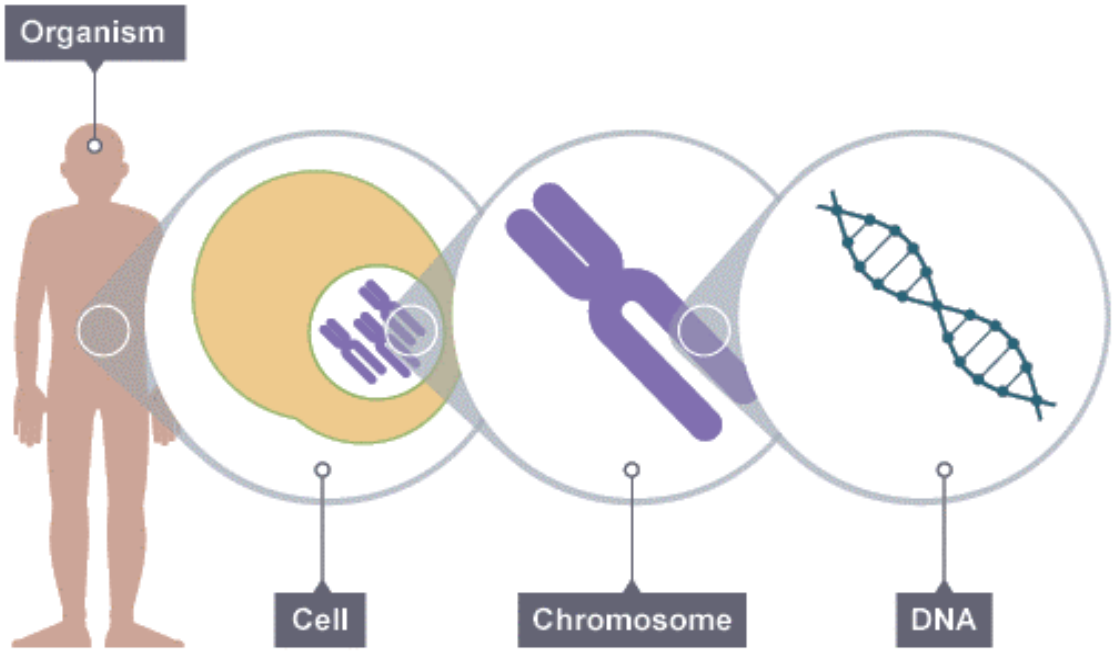
1. Nicotine and carbon monoxide can reduce the baby's oxygen supply.
2. This leads to an underdeveloped baby which increases the risk of:
   - baby being underweight
   - heart defects
   - decrease in lung function
   - brain function affected
   - risk of still birth or SIDS (Sudden Infant Death Syndrome)

Science

8. Drug: any chemical that effects the nervous system

Stimulant	Depressant
Stimulants speed up the activity of the nervous system. **This causes:** - Increased alertness - Raised heart rate and blood pressure - Reduced appetite	Depressants slow down the activity of the nervous system. **This causes:** - Sleepiness - Forgetfulness - Can be addictive

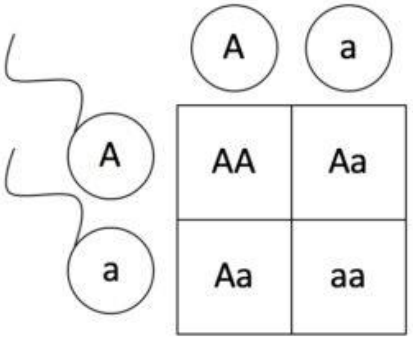
9. The organisation of DNA in humans



Each cell with a nucleus contains chromosomes, which are made from DNA

10. Genetic inheritance

Allele	Different forms of the same gene, e.g. hair colour
Dominant	When only one copy of the allele is needed to show in the offspring
Recessive	When the allele only shows when there are two copies
Homozygous	Two copies of the same allele
Heterozygous	Two different alleles



Science

9CR Reactivity

1. Keywords

Reactivity	How easily a substance takes part in a chemical reaction
Acidic	pH value less than 7
Alkaline	pH value more than 7
Oxide	Compound containing oxygen and another element
Displacement reaction	Where a more reactive element takes the place of a less reactive element in a compound

