KNOWLEDGE ORGANISER

YEAR 8 – TERM 1

THOMAS HALL SCHOOL

Think Like An
Environmentalist

Community, Collaboration and Challenge

ATTENDANCE MATTERS

EVERY DAY COUNTS
Missing just 1 day every 2 weeks is the same as missing 10% of the school year.

LEARNING
Being in school allows you the best opportunity to learn.

WELLBEING
Attending school supports your mental and emotional health.

FUTURE SUCCESS
Regular attendonce at school is vitol for building the key skills needed for future employment

EQUIPMENT

SCHOOL DAY

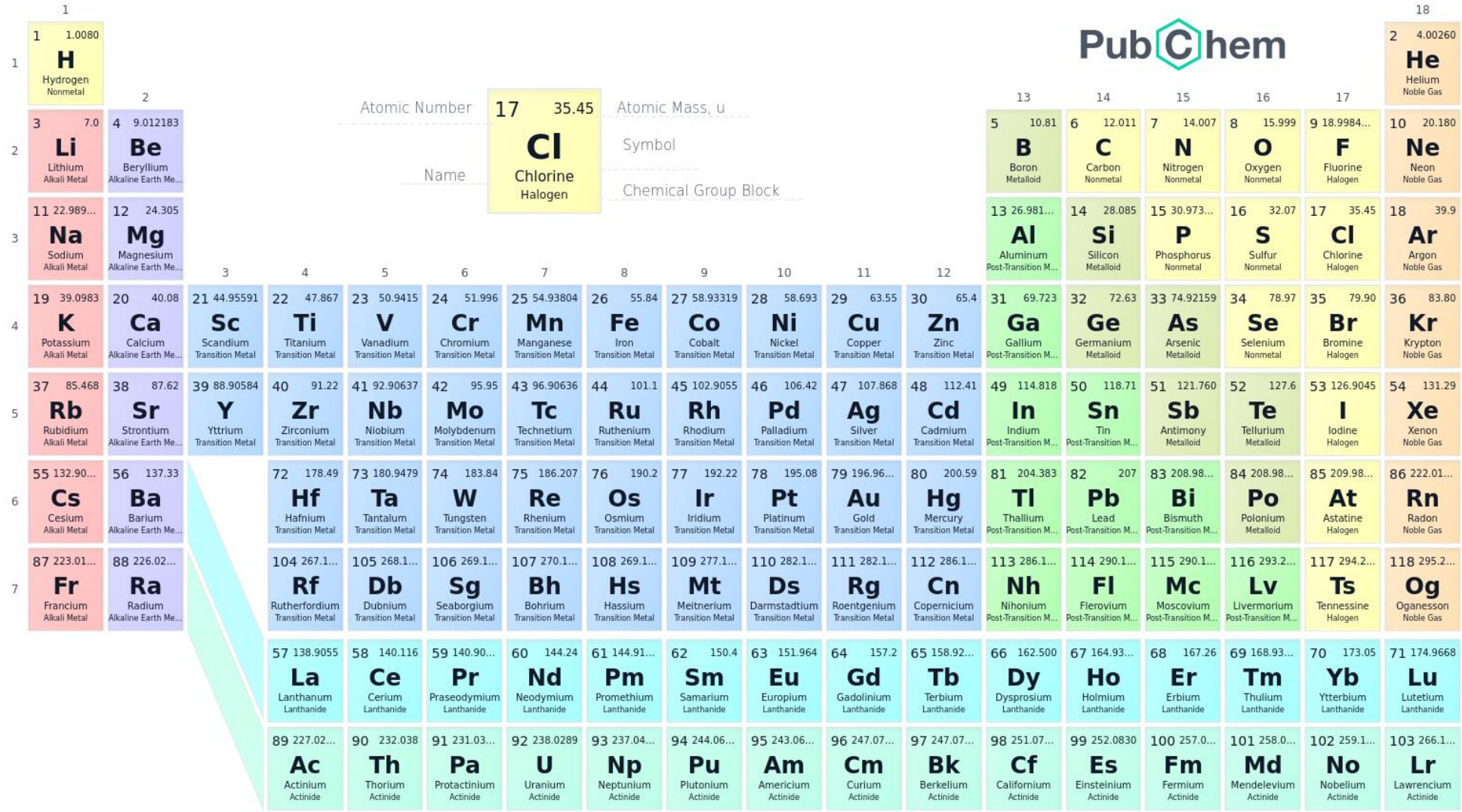
9:00–9:05	AM Reg
9:05–10:20	Lesson 1
10:20–11:35	Lesson 2
11:35–12:05	Break 1
12:05–13:20	Lesson 3
13:20–13:50	Break 2
13:50–15:05	Lesson 4
15:05–15:30	PM Reg – assembly or guided reading

Multiplication Grid

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

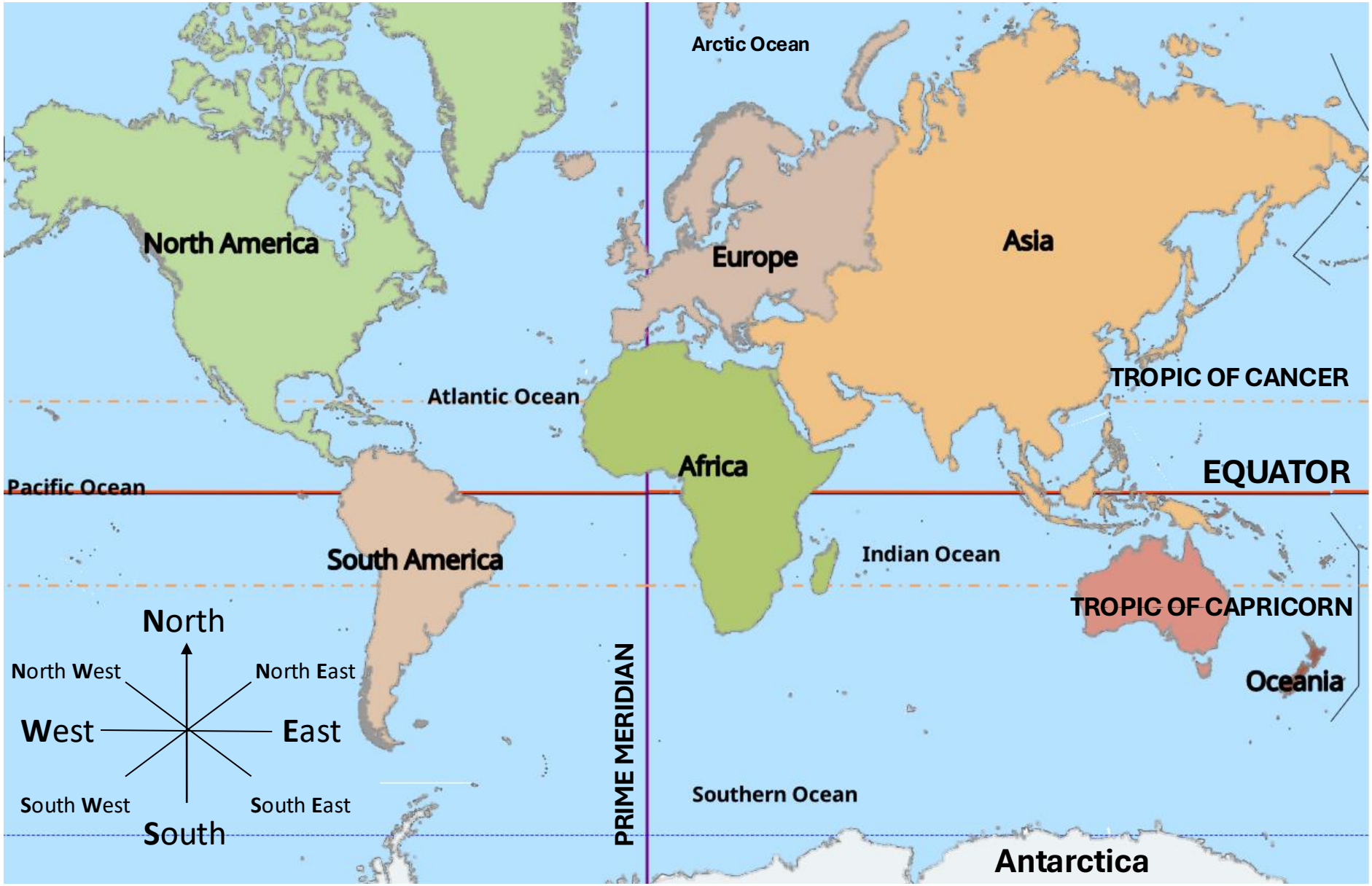
PERIODIC TABLE OF ELEMENTS

Chemical Group Block




01 Adjectives
THAT DESCRIBE:
age: young, old
colour: red, blue
condition: new, used
size: large, medium
speed: fast, slow
etc.
COMPARATIVE:
smaller, better...
SUPERLATIVE:
the smallest,
the worst,
the best...
02 Adverbs
PLACE:
here, there,
outside, everywhere,
upstairs, nowhere,
somewhere....
TIME:
ago, before, since,
yet, for, still,
afterwards...
FREQUENCY:
often, never,
sometimes, always
MANNER:
just, quite,
quickly, hardly,
well, carefully,
barely, almost,
scarcely,
beautifully...
03 Conjunctions
COORDINATING:
and, or, but,
yet, nor, for, so
CORRELATIVE:
both... and...,
either... or...,
just as... so...,
whether... or...,
neither... nor...,
not only... but also...
SUBORDINATING:
after, since, if,
while, although,
before, because,
unless
04 Determiners
TELLS US WHICH:
each, every,
some, none,
all...
TELLS US WHOSE:
my, your, her, his, its,
our, your, their (= possessive
adjectives or determiners)
05 Nouns
COMMON NOUNS: house, dog, laptop...
PROPER NOUNS:
(Capitalised)
London, Paris,
James, William,
Julia, Jennifer...
> VERBAL:
swimming...
> COLLECTIVE:
choir, jury...
> COMPOUND:
mother-in-law...
> COUNTABLE:
book, day...
> UNCOUNTABLE:
traffic, calm...
> ABSTRACT V. CONCRETE:
wit vs. road...
06 Prepositions
PLACE / DIRECTION:
in, at, on,
under, above,
across,
among,
between...
TIME:
in, at, on,
over, until, about,
during, before,
after, while,
through...
OTHER (agent,
phrase...):
by, with, on, over,
to, up, within,
beyond, for...
07 Pronouns
PERSONAL
(subject):
I, you, he, she, it,
we,
you, they
PERSONAL
(reflexive):
myself, yourself,
himself, herself,
itself, ourselves,
yourselves,
themselves
DEMONSTRATIVE:
this, these,
that, those
PERSONAL
(object):
me, you, him, her,
it, us, you, them
POSSESSIVE:
mine, yours, his,
hers, its, ours,
yours, theirs
INTERROGATIVE:
how, where,
when, which...?
INDEFINITE:
somebody,
anyone...
RELATIVE:
that, which,
whose, whom...
08 Verbs
ACTION:
to run, to organise,
to read, to think...
> Transitive
or
> Intransitive
LINKING:
to be,
to look, to appear,
to seem, to smell...
HELPING
(= AUXILIARY):
can, may,
will, must,
should, to be,
to have...
Word Classes