3. Reaction of metals and acids

metal + acid → a salt + hydrogen

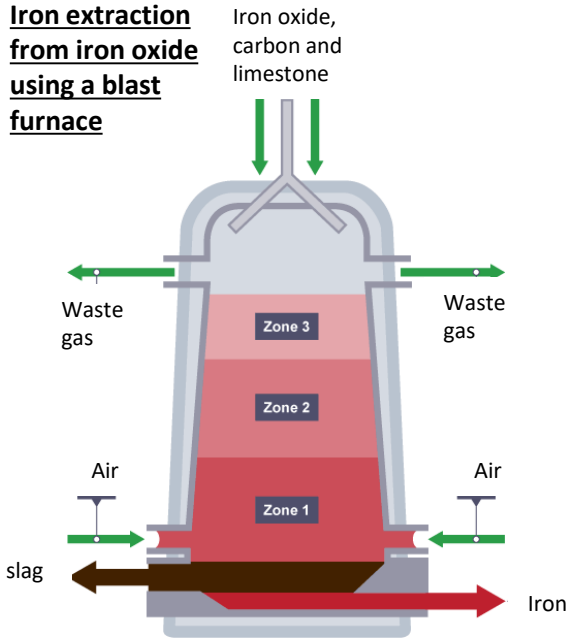
The reaction between metal and acid gets faster when more reactive metals are used.

4. Extraction of metals

Less reactive than carbon:
Extracted from their metal oxide by carbon.
metal oxide + carbon → metal + carbon dioxide

More reactive than carbon:
Extracted from their metal oxide by electrolysis

Iron extraction from iron oxide using a blast furnace



5. Metal oxides

Metal oxides	Non-metal oxides
Bases – they dissolve to form alkaline solutions	They dissolve in water to form acidic solutions

6. Displacement reactions

Magnesium + copper sulphate → magnesium sulphate + copper
$Mg + CuSO_4 \rightarrow MgSO_4 + Cu$

Zinc + lead nitrate → zinc nitrate + lead
$Zn + Pb(NO_3)_2 \rightarrow Zn(NO_3)_2 + Pb$

2. Reactivity series

Most reactive
Potassium
Sodium
Calcium
Magnesium
Aluminium
Carbon
Zinc
Iron
Tin
Lead
Copper
Silver
Gold
Platinum
Least reactive

Science

9PS Sound Waves

1.

Keyword	Definition
Transverse wave	A wave where the vibration is perpendicular to the direction of travel
Longitudinal wave	A wave where the vibrations are parallel to the direction of travel
Mechanical wave	A vibration that travels through a substance (e.g. sound)
Frequency	The number of wave fronts passing a fixed point every second (measured in Hz)
Ultrasound	Sound above 20 KHz
Superposition	When two waves meet and affect each other
Reflection	When waves bounce off a surface
Echo	Reflection of sound that can be heard

2.

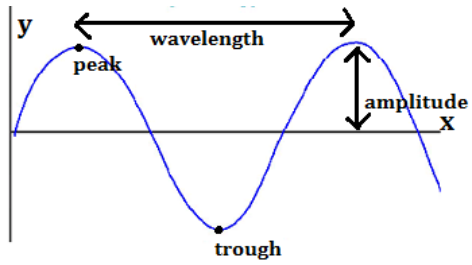
Comparing waves	Light wave	Mechanical wave
Type of wave	Transverse	Longitudinal
Can they travel through a vacuum?	Yes	No. Mechanical waves can only pass through a solid, liquid or gas
Can they be reflected?	Yes. By smooth shiny surfaces	Yes. By smooth surfaces
Can they be absorbed?	Yes. By dark surfaces	Yes. Rough surfaces absorb sound
Can superposition occur?	Yes	Yes

3.

Uses of ultrasound	
Use	**How it works**
Cleaning jewellery	The vibrations of the wave shake the dirt lose
Scanning the human body	The waves are partially reflected at different tissue boundaries
Industrial imaging	The waves can detect flaws in metal castings as they are partially reflected by cracks
Physiotherapy	Energy from the wave is absorbed by body tissue and relieves pain

4.

Labelling a wave



5.

Speed of sound

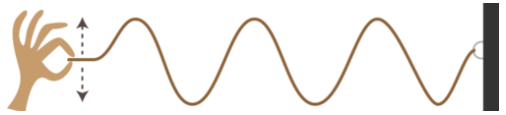
Sound travels faster through liquids and solids than it does through a gas because the particles in a gas are further apart.