World Map


Arctic Ocean
North America
Europe
Asia
Atlantic Ocean
TROPIC OF CANCER
Africa
EQUATOR
Pacific Ocean
South America
Indian Ocean
TROPIC OF CAPRICORN
Oceania
North
North West
North East
West
East
South West
South East
South
PRIME MERIDIAN
Southern Ocean
Antarctica

Art

Year 8 Fashion Illustration Art Term 1

Project Title: *"Trainers and Shoes*
Objectives:
- Develop skills in observational drawing.
- Explore tone, texture, and proportion.
- Experiment with color theory and painting techniques.
- Create a final piece that shows personal style and creativity.


Introduction & Sketchbook Exploration
Focus: Introduction to the project and theme
Activities:
- Discussion: Why are trainers popular in culture/fashion/art?
- Mood board creation (collage, sketches, photos).
- Bring in or photograph favorite trainer for reference.

Homework: Photograph or sketch 3 different trainer types.
Skill: Construction lines, proportion, contour drawing

Basic Shapes & Proportion
Focus: Observational drawing using basic forms
Activities:
- Demonstration: Breaking down trainers into 3D shapes (cylinders, boxes).
- Practice drawing trainers from different angles.


Detail & Texture Studies
Focus: Exploring texture, materials, and intricate details
Activities:
- Zoom-in studies of different materials (leather, mesh, rubber).
- Tonal pencil drawings focusing on texture (hatching, blending).


Color Theory & Media Exploration
Focus: Understanding and applying color
Activities:
- Color wheel and blending exercise.
- Media testing: watercolor, acrylic, colored pencil.
- Recreate a section of trainer in color.

•**Focus**: Painting techniques and layering
Activities:
•Acrylic or watercolor trainer study.
•Focus on blending, highlights, and shadow.
•Build up underpainting, then details.

Complete Final Painting
Focus: Finish painting and refine details
Activities:
- Add textures, patterns, shadows, and highlights.
- Final touches with pen, ink, or colored pencil.


Art

Year 8 Perspective Art Term 1

Introducing the core concepts of perspective, gradually building skills from basic one-point perspective to more complex compositions involving two-point perspective and creative application.

Learning Objectives:

- Understand the principles of linear perspective.
- Apply one-point and two-point perspective techniques.
- Create depth and spatial illusion in drawings.
- Explore creative applications of perspective in imaginative and observational work.

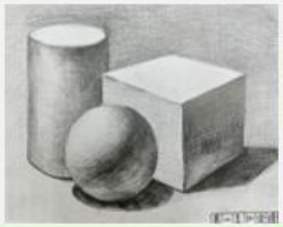
- **Objective:** Understand what perspective is and why it's used.
- **Activities:**
- Class discussion: "What is perspective?"
- Look at examples of Renaissance art and contemporary art using perspective.
- Sketch simple horizon lines vanishing points.


One-Point Perspective Basics

- **Objective:** Draw a simple box using one-point perspective.
- **Activities:**
  - Demonstration on the board.
  - Students draw cubes and simple shapes in one-point perspective.
- **Focus:** Horizon line, vanishing point, orthogonal lines.


Street Scene in One-Point Perspective

- **Objective:** Create an outdoor street scene.
- **Activities:**
  - Students draw buildings on either side of a road using one-point perspective.
  - Emphasize scale and detail.
- **Key Skills:** Overlapping, diminishing scale.

Building Structures in Two-Point Perspective

- **Objective:** Apply two-point perspective to architectural forms.
- **Activities:**
  - Draw buildings or blocky structures.
  - Introduce windows, doors, and roofs in perspective.

Introduction to Two-Point Perspective

- **Objective:** Understand and practice two-point perspective.
- **Activities:**
- Step-by-step demonstration of drawing a cube in two-point perspective.
- Students draw multiple cubes or boxes from different angles.
- **Focus:** Dual vanishing points, corner-on view.


Computing

Bitmap graphics

Bitmap graphics made with painting packages consist of many tiny dots called pixels. It is possible to edit each individual pixel.

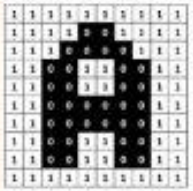
Since the computer has to store information about every single **pixel** (the colour for example) in the image, the file size of a **bitmap** graphic is often quite large. **Bitmap** graphics lose quality when they are resized.

Representing Bitmaps

Images are made up of **pixels** (Picture Elements). Each **pixel** is set to one colour. Together they look like an image. Individual **pixels** are unidentifiable.

Creating a Bitmap

Each **pixel** is given a binary value. Each value represents a different colour. Using one bit per **pixel** allows only 2 values, 0 and 1.

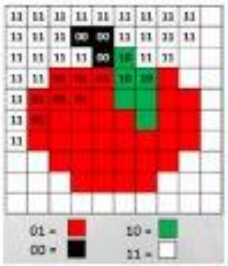


1	=	White
0	=	Black

More bits per **pixel** = more colour combinations.

- 1 bit = 2 Colours
- 2 bits = 4 Colours
- 3 bits = 8 Colours
- 4 bits = 16 Colours

How many bits per **pixel** required for 256 colours?

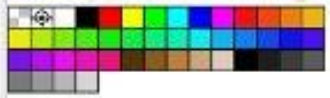


Graphics Package

A graphics package is an application that can be used to create and manipulate images on a computer.

Common features of graphics packages:

- Drawing straight lines and 'freehand' lines;
- Drawing regular pre-defined shapes like squares, rectangles and circles using a special 'tool';
- Building up images using **'layers'**;
- Entering text and changing the style and size of font;
- Attaching text to objects;
- Changing the size of an object, or scaling;
- Rotating objects in either clockwise or anticlockwise by specifying the direction and angle of rotation;
- Stretching objects either horizontally or vertically. 'Flipping' an object either horizontally or vertically.
- A paint palette from which different colours and patterns can be chosen.



- A fill option for colouring in a shape or area on the screen with a colour or pattern from the paint palette.
- Most graphics packages have a built-in library of clipart pictures.
- Zoom or magnify is a feature that allows an area of the screen to be seen close up for detailed work.
- Special brushes such as an airbrush can be used to achieve different paint effects on the screen.
- In most graphics these features are chosen from a toolbar or tool palette where they are displayed as icons.
- Exporting is a special way of saving a file produced using a graphics package so that it can be used in another application package **(.PNG, .JPG, .BMP)**

Vector Graphics

Vector images comprise geometric shapes. The properties of each shape are recorded:

- Shape type (e.g. Circle)
- Radius
- Centre point **(x,y)**
- Fill Colour
- Line Colour

Vector graphics consist of shapes called objects. You can edit each object separately to change the shape, colour, size, and position.

Recording the properties of vector shapes does not take up much memory. This usually makes the file size of a **vector** graphic very small

Vector graphics are scalable – you can change their size without any loss of quality.

	Bitmap graphics	Vector graphics
Made up of	Coloured pixels	Objects
File size	Large	Small
Resizing	Lose quality	No loss of quality
Appearance	Real	Cartoon-like
File formats	.bmp .jpg .gif	.svg .wmf

Bitmap or Vector image?

- Will the image need to be resized?
- Will the image need to be drawn to scale?
- Will the image need to be realistic?
- Are there any restrictions on file size?

Drama

Year 8 | **Drama** | **Term 1**

Performance style

Devising involves collaborative creation of a play without a pre-existing script, starting from a stimulus and building through improvisation, research, and refinement. Key steps include choosing a stimulus, researching it, developing ideas through exploration, structuring the performance, and refining the final piece.

Drama Techniques

Teacher in Role – The teacher acts as a character to guide or challenge the drama.
Tableau – A still image that shows a key moment or emotion.
Thought-Tracking – A character's thoughts spoken aloud.
Improvisation – Creating unscripted scenes in character, responding naturally.

Historical Context

- During **WW2**, many British children were **evacuated from cities to the countryside** to avoid bombing raids.
- Families were often **separated**, and children lived with **strangers** in unfamiliar environments.
- The **emotional impact** was: fear, confusion, homesickness, but also resilience and growth.

Themes

Displacement – Being forced to leave home.
Resilience – Coping with difficult and unfamiliar situations.
Identity – How characters understand themselves when their world changes.

Devising stimulus

- **Photos of WW2 Evacuees**
- **Real stories of WW2 Evacuees**
- **'Goodnight Mr Tom' novel and play script:**

"Goodnight, Mister Tom" tells the story of Willie Beech, a young boy evacuated from London to the countryside during World War II, who finds solace and healing under the care of the gruff but kind-hearted recluse, Thomas Oakley.

Evaluating in Drama

What?
(e.g The actor playing Tom marched downstage)
Why?
(e.g To show that they were angry)
How?
(e.g They used a straight posture and stomped their feet, with an angry facial expression.)

WW2 Evacuees

Drama

Year 8 Drama Term 1

Plot

"Stone Cold," follows two parallel narratives: Link, a young man forced to live on the streets of London, and Shelter, a former soldier who targets homeless people for murder. Link, after running away from an abusive stepfather, struggles to survive and befriends Ginger, another homeless youth. Simultaneously, Shelter, driven by a warped sense of patriotism, believes he is cleansing the city by killing the homeless.

Getting from Page to Stage

1) Decide who is playing who.
2) Sit and read the scene, including stage directions.
3) Discuss the scene.
4) Get on your feet and start blocking.
5) Focus on performance skills to make the scene more detailed.

Context

Stone Cold is set in the 1990s, a time when homelessness was a significant issue, and the story highlights the prejudice and vulnerability faced by those living on the streets.

Themes

Homelessness
Society's failure to protect the vulnerable
Friendship and trust
Prejudice
Invisibility

Key Characters

Link - real name Dave: a British teenager who grew up in Bradford until he became homeless.
Shelter - an ex-army man who served for twenty-nine years in the National Service
Ginger - a homeless boy whom Link meets in London and who becomes Link's friend and companion.
Louse - a journalist who goes undercover as Gail; a homeless girl who befriends Link.

Set Design Terminology

Staging type: end-on, traverse, thrust, proscenium arch, in-the-round, promenade.
Naturalistic or non-naturalistic
Stage Flat - a wooden structure to make walls
Rostrum - a raised platform
Painted Backdrop - a decorated back cloth
Cyclorama - a white backdrop that can be lit or projected onto

Stone Cold

THE HUNGER GAMES English

Context – *The Hunger Games* was written by Suzanne Collins and was published in 2008.

Collins' Influences – Collins has claimed that her main influence for The Hunger Games arrived when she was channel-hopping between reality TV and coverage of the Iraq War, and the two ideas 'fused together – sort of a combination of young people being killed and the nation watching it.' She was also influenced by the Greek myth: Theseus and the Minotaur. This is evident in a number of plot features, e.g. the oppression, the sacraficial victims, and the voluntary tribute: Katniss.

Collins' Language Devices

Metaphor	*"'...and turn my features into an indifferent mask so that no one could ever read my thoughts."*
Similes	*"Prim's face is as fresh as a raindrop, as lovely as the primrose for which she was named."* *"The camera crews, perched like buzzards on rooftops."*
Personification	*"The disasters, the droughts, the storms, the fires, the encroaching seas that swallowed up so much of the land."*

Features of Dystopian Novels

A background story The failed uprising of the 13 Districts caused the Hunger Games ritual to begin taking place.	A brave, selfless protagonist Katniss has a number of desirable mental and physical characteristics, and is a good, caring person in a world of hate.	Advanced technology Collins portrays a futuristic society, evident throughout the text (e.g. the Hunger Games arena!)

Main Characters – Consider what Rowling intended through her characterisation of each of the below...

Katniss Everdeen – Katniss is the lead protagonist and narrator of *The Hunger Games.* She may only be 16 years old but is far more mature than her years would suggest – largely due to caring for her younger sister from a young age. She is strong, courageous, resilient and brave. She has gathered numerous skills in hunting/ survival, particularly with a bow, which come in useful in the fighting arena.

Quote: *'"I volunteer!" I gasp. "I volunteer as tribute!"* (Chapter 2)

Peeta Mellark – Peeta is the male tribute from District 12. He is in love with Katniss, and becomes her main ally and love interest throughout *The Hunger Games.* Whilst himself strong and able, arguably Peeta's greatest attribute is his willingness to sacrifice himself for Katniss – her earliest memory of him was him selflessly helping her (putting himself in danger) something he repeats in the arena.

Quote: *"I want to die as myself. Does that make any sense?* (Chapter 10)

Haymitch Abernathy – Haymitch is District 12s only surviving tribute, having been a previous winner of The Hunger Games. Due to his prior success, Haymitch is employed to be the coach/mentor of the District 12 tributes: Katniss and Peeta. Though he is a drunk, he proves to be a cunning and helpful guide. He devises ways to make the District 12 tributes popular (and thus attract sponsorship) and also offers them survival, killing and psychological advice. Whilst he can be manipulative, Haymitch is effective.

Quote: *"It's all a big show. It's all how you're perceived."* (Chapter 10)

Rue – Rue is the girl tribute from District 11. She is young and small, and thus reminds Katniss of her younger sister Primrose. Rue is a skilled tree climber, allowing her to escape from the larger tributes. She helps Katniss early on in the Hunger Games, for example by advising her about the tracker jacker nest that she can use to scare away Cato and his alliance, saving Katniss' life. She teaches Katniss how to use the mockingjays to carry messages, before she is killed. She makes Katniss promise to win the Hunger Games, which spurs her on.

Quote: "*They have all those supplies. They're not hungry."* (Chapter 15)

Gale Hawthorne – Gale, Katniss' hunting partner, is a fellow struggler from the Seam in District 12. Like Katniss, he also feels the weight of caring for his family, and early in the text mentions the idea of Katniss and him running away from their problems together. Gale is vocal about his hatred for the Capitol, which stems from the death of his father in the same explosion that killed Katniss' father. Katniss thinks of Gale often during the Games, as she knows he'd help her.

Quote: *"Leave the district. Run off. Live in the woods. You and I, we can make it."* (Chapter 1)

Cinna – Cinna is Katniss' stylist for the Hunger Games. He is modest, kind, and understanding, and is aware of how the wasteful and luxurious lives of those in the Capitol must sicken Katniss – unlike most stylists, he requests to work with District 12. He is talented in his work; he creates the flaming dress that Katniss wears during her introduction to the Capitol, earning her the name as 'The Girl on Fire.' In stressful times, he retains a calm and level head, which helps Katniss.

Quote: *"Katniss...the girl who was on fire."* (Chapter 5)

English

Chapter-by-Chapter Summary – Alongside key quotations.		
Chapter 1	Katniss Everdeen (the 1st person narrator) wakes up. She sees Prim and her mother sleeping, and then goes poaching outside of the fence which marks out District 12. Her father died when she was 11 from a mine explosion. She meets Gale, her close friend. They catch fish and trade them for bread and salt. It is the reaping for the Hunger Games: treated like a festive event. To Katniss's horror, Primrose's name is drawn.	*'As soon as I'm in the trees, I retrieve a bow and sheath of arrows from a hollow log.'*
Chapters 2-3	Katniss decides to take Prim's place, as a tribute. Peeta Mellark is drawn as the boy tribute. Katniss recalls a couple of her interactions with him in the past, where he has shown her great kindness. Katniss says goodbye to her family and friends. She is given a gold pin of a bird to wear.	*'Promise you'll wear it into the arena, Katniss? Promise?"*
Chapters 4-6	Katniss notes Peeta's kindness as he helps Haymitch (a drunk past survivor of the HG). Haymitch is impressed with Katniss/Peeta's determination, and agrees to help them. Their stylist, Cinna, dresses them as flames - a huge success with the public. At the Training Centre, Katniss recognises an 'Avox' from her past – she regrets not helping her.	*'The crowd's initial alarm at our appearance quickly changes to cheers and shouts of "District 12!"'*
Chapters 7-9	Katniss and Peeta train together. He is an excellent wrestler, and she is skilled with the bow. They will be against some Career Tributes. She shows her skill by skewering an apple in a roasted hog's mouth with an arrow. She scores highly, thus attracting sponsors. Peeta then trains separately. They prepare for the TV interviews. The Avox helps Katniss.	*'The arrow skewers the pig's mouth and pins it to the wall behind it.'*
Chapter 10-12	In the TV interviews, Peeta reveals love for Katniss – this angers her, but then she realises it is part of a desirable plan to make her desirable. The Hunger Games begin and a bow is just out of Katniss' reach. She instead grabs a tarp. She also gets an orange backpack as another boy is killed. 11 die in the first battle. She notes that Peeta has joined some career tributes, hunting in a tribe.	*"So they're fighting in a pack…Often alliances are formed in the early stages of the Games."*
Chapter 13-15	Katniss escapes a large fire, but is burnt on her leg and arm. She takes rest up a tree. The Careers appear & Cato tries to get up to kill Katniss. She saws down a tracker jacker nest, which kills one & causes the others to flee. Katniss retrieves the bow and arrows. However she too is stung – she hallucinates and passes out. She forms an alliance with a young girl called Rue, who helps her with her stings.	*'I'm weak from pain and hunger but I can't bring myself to eat. Even if I can last into the night, what will the morning bring?'*
Chapters 16-18	They devise a plan to raid the Careers supplies & Rue teaches Katniss a mockingjay call to listen out for. Katniss destroys the booby-trapped supplies, causing Cato to angrily kill a District 3 recruit. Katniss hears the mockingjay song, but is too late - Rue is killed by a boy from District 1, who Katniss immediately kills. The rules are changed – recruits from the same district can now both win.	*"Then, the apples spill to the ground and I'm blown backwards into the air."*
Chapters 19-21	Katniss finds the injured Peeta and helps nurse him. However his leg is infected. An announcer informs the tributes that something they each need at a 'feast' (for D12 – Peeta's remedy). Katniss risks her life to get it for Peeta. She is almost killed by a girl from D3, but is rescued by Thresh – Rue's fellow District 11 tribute.	*'Just this one time, I let you go. For the little girl. You and me, we're even then. No more owed. You understand?'*
Chapters 22-24	Katniss awakes to find Peeta rejuvenated. As they talk, she begins to feel genuine care for him. Thresh dies. Foxface (the District 5 girl) also dies, seemingly from eating poisonous berries. Katniss and Peeta hold onto the berries, should the opportunity arise to give them to Cato, the last remaining opposition. They realise that the Gamemakers have drained the water sources, in an attempt to bring them together with Cato. Then, Cato races past them, being pursued.	*"My eyes scan the woods just in time to see the first creature leap onto the plain…another half dozen join it."*
Chapter 25-27	The pursuers are 'muttations' – wolf-like creatures. Katniss and Peeta narrowly escape them, but Cato appears and headlocks Peeta. Katniss shoots Cato off the side, where he is mutilated by the muttations. Katniss eventually kills him with an arrow. The announcer attempts to order a reversal of the rule change, until Katniss & Peeta attempt to kill themselves. They are then crowned the winners. The Capitol is furious at their actions, but both recuperate & return to District 12.	*'And right now, the most dangerous part of the Hunger Games is about to begin.'*

French

Module 4 - Ma vie de famille

As-tu un animal?