Substance	Speed of sound
Air	343 m/s
Water	1493 m/s
Steel	5130 m/s

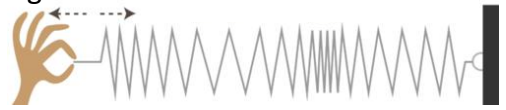
6.

Humans can hear sound in the 20 Hz – 20 KHz range.
Dogs can hear up to 50 Hz.

Transverse wave

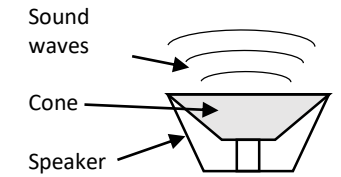


Longitudinal wave



7.

Sound waves are produced by all vibrating objects. Loudspeakers work by converting electrical energy into kinetic energy. This moves the cone which creates the sound waves.



Textiles

Specialist technical principles:
stock forms, types and sizes

Introduction

Most textiles come in a range of standard sizes. Standard practice is to use length × width for fabrics. Some fabrics are available in range of weights from light through to heavy.

Keywords

Drape – The way a fabric hangs

Fabric

Yarn

Hank

Ball

Reel

Buttons

Velcro

Hook and eye

Buckle

Eyelet

Press stud

Zip

Toggle

Exam Questions

1. What factors make reels of yarn the most appropriate for manufacturing by machine?
2. Give two advantages of using a zip for a trouser fastening compared to buttons.

Stretch

A. Velcro is a popular types of fastener on children's clothing. Give three reasons why Velcro is a suitable fastening on a school coat for a child.

Exam Tips

Understand how textiles and components are available in standard forms and sizes.

Key Facts to Memorise

Fabrics are mostly available by the roll and are cut to length as needed. They come in different widths and are usually bought by the linear metre.

Yarn is available in hanks, balls and reels and is generally sold by weight. Reels tend to be used for machine production and hanks and balls are better for handmade constructions. A standard ball of yarn weighs around 100g.

Shears

Rotary cutter – Cuts accurate lines and curves on multiple layers of fabric

Band saw – Can cut multiple layers of cloth in one pass. Used in commercial settings

Embroidery scissors

Thread snips – Multi-purpose mini shears for trimming threads or ripping seams

Seam ripper

Pinking shears

Electric rotary cutter

Textiles

Specialist technical principles:
sources and origins

Introduction

Textiles can be made from natural or synthetic fibres and can also be combined to make modern textiles that perform more usefully.

Keywords

Animal skins – Leather suede and fur. The skins and hides are tanned and then be dyed before use.

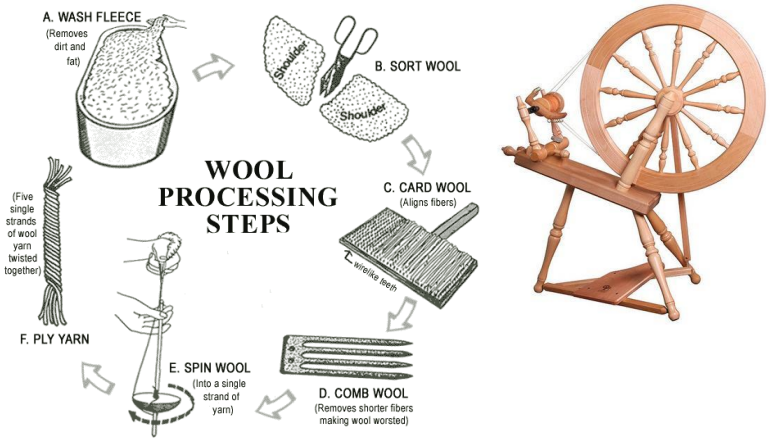
Chemical sources – Nylon, polyester, acrylic, lycra, Kevlar, Nomex

Vegetable sources – Cotton, flax (linen), jute, hemp, bamboo, coir

Fibre – Filament and staple

Yarn

Spinning



Animal fibres: Wools and silk





Plant fibres: Cotton and linen


Chemical sources:
Polyester, polyamide, elastane, polypropylene, acrylic, PVC, Kevlar

Coco Chanel

http://inside.chanel.com/en/timeline/1883_birth-of-gabrielle-chanel

https://www.google.com/culturalinstitute/beta/search?q=coco%20chanel

https://www.google.com/culturalinstitute/beta/exhibit/7QKCy_v7yDpuIg

Gabrielle Bonheur Chanel

Timeline