As-tu un animal? Do you have a pet	oui, j'ai un yes I have a	chat – cat chien- dog cochon d'Inde – Guinea pig hamster – hamster lapin – rabbit lézard – lizard oiseau – bird poisson – fish serpent – snake	il est he is elle est she is qui est who is	violet- purple blanc- white noir - black rose- point vert – green marron – brown bleu – blue gris – grey rouge – red jaune – yellow	
	non, je n'ai pas d'animal				
Quel âge as ton animal? How old is your pet?	Il a He is (literally 'he has') Elle a She is (literally 'she has')	un an – 1 year old deux ans – 2 years old trois ans – 3 years old	mais son âge humain est ... but it's human age is..	20 vingt 30 trente 40 quarante 50 cinquante 60 soixante 70 soixante-dix (60+10) 71 soixante et onze 80 quatre vingts 90 quatre-vingt-dix 100 cent	ans years old

Une drôle defamille

je suis I am il est he is elle est she is	grincheux (-se) – grumpy studieux (-se) – studious marrant(e) – funny sévère – strict maigre – thin furieux(-se) – furious

On fait la fête!

le 14 juillet la fête nationale un jour de congé un défilé (militaire) un bal regarder un feu d'artifice faire un pique-nique faire la fête	Bastille Day national holiday a day off (military) parade a dance to watch fireworks to have a picnic to celebrate

Qu'est-ce que tu manges au petit déjeuner?

Qu'est-ce que tu manges / bois au petit déjeuner? What do you eat/drink for breakfast?	je mange I eat	un croissant – a croissant un fruit – a piece of fruit	du pain grille – toast du beurre – butter du bacon – bacon du yaourt - yoghurt	une tartine – bread with jam de la confiture – jam	des céréales – cereals des oeufs - eggs
	je bois I drinnk	du jus de fruits – fruit juice	du chocolat chaud – hot chocolate	du lait – milk	de l'eau – water
	je ne mange rien – I don't eat anything				

French

Module 4 - Ma vie de famille

Décris ta famille

Dans ma famille il y a.. In my family there is...	mon - my	(beau-) père (step) father grand-père grandfather (demi-) frère (half/step) brother fils - son	qui a who has qui ont who have	les yeux eyes	bleus – blue verts – green marron – brown	
	ma – my	(belle-) mère (step) mother grand-mère grandmother (demi-) soeur (half/step) sister fille - daughter		les cheveux hair	noirs – black blonds- blond roux- red gris – grey bruns – brown et (and)	courts – short longs - long mi-longs - mid length bouclés – curly raides – straight
	mes – my	parents		une barbe a beard	des taches de rousseur freckles	des tatouages tattoos
			qui porte(nt) des lunettes – who wear(s) glasses qui s'appelle(nt).... – who is (are) called			

Où habites-tu?

Où habites -tu? Where do you live?	j'habite I live nous habitons we live	dans in	un appartement a flat un village a village une maison a house une ville a town	en in	Angleterre - England France - France Espagne - Spain Suisse - Swizterland Ecosse - Scotland Irelande - Ireland	J'aime habiter ici I like living here	parce que c'est / parce qu' c'est because it is	tranquille – quiet grand – big confortable – comfortable trop petit – too small il n'y a pas de place – there's no space
				au in	pays de Galles – Wales Portugal - Portugal	Je n'aime pas habiter ici I don't like living here		

Les pièces

Dans ma maison il y a 3 pieces	In my house there are 3 rooms
il y a :	there is:
un salon	a living room
une cuisine	a kitchen
une chambre	a bedroom
une salle de bains	a bathroom
une sale à manger	a dining room
un jardin	a garden

High Frequency Words

nous	we
de	of
dans	in
à	in/at
du/de la/des/de l'	some
(ne)...rien	nothing

French

GRAMMAIRE
Regular present tense verbs

ER VERBS e.g. Passer = to spend (time)	
Je pass**e**	*I spend*
Tu pass**es**	*You spend*
Il/Elle/On pass**e**	*He/She/One spends*
Nous pass**ons**	*We spend*
Vous pass**ez**	*You spend (form/pl)*
Ils/Elles pass**ent**	*They spend*

IR VERBS e.g. Finir = finish	
Je fini**s**	*I finish*
Tu fini**s**	*You finish*
Il/Elle/On fini**t**	*He/She/One finishes*
Nous fin**issons**	*We finish*
Vous fin**issez**	*You finish (form/pl)*
Ils/Elles fin**issent**	*They finish*

RE VERBS e.g. vendre = to sell	
Je vend**s**	*I sell*
Tu vend**s**	*You sell*
Il/Elle/On vend	*He/She/One sells*
Nous vend**ons**	*We sell*
Vous vend**ez**	*You sell (form/pl)*
Ils/Elles vend**ent**	*They sell*

GRAMMAIRE Irregular present tense verbs

Faire = to do / to make		Aller = to go	
Je fais	*I do*	Je vais	*I go*
Tu fais	*You do*	Tu vas	*You go*
Il/Elle/On fait	*He/She/One does*	Il/Elle/On va	*He/She/One goes*
Nous faisons	*We do*	Nous allons	*We go*
Vous faites	*You do (form/pl)*	Vous allez	*You go (form/pl)*
Ils/Elles font	*They do*	Ils/Elles vont	*They go*

GRAMMAIRE Modal verbs

Vouloir = to want	
Je veux	*I want*
Tu veux	*You want*
Il/Elle/On veut	*He/She/One wants*
Nous voulons	*We want*
Vous voulez	*You want (form/pl)*
Ils/Elles veulent	*They want*

Pouvoir = to be able to	
Je peux	*I can*
Tu peux	*You can*
Il/Elle/On peut	*He/She/One can*
Nous pouvons	*We can*
Vous pouvez	*You can (for/pl)*
Ils/Elles peuvent	*They can*

Grammar

Aujourd'hui	*Today*
Demain (soir)	*Tomorrow (night)*
Ce matin / ce soir	*This morning/evening*
Cet après-midi	*This afternoon*
La semaine prochaine	*Next week*

⭐ **S'il fait beau**
If the weather's nice

⭐ **S'il fait mauvais**
If the weather's bad

⭐ **Si j'ai assez d'argent** *If I have enough money*

Ça va être...
It's going to be

cool / génial / sympa
cool / great / nice

Qu'est-ce qu'on va faire? *What are we going to do?*

Near Future Tense = Aller + infintive (going to do)

Je vais I am going **On va / Nous allons** *We are going* Use the present tense of the verb ALLER from above ↗	**aller** au parc	*to go to the park*
	visiter le musée	*to visit the museum*
	manger au resto	*to eat at a restaurant*
	acheter un jeu vidéo	*to buy a videogame*
	voir un spectacle	*to see a show*
	faire les magasins	*to go shopping*
	prendre le bus	*to take the bus*

French

Qu'est-ce que tu as fait le week-end dernier? ***What did you do last weekend?***	**J'ai / Nous avons…** ***I / We…***	…passé (le week-end) *…spent (the weekend)*	…participé à une competition *…took part in a competition*	fait du vélo *…went cycling*
	…joué au tennis *…played tennis*	…fêté (mon anniv) *…celebrated my birthday*	*…regardé un match / film* *…watched a match / a film*	fait de la natation *…went swimming*

Hier *Yesterday*
Avant-hier *The day before yesterday*
Le week-end dernier *Last weekend*
La semaine dernière *Last week*
Il y a deux semaines *Two weeks ago*
D'abord / Enfin *Firstly / Finally*
Ensuite / puis *Next / then*
Après *After*
Plus tard *Later*
⭐ Après avoir (mangé) *After having (eaten)*
⭐ Avant de (partir) *Before (leaving)*

The Past: The Perfect Tense with Avoir

We use the perfect tense to say what we did or have done in the past. To form it you need 2 parts:
PART 1: Avoir (the verb to have) **+ PART 2:** Past participle (e.g. visited/done/eaten)

PART 1: Avoir = *To have*			**PART 2: The Past participle**							
			ER verbs +é		**IR verbs +i**		**RE verbs +u**		**Irregulars**	
J'**ai**	*I have*	+	visité	*visited*	fini	*finished*	perdu	*lost*	fait	*did*
Tu **as**	*You have*		regardé	*watched*	vomi	*vomited*	attendu	*waited*	pris	*took*
Il / Elle/ On **a**	*He / She has*		écouté	*listened*	dormi	*slept*	vendu	*sold*	bu	*drank*
Nous **avons**	*We have*		mangé	*ate /eaten*					vu	*saw*
Vous **avez**	*You all have*		acheté	*bought*					lu	*read*
Ils / Elles **ont**	*They have*									

Je suis allé(e) … ***I went…***
Nous sommes allé(e) … ***I went…***
au parc / **au** stade *…to the parc / stadium*
à la piscine *…to the pool*
aux magasins *…to the shops*

The Past: The Perfect Tense with Être

Some specific 'special' verbs take **Être (To be)** instead of Avoir…
Être verbs agree with the subject! If it's feminine, add an '**e**'. If it's plural, add an '**s**'

PART 1: Être = *To be*	
Je **suis**	*I am*
Tu **es**	*You are*
Il / Elle **est**	*He/She is*
Nous **sommes**	*We are*
Vous **êtes**	*You lot are*
Ils / Elles **sont**	*They are*

	PART 2: The Past participle (+e) (+s)			
+	allé(e)(s)	*went*	sorti(e)(s)	*went out*
	resté(e)(s)	*stayed*	parti(e)(s)	*left*
	arrivé(e)(s)	*arrived*	venu(e)(s)	*came*
	retourné(e)(s)	*returned*	revenu(e)(s)	*came back*
	rentré(e)(s)	*went back (home)*	devenu(e)(s)	*became*

Grammar

AQA French 90 Word Paper 4 Writing Mat

Score 5 ingredients...

- ✓ **ALL** bullet points of task covered
- ✓ At least 2 opinions with a reason
- ✓ Past tense used
- ✓ Present tense used
- ✓ Future tense used
- ✓ Talk about self and at least 1 other person
- ✓ Connective used
- ✓ Adjective used
- ✓ DIFFERENT adjective to last used
- ✓ Adverb used
- ✓ Intensifier used
- ✓ Interesting vocabulary used

Some Score 8 ingredients...

- ✓ Comparative used
- ✓ Conditional tense used
- ✓ An idiom used

Opinions

j'aime bien - I like
j'aime beaucoup - I like a lot
j'aime assez - I quite like
je n'aime pas beaucoup - I don't much like
je n'aime pas tellement - I don't really like
je n'aime pas trop - I don't really like too much
je n'aime pas du tout - I don't like at all
je déteste - I hate

Ça me plaît beaucoup - I like it a lot
Ça me plaît de m'amuser - I like having fun
Ça me plaît de sortir - I like going out
Ça me plaît de faire ... - I like doing/going ...
Ça me plaît d'aller ... - I like going

chouette	*great*
affreux (euse)	*horrible*
ennuyeux (euse)	*boring*
agréable	*pleasant*
amusant (e)	*funny*
nul (le)	*rubbish*
dégoûtant (e)	*disgusting*
pratique	*practical*
dangereux (euse)	*dangerous*
parfait (e)	*perfect*
mauvais (e)	*bad*
passionnant (e)	*fascinating*

bête	*silly*
sympa	*nice*
une perte de temps	*waste of time*
laid (e)	*ugly*
fabuleux (euse)	*fabulous*
impoli (e)	*rude*
désastreux (euse)	*desastrous*
casse-pieds	*annoying*
pas mal	*not bad*
rien de spécial	*nothing special*
ordinaire	*ordinary*
effrayant (e)	*scary*

Linking words...

et	*and*
mais	*but*
quand	*when*
ou	*or*
qui	*who,which*
parce que/ car	*because*
puisque	*as,since*
cependant	*however*
néanmoins	*nevertheless*
puis	*then*
si	*if*
donc	*therefore*
où	*where*
par conséquent	*as a result*
alors	*then/ so /at that time*
tandis que	*whereas*
par contre	*on the other hand*

Intensifiers...

vraiment	*really*	**tout à fait**	*completely*
trop	*too*	**un peu**	*a bit*
incroyablement	*unbelievably*		
très	*very*		
assez	*quite*		

Comparatives...

plus ...que - *more ...than*
je suis plus grand(e) que toi - *I am bigger than you*
moins ...que - *less ... than*
elle est moins grande que moi - *she is less tall than me*

BUT *good* = **bon** *better*= ***meilleur(e)***
bad = **mauvais(e)** *worse*= **pire**

Adverbs...

malheureusement	*unfortunately*
heureusement	*fortunately*
d'abord	*firstly*
normalement	*normally*
généralement	*generally*
de temps en temps	*from time to time*
souvent	*often*
finalement	*finally*

Giving reasons for opinions...

selon...	- according to ..
je pense que	- I think that
je trouve que	- I think that
je crois que	- I believe that
j'estime que	- I reckon that
a mon avis	- in my opinion
c'est	- it is
ce n'est pas	- it isn't (it is not)
ça peut être	- it can be
il/elle peut être	- he/she can be
je peux être	- I can be

Idioms...

c'est dommage que	- it's a shame that
quand je m'ennuie	- when I'm bored
j'en ai marre	- I'm fed up
j'en ai marre de travailler	- I'm fed up of working
ça vaut le peine (worth the effort)	- it's worth it
une perte de temps	- a waste of time
une perte d'argent	- a waste of money
tant pis !	- too bad !
ça m'est égal	- I don't mind

Conditional...

Je voudrais	I would like
Ce serait	It would be
On pourrait + infinitive	We could..
On devrait + infinitive	We should

Content

- ❑ Cover **ALL** aspects of the task!
- ❑ Opinions
- ❑ A lot of information

Response

- ❑ Variety of *appropriate* vocab (is it relevant?)
- ❑ Complexity
- ❑ Three time frames
- ❑ Clear message
- ❑ Does it fit the task?

French

Don't forget to refer to THREE time frames...

Present

Time phrases...

normalement - normally
quelquefois - sometimes
parfois - sometimes
d'habitude - usually
de temps en temps - from time to time
tous les jours - every day
toujours - always
souvent - often
en général - in general
généralement - for the most part
la plupart du temps - most of the time
maintenant - now

I		HE/SHE/WE
Je vais	I go	Il/elle/on va
Je fais	I do/make	Il/elle/on fait
Je joue	I play	Il/elle/on joue
Je travaille	I work	Il/elle/on travaille
Je mange	I eat	Il/elle/on mange
Je bois	I drink	Il/elle/on boit
Je finis	I finish	Il/elle/on finit
Je prends	I take	Il/elle/on prend
Je voyage	I travel	Il/elle/on voyage
Je sors	I go out	Il/elle/on sort
Je dors	I sleep	Il/elle/on dort
Je parle	I talk	Il/elle/on parle
Je peux	I can	Il/elle/on peut
Je lis	I read	Il/elle/on lit

Score 5 Checklist:

- ✓ *ALL bullet points of task covered*
- ✓ *At least 2 opinions with a reason*
- ✓ *Past tense used*
- ✓ *Present tense used*
- ✓ *Future tense used*
- ✓ *Talk about self and at least 1 other person*
- ✓ *Connective used*
- ✓ *Adjective used*
- ✓ *DIFFERENT adjective to last used*
- ✓ *Adverb used*
- ✓ *Intensifier used*
- ✓ *Interesting vocabulary used*

Past

Time phrases...

l'année dernière - last year
récemment - recently
l'autre jour - the other day
la semaine dernière - last week
hier – yesterday
L'été dernier – last Summer
le weekend dernier - last weekend
il y a deux ans - ... 2 years ago
Il y a une semaine – a week ago
Pendant les grandes vacances – in the Summer holidays

I		HE/SHE/WE
Je suis allé(e)	I went	Il/elle/on est allé(e)
J'ai fait	I did	Il/elle/on a fait
J'ai joué	I played	Il/elle/on a joué
J'ai travaillé	I worked	Il/elle/on a travaillé
J'ai mangé	I ate	Il/elle/on a mangé
J'ai bu	I drank	Il/elle/on a bu
J'ai fini	I finished	Il/elle/on a fini
J'ai pris	I took	Il/elle/on a pris
J'ai voyagé	I travelled	Il/elle/on a voyagé
Je suis sorti(e)	I went out	Il/elle/on est sorti(e)
J'ai dormi	I slept	Il/elle/on a dormi
J'ai parlé	I talked	Il/elle/on a parlé
J'ai pu	I was able	Il/elle/on a pu
J'ai lu	I read	Il/elle/on a lu

Opinions - past tense

j'ai bien aimé - I liked
j'ai beaucoup aimé - I really liked
je n'ai pas beaucoup aimé - I didn't really like
j'ai détesté - I hated
ça m'a beaucoup plu - I really liked it

Giving reasons - past tense

j'ai pensé que - I thought that
j'ai trouvé que - I thought that
j'étais de l'opinion que - I was of the opinion that
j'étais d'accord que - I agreed that
je n'étais pas d'accord que - I didn't agree that
c'était - it was
ce n'était pas - it wasn't

Future

Time phrases...

demain - tomorrow
la semaine prochaine - next week
le weekend prochain - next weekend
l'année prochaine - next year
après les examens - after exams
après avoir quitté le collège - after leaving school
à l'avenir - in the future
dans mes rêves - in my dreams
l'été prochain - next Summer

Points to note:

- content
- quality
- needs detail
- opinions
- complexity
- time frames.

I		HE/SHE/WE
Je vais aller	I will go	Il/elle/on va aller
Je vais faire	I will do/make	Il/elle/on va faire
Je vais jouer	I will play	Il/elle/on va jouer
Je vais travailler	I will work	Il/elle/on va travailler
Je vais manger	I will eat	Il/elle/on va manger
Je vais boire	I will drink	Il/elle/on va boire
Je vais finir	I will finish	Il/elle/on va finir
Je vais prendre	I will take	Il/elle/on va prendre
Je vais voyager	I will travel	Il/elle/on va voyager
Je vais sortir	I will go out	Il/elle/on va sortir
Je vais dormir	I will sleep	Il/elle/on va dormir
Je vais parler	I will talk	Il/elle/on va parler
Je vais pouvoir	I will be able	Il/elle/on va pouvoir
Je vais lire	I will read	Il/elle/on va lire

Giving reasons - future/conditional

ce sera - it will be
ce serait - it would be

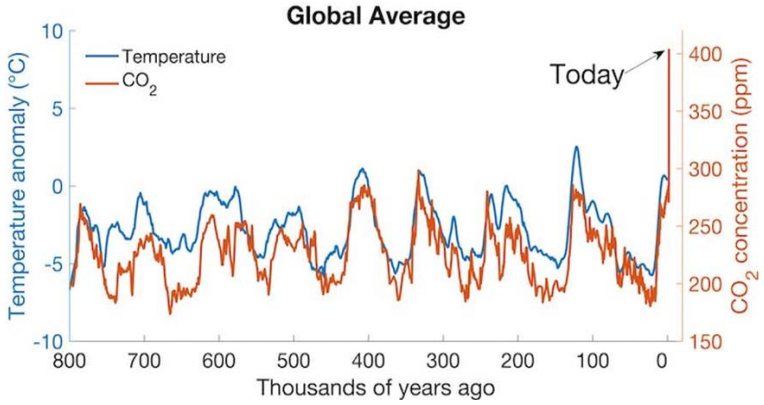
Future tense expressions :

Quand je serai grand(e) - When I'm older
J'ai l'intention de + infinitive - I intend to
Je rêve de + infinitive - I dream of

Geography

1. LONG TERM CLIMATE CHANGE

How have global temperatures changed over the past 800,000 years? More specifically.....	The earth's climate has fluctuated with periods of warm weather and periods of colder weather. 300,000 years ago, average global temperatures were 4°C warmer than today, whereas approximately 420,000 years ago, average global temperatures were 9°C colder than today.
Historical Records show ...	that temperature changes have resulted in periods of history where the earth was colder than today (**glacials**) and warmer than today (**interglacials**). During the Little Ice Age, Napoleon's army froze to death.
Paintings show ...	Paintings from 1677 show that the Thames was previously frozen over!
Geological Time Scale	A calendar of rocks through time. It can be used to identify time periods or climate patterns from a rock or fossils.



2. RECENT CLIMATE CHANGE

How has global temperature changed since 1860? More specifically ...	More recently the earth's temperature has shown a rapidly warming trend, with average temperatures continuing to grow. In 1883, the average temperature was 13.5°C, whereas in 1960 the average temperature had risen to 14.0°C. By 1985, the average temperature had risen to almost 14.4°C.
Thermometer Records show ...	• Average global temperatures have risen by 0.8°C in the last 100 years. • Most of the warming has occurred recently. • In the last 35 years, average temperatures have risen by 0.5°C.
Satellite Images	Arctic ice cover has decreased since the 1970s. It has reduced by approximately 4% and has halved in thickness in many places.
Sea level rise	Rises in temperature and melting ice caps has resulted in a rise in sea levels.

3. NATURAL CAUSES OF CLIMATE CHANGE

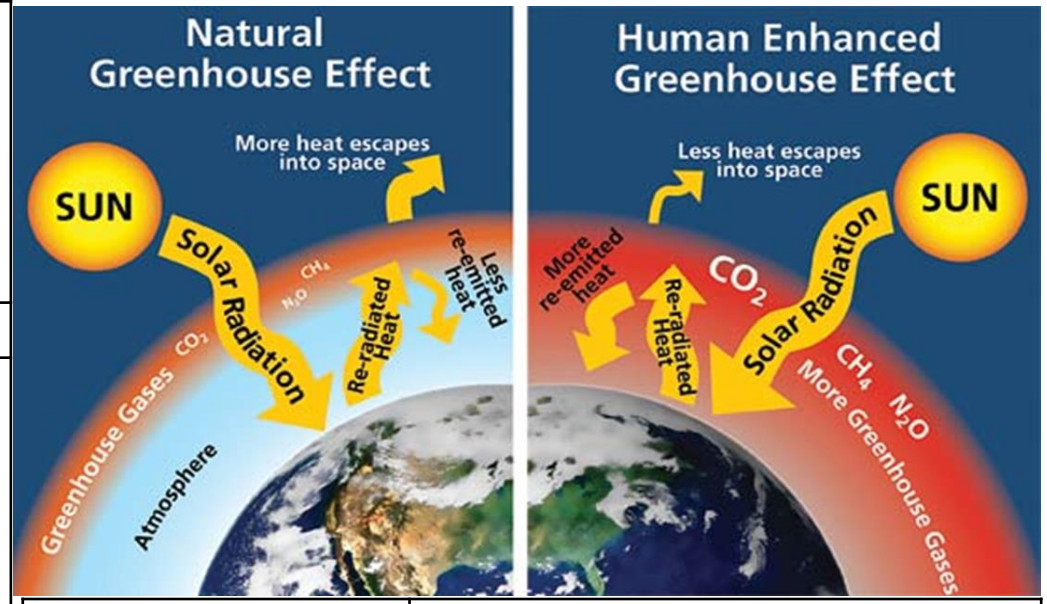
Solar Output	A sunspot is dark patch on the sun that appears from time to time. Every 11 years the number of sunspots changes from very few, to lots, to very few again. Lots of sunspots = warmer. Very few sunspots = cooler.
Volcanic Activity	Eruptions blast lots of ash, gases (e.g. sulphur dioxide) and liquids into the atmosphere. Major volcanic eruptions lead to a brief period of global cooling. This is due to the ash, gases and liquids can block out the sun's rays, reducing the temperature.
Orbital Change	Refers to changes in how the earth moves round the sun. It affects how close the earth is to the sun and therefore how much energy we get from the sun. When the earth is very close to the sun, it is warmer. When the earth is further away from the sun, it is cooler.

Geography

4. HUMAN CAUSES OF CLIMATE CHANGE

Enhanced Greenhouse Effect	A) Humans produce excess greenhouse gases, which create a thick blanket around the earth. B) Sunlight travels to earth as shortwave radiation. C) Sunlight bounces off the earth's surface as long-wave radiation. This reflected sunlight is trapped in the earth's atmosphere by the greenhouse gases = earth heats up. A) Some heat does manage to escape.
How does human activity cause greenhouse gases?	
Methane Humans are to blame because …	Cows produce a methane when they fart, belch & poo. Methane is a GHG that traps longwave radiation in the earth's atmosphere. The world's population is rising & countries are becoming more developed = there are more people and more families that have money to spend on food (e.g. meat) = rising demand for meat = more animals farmed = more methane produced.
Carbon Dioxide CO_2 Humans are to blame because …	CO_2 is the GHG that people are most worried about. CO_2 adding to the atmosphere fastest. ➢ Fossil fuels (coal, gas, oil) are burnt to make energy = carbon dioxide is released into the atmosphere. ➢ Humans drive cars & use freight ships, which release CO_2, nitrous oxide & methane into the atmosphere. Rising population & more developed countries = increased demand for electricity = more CO_2 produced.

5. GREENHOUSE EFFECT



6. EFFECTS OF CLIMATE CHANGE

Sea level rise due to expansion & melting ice caps -floods low lying countries (Bangladesh). 80% of people at risk of river flooding live in developing countries.

Extreme weather (hurricanes). In 2017 there were 83 storms and 42 hurricanes. This was above average. Climate change will result in more hurricanes in the future.

Pests & diseases: an increase of 2°C will mean more pests = more crops will die.

Habitats will be lost due to extreme weather caused by climate change

7. MITIGATION OF CLIMATE CHANGE

International Agreements – Many governments around the world meet to discuss climate change and how they can work together to reduce global carbon emissions. I*n 2016 world leaders met at the Paris Climate Summit - 196 countries signed a climate agreement.*

Create more National Parks – plants sequester carbon dioxide, causing less GHG emissions.

Generating energy from natural renewable sources (solar panels, hydro-electric power, wind turbines). They don't produce GHG when generating energy.

History

1. Historical Terms needed throughout the subject

Tier 2	Definition
source	Evidence created at the time of the event being studied
interpretation	An opinion based on evidence written after the event being studied
inference	To make a guess from a source (of evidence)
provenance	Information of who wrote a source and when

2. Key people in the topic


Edward the Confessor - Anglo-Saxon King of England, died Jan 1066


Edith Godwinson - Wife of King Edward and sister of Harold Godwinson


Harold Godwinson - Claimant to the throne, King of England in 1066, died at the Battle of Hastings


Edgar Aethling - Claimant to the throne, nephew of King Edward


Tostig Godwinson - Brother of Harold Godwinson, fought with Harold Hardrada, died at Stamford Bridge


William - Duke of Normandy, claimant to the throne, King of England from Dec 1066


Odo of Bayeux - Brother of William, bishop and tenant-in-chief


Harold Hardrada - Claimant to the throne, King of Norway, invaded England, died at the Battle of Stamford Bridge


The Pope - Head of the Church, supported William

3. Key dates

Jan 1066	King Edward died & Harold becomes king
25th Sept. 1066	The Battle of Stamford Bridge: Anglo-Saxons V. Danes/Vikings. Anglo-Saxons win
14th Oct 1066	Battle of Hastings: Anglo-Saxons V. Normans. Normans win
25th Dec 1066	William became king of England

4. Tier vocabulary that describe key historical concepts

Tier 2	Definition
oath	A special promise made before God
coronation	The ceremony when someone becomes a king/queen
conquer	Taking over an area or country, often by force. To win.
illegitimate	Born outside of marriage.
Tier 3	**Definition**
fyrd	Anglo-Saxon word for army
archers	Soldiers with bows and arrows
cavalry	Soldiers on horseback
feigned Retreat	A group of soldiers pretending to run away
shield Wall	Battle tactics, where soldiers form a line of shields
burh	Anglo-Saxon word for a town
cunning woman	Woman who is a priest and doctor
Earl / lord	Important person who holds a lot of land
Knight	Someone who fights on horseback / holds land from tenant-in-chief/lord
peasant	A poor person who works on the land
pagan	A person that believes in lots of Gods or spirits.
claimant	Someone who wants to be king
heir / Aethling	Next in line to the throne
witan	Council that advised Anglo-Saxon kings

Maths

YEAR 8 - PROPORTIONAL REASONING...

Ratio and Scale

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Simplify any given ratio
- Share an amount in a given ratio
- Solve ratio problems given a part

Solutions should be modelled, explained and solved

Keywords

Ratio: a statement of how two numbers compare
Equal Parts: all parts in the same proportion, or a whole shared equally
Proportion: a statement that links two ratios
Order: to place a number in a determined sequence
Part: a section of a whole
Equivalent: of equal value
Factors: integers that multiply together to get the original value
Scale: the comparison of something drawn to its actual size

Units are important:

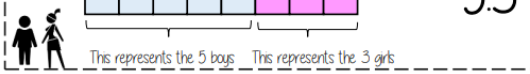
When using a ratio – all parts should be in the same units

Useful Conversions

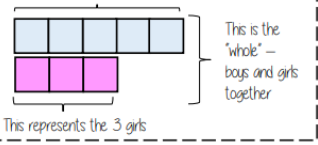
mm ⇄ cm ⇄ m ⇄ km (×10, ×100, ×1000 / ÷10, ÷100, ÷1000)
g ⇄ kg (×1000 / ÷1000)
ml ⇄ L (×1000 / ÷1000)

Representing a ratio

"For every 5 boys there are 3 girls"



5:3



Double Number Line

Order is Important

"For every dog there are 2 cats"

Dogs: Cats

1:2

The ratio has to be written in the same order as the information is given.
e.g. 2:1 would represent 2 dogs for every 1 cat ✕

Simplifying a ratio

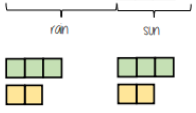
Cancel down the ratio to its lowest form

"For every 6 days of rain there are 4 days of sun"

6:4

÷ by 2

3:2



Find the biggest common factor that goes into all parts of the ratio

For **6** and **4** the biggest factor (number that multiples into them is **2**)

"For every 3 days of rain there are 2 days of sun" – when this happens twice the ratio becomes 6:4

Ratio 1n (or n:1)

This is asking you to cancel down until the part indicated represents 1

Show the ratio 4:20 in the ratio of 1n

The question states that **this part has to be 1** unit. Therefore **Divide by 4**

4 : 20
1 : 5

This side has to be divided by 4 too – to keep in **proportion**

n the n part does not have to be an integer for this type of question

Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4
Work out how much each person earns

Model the Question

James: Lucy
3 : 4

Find the value of one part

Whole: £350
7 parts to share between
(3 James, 4 Lucy)

£350 ÷ 7 = £50

□ - one part
- £50

Put back into the question

James: Lucy
(×50) 3 : 4 (×50)
£150 : £200

James = 3 x £50 = £150
Lucy = 4 x £50 = £200

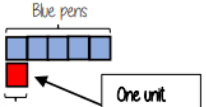
Finding a value given 1n (or n:1)

Inside a box are blue and red pens in the ratio 5:1
If there are 10 red pens how many blue pens are there?

Model the Question

Blue : Red
5 : 1

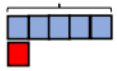
□ - one part
- 10 pens



Put back into the question

Blue : Red
(×10) 5 : 1 (×10)
50 : 10

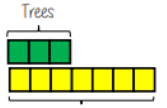
Blue pens = 5 x 10 = 50 pens



There are 50 Blue Pens

Ratio as a fraction

Trees: Flowers
3 : 7



Ratio

There are **3** parts for trees

Fraction of trees

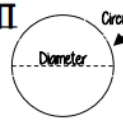
Fraction

Number of parts in group / Total number of parts

3/10

Tree parts **3** + Flower parts **7** = **10**

Pi π



The ratio of a circles circumference to its diameter

Maths

YEAR 8 - PROPORTIONAL REASONING...

Multiplicative Change

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Solve problems and explain direct proportion
- Use conversion graphs to make statements, comparisons and form conclusions
- Understand and use scale factors for length

Keywords

Proportion: a statement that links two ratios
Variable: a part that the value can be changed
Axes: horizontal and vertical lines that a graph is plotted around
Approximation: an estimate for a value
Scale Factor: the multiple that increases/ decreases a shape in size
Currency: the system of money used in a particular country
Conversion: the process of changing one variable to another
Scale: the comparison of something drawn to its actual size

Direct Proportion

As one variable changes the other changes at the same rate

4 cans of pop = £2.40

This is a multiplicative change

4 cans of pop = £2.40 → (x 3) → 12 cans of pop = £7.20

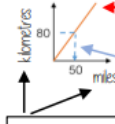
4 cans of pop = £2.40 → (x 0.5) → 2 cans of pop = £1.20

This multiplier is the same in the same way that this would be for ratio

Sometimes this is easiest if you work out how much one unit is worth first
e.g. **1 can of pop = £0.60**

Conversion Graphs

Compare two variables



Labelling of both axes is vital

This is always a straight line because as one variable increases so does the other at the same rate

To make conversions between units you need to find the point to compare – then find the associated point by using your graph
Using a ruler helps for accuracy
Showing your conversion lines help as a "check" for solutions

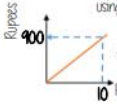
Conversion between currencies

£1 = 90 Rupees ← Currency is directly proportional

For every £1 I have 90 Rupees

£1 - 90 Rupees → (x 10) → £10 - 900 Rupees

Currency can be converted using a conversion graph



Convert 630 Rupees into Pounds

£1 - 90 Rupees → (x 7) → £7 - 630 Rupees

630 ÷ 90 = 7

Ratio between similar shapes

Angles in similar shapes do not change. e.g. if a triangle gets bigger the angles can not go above 180°

The two rectangles are similar.

Corresponding sides

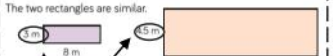
3m : 4.5m → (x 3) → 1m : 1.5m

8m : 12m → (x 8) → 1m : 1.5m

Note: Simplify to the same ratio

Understand Scale Factor

The two rectangles are similar.



3 x 1.5 = 4.5

This is a multiplicative change

Use **corresponding** sides to calculate a scale factor

Missing length
8 x 1.5 = 12m

Scale factor can also be calculated by

Bigger corresponding side
Smaller corresponding side

Small corresponding side → (x SF) → Big corresponding side

Big corresponding side → (÷ SF) → Small corresponding side

Draw and interpret scale diagrams

A picture of a car is drawn with a scale of 1:30

For every 1cm on my image is 30cm in real life

The car image is 10cm

Image: 1cm : 30cm → (x 10) → 10cm : 300cm

The car in real life is 210cm

Image: 1cm : 30cm → (x 7) → 7cm : 210cm

Interpret maps with scale factors

1 cm : 250 m

Ratios need to be in the same units

1 cm : 250m

1 cm : 25000cm

250 x 100 = 25000

For every 1cm on my map is 25000cm in real life

Maths

YEAR 8 - PROPORTIONAL REASONING...

Multiplying and Dividing Fractions

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Carry out any multiplication or division using fractions and integers
- Solutions can be modelled, described and reasoned

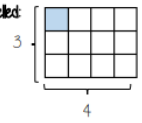
Keywords

Numerator : the number above the line on a fraction. The top number. Represents how many parts are taken
Denominator: the number below the line on a fraction. The number represent the total number of parts.
Whole: a positive number including zero without any decimal or fractional parts
Commutative: an operation is commutative if changing the order does not change the result.
Unit Fraction: a fraction where the numerator is one and denominator a positive integer.
Non-unit Fraction: a fraction where the numerator is larger than one.
Dividend : the amount you want to divide up.
Divisor: the number that divides another number.
Quotient: the answer after we divide one number by another. e.g dividend÷ divisor = quotient
Reciprocal: a pair of numbers that multiply together to give 1

Multiplying unit fractions

$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$ ← Parts shaded; ← Total number of parts in the diagram

Modelled:



Multiplying non-unit fractions

Shade in 3 parts

Repeat it on this many rows

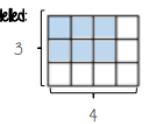
$\frac{3}{4} \times \frac{2}{3}$

This many columns

This many rows

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$ ← Parts shaded; ← Total number of parts in the diagram

Modelled:



Representing a fraction

Numerator
Denominator

$\frac{3}{5}$

Number of parts represented Numerator

Number of parts to make up the whole Denominator

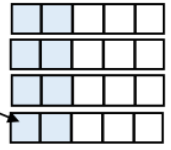
ALL PORTS of a fraction are of equal size

Repeated addition = multiplication by an integer

$4 \times \frac{2}{5} \rightarrow \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$

Integer (Whole number)

Each part represents $\frac{1}{5}$

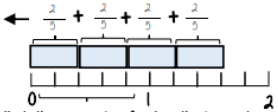


How many parts are shaded?

What each part represents

$= \frac{8}{5} \leftarrow \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$

$= 1\frac{3}{5}$



Each whole is split into the same number of parts as the denominator

Revisit
When adding fractions with the same denominator - add the numerators

Quick Multiplying and Cancelling down

$\frac{1}{\cancel{5}} \times \frac{4}{\cancel{9}\ 3}$

The 3 and the 9 have a common factor and can be simplified

Quick Solving
Multiply the numerators
Multiply the denominators

$\frac{1 \times 4}{5 \times 3} = \frac{4}{15}$

The reciprocal

When you multiply a number by its reciprocal the answer is always 1

$3 \times \frac{1}{3} = 1$

$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$

The reciprocal of 3 is $\frac{1}{3}$ and vice versa

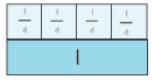
Reciprocals for division

e.g $5 \div \frac{1}{4} = 20$

$5 \times 4 = 20$

Multiplying by a reciprocal gives the same outcome

Dividing an integer by an unit fraction



$1 \div \frac{1}{4} = 4$

How many quarters are in 1?

"There are 4 quarters in 1 whole. Therefore, there are 20 quarters in 5 wholes"

$5 \div \frac{1}{4} = 20$

Dividing any fractions

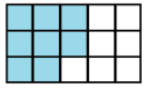
Remember to use reciprocals

$\frac{2}{5} \div \frac{3}{4}$

$\frac{2}{5} \times \frac{4}{3}$

Multiplying by a reciprocal gives the same outcome

Represented



$= \frac{8}{15}$

Maths

YEAR 8 - REPRESENTATIONS...

Working in the Cartesian plane

@whisto_maths

What do I need to be able to do?

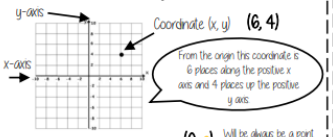
By the end of this unit you should be able to:

- Label and identify lines parallel to the axes
- Recognise and use basic straight lines
- Identify positive and negative gradients
- Link linear graphs to sequences
- Plot y = mx + c graphs

Keywords

Quadrant: four quarters of the coordinate plane
Coordinate: a set of values that show an exact position
Horizontal: a straight line from left to right (parallel to the x axis)
Vertical: a straight line from top to bottom (parallel to the y axis)
Origin: (0,0) on a graph. The point the two axes cross
Parallel: Lines that never meet
Gradient: The steepness of a line
Intercept: Where lines cross

Coordinates in four quadrants



Coordinate (x, y) **(6, 4)**

From the origin this coordinate is 6 places along the positive x axis and 4 places up the positive y axis

(x, y)

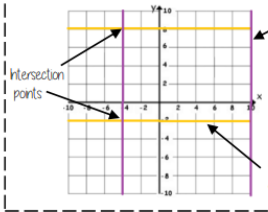
Always the position on the x axis first

Always the position on the y axis second

(0, a) Will be always be a point on the y axis (a can be any number)

(a, 0) Will be always be a point on the x axis (a can be any number)

Lines parallel to the axes



All the points on this line have a x coordinate of 10

'a' can be ANY positive or negative value including 0

Intersection points

Lines parallel to the **y axis** take the form **x = a** and are **vertical**

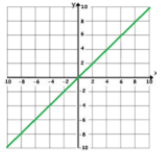
Lines parallel to the **x axis** take the form **y = a** and are **horizontal**

All the points on this line have a y coordinate of -2

e.g (3, -2) (7, -2) (-2, -2) all lay on this line because the y coordinate is -2

Recognise and use the line y=x

This means the x and the y coordinate have the same value

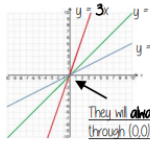


Examples of coordinates on this line (0, 0) (-3, -3) (8, 8)

The axes **scale is important** – if the scale is the same y = x will be a straight line at 45°

Recognise and use the lines y=kx

The value of **k** changes the steepness of the line



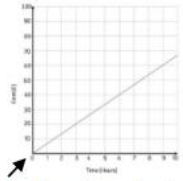
Note: y =x is the same as y= 1x

The bigger the value of k the **steeper** the line will be

They will **always** go through (0,0)

The closer to 0 the value of k the closer the line will be to the x axis

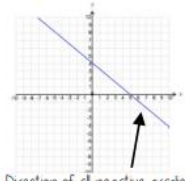
Direct Proportion using y=kx



The line must be straight to be directly proportional – variables increase at the same rate **k**

Direct proportion graphs always start at (0,0) as they are describing relationships between two variables

Lines with negative gradients

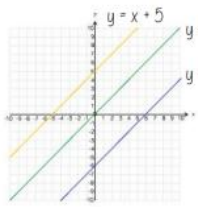


Any straight-line graph with a negative x value has a negative gradient

E.g $y = -2x$ $y = -x$ $y + x = 12$

Direction of all negative gradients

Lines in the form y = x + a



All the lines are **parallel** because the gradients are the same

$y = x + a$

This is the line y=x when the y and x coordinate are the same

This shows the translation of that line

e.g y = x + 5 is the line y=x moved 5 places up the graph

5 has been added to each of the x coordinates

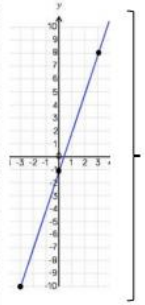
Plotting y = mx + c graphs

$y = 3x - 1$ → 3 x the x coordinate then – 1

x	-3	0	3
y	-10	-1	8

Draw a table to display this information

This represents a coordinate pair (-3, -10)



You only need two points to form a straight line

Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

Maths

YEAR 8 - REPRESENTATIONS...

Representing Data

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Draw and interpret scatter graphs
- Describe correlation and relationships
- Identify different types of non-linear relationships
- Design and complete an ungrouped frequency table
- Read and interpret grouped tables (discrete and continuous data)
- Represent data in two way tables

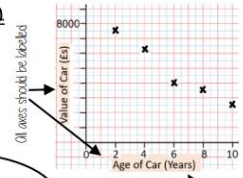
Keywords

Variable: a quantity that may change within the context of the problem
Relationship: the link between two variables (items) E.g. Between sunny days and ice cream sales
Correlation: the mathematical definition for the type of relationship.
Origin: where two axes meet on a graph
Line of best fit: a straight line on a graph that represents the data on a scatter graph
Outlier: a point that lies outside the trend of graph
Quantitative: numerical data
Qualitative: descriptive information, colours, genders, names, emotions etc
Continuous: quantitative data that has an infinite number of possible values within its range.
Discrete: quantitative or qualitative data that only takes certain values.
Frequency: the number of times a particular data value occurs.

Draw and interpret a scatter graph

Age of Car (Years)	2	4	6	8	10
Value of Car (£s)	7500	6250	4000	3500	2500

- This data may not be given in size order
- The data forms information pairs for the scatter graph
- Not all data has a relationship



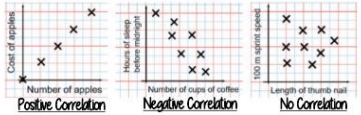
All axes should be labelled

The axis should fit all the values on and be equally spread out

"This scatter graph show as the age of a car increases the value decreases"

The link between the data can be explained verbally

Linear Correlation



Positive Correlation
As one variable increases so does the other variable

Negative Correlation
As one variable increases the other variable decreases

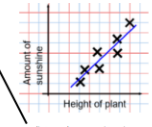
No Correlation
There is no relationship between the two variables

The line of best fit

The Line of best fit is used to make estimates about the information in your scatter graph

Things to know:

- The line of best fit **DOES NOT** need to go through the origin (The point the axes cross)
- There should be approximately the same number of points above and below the line (It may not go through any points)
- The line extends across the whole graph



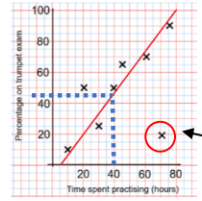
It is only an estimate because the line is designed to be an average representation of the data

It is always a **straight line.**

Using a line of best fit

Interpolation is using the line of best fit to estimate values inside our data point

e.g. 4.0 hours revising predicts a percentage of 45



Extrapolation is where we use our line of best fit to predict information outside of our data
This is not always useful – in this example you cannot score more that 100%. So revising for longer can not be estimated

This point is an "**outlier**"
It is an outlier because it doesn't fit this model and stands apart from the data

Ungrouped Data

The number of times an event happened

The table shows the number of siblings students have. The answers were
3, 1, 2, 2, 0, 3, 4, 1, 1, 2, 0, 2

2 people had 0 siblings. This means there are 0 siblings to be counted here

Number of siblings	Frequency
0	2
1	3
2	4
3	2
4	1

0
3
2 + 2 + 2 + 2 OR 2 x 4 = **8**
3 + 3 OR 3 x 2 = **6**
4

2 people have 3 siblings so there are 6 siblings in total

Best represented by discrete data (Not always a number)

OVERALL there are 0 + 3 + 8 + 6 + 4 Siblings = 21 siblings

Grouped Data

If we have a large spread of data it is better to group it. This is so it is easier to look for a trend. Form groups of equal size to make comparison more valid and spread the groups out from the smallest to the largest value.

Discrete Data
The groups do not overlap

Cost of TV (£)	Tally	Frequency
101 – 150	𝍸 II	7
151 – 200	𝍸 𝍸 I	11
201 – 250	𝍸	5
251 – 300	III	3

We do not know the exact value of each item in a group – so an estimate would be based to calculate the overall total (Midpoint)

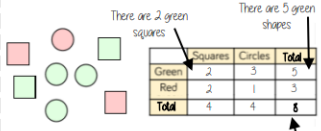
Continuous Data
To make sure all values are included inequalities represent the subgroups

x Weight(g)	Frequency
40 < x ≤ 50	1
50 < x ≤ 60	3
60 < x ≤ 70	5

e.g. this group includes every weight bigger that 60Kg, up to and including 70Kg

Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability or find totals of sub groups



	Squares	Circles	Total
Green	2	3	5
Red	2	1	3
Total	4	4	8

There are 8 items in total

Using your two-way table

To find a fraction
e.g. What fraction of the items are red? **3 red items** but **8 items in total** = $\frac{3}{8}$

Interleaving Use your fraction, decimal percentage equivalence knowledge

Maths

YEAR 8 - REPRESENTATIONS...

Tables and Probability

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Construct a sample space diagram
- Systematically list outcomes
- Find the probability from two-way tables
- Find the probability from Venn diagrams

Keywords

Outcomes: the result of an event that depends on probability
Probability: the chance that something will happen
Set: a collection of objects
Chance: the likelihood of a particular outcome
Event: the outcome of a probability – a set of possible outcomes
Biased: a built in error that makes all values wrong by a certain amount
Union Notation '∪' meaning the set made by comparing the elements of two sets

Probability from two-way tables

	Car	Bus	Walk	Total
Boys	15	24	14	53
Girls	6	20	21	47
Total	21	44	35	100

P (Girl walk to school) = $\frac{21}{100}$

The event

The total in the set

The total number of items

Product Rule

The number of items in event a **x** The number of items in event b

Construct sample space diagrams

Sample space diagrams provide a systematic way to display outcomes from events

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

This is the set notation to list the outcomes **S =**

S = { 1H, 2H, 3H, 4H, 5H, 6H, 1T, 2T, 3T, 4T, 5T, 6T}

In between the **{ }** are a, the possible outcomes

Probability from sample space

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

What is the probability that an outcome has an even number and a tails?

This is the set notation that represents the question **P**

P (Even number and Tails) = $\frac{3}{12}$

There are three even numbers with tails

There are twelve possible outcomes

In between the **( )** is the event asked for

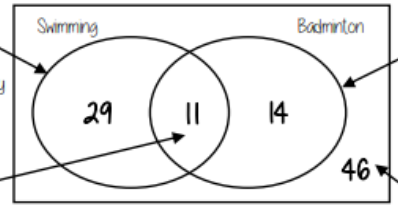
Numerator: the event

Denominator: the total number of outcomes

Probability from Venn diagrams

100 students were questioned if they played badminton or went to swimming club
40 went swimming, 25 went to badminton and 11 went to both

This whole curve includes everyone that went swimming. Because 11 did both we calculate **just** swimming by 40 - 11



This whole curve includes everyone that went to badminton. Because 11 did both we calculate **just** badminton by 25 - 11

The intersection represents both Swimming **AND** badminton

The number outside represents those that did **neither** badminton or swimming 100 – 29 – 11 – 14

P (Just swimming) = $\frac{29}{100}$

Music

The origin of the Blues

Students learn how the **blues** grew from **African-American work songs** and **spirituals** in the late **1800s**.

It emerged out of **slavery** and the oppression of the '**company store**' creating a **hauntingly beautiful** mixture of **sad** and **happy** tones with a **West African scale** and its the famous **'blue'** note.

9 Key Words

12-bar blues – The **structure** of the blues.
I–IV–V – Main three **chords** in the blues.
Blues scale – Five note scale + **'blue'** note.
Shuffle / swing – Heartbeat like **rhythm**.
Walking bass – Steady stepping bass line.
Turn-around – Lick in bar 12 to restart.
Riff – Short, catchy repeated phrase.
Call-and-response – Musical question & answer pattern.
Improvisation – Making up solos live.

(Picture: **Sister Rosetta Tharpe**)

Influence of the 12-Bar Blues

Most blues follows a **12-bar** chord pattern using the **I, IV, V** chords (e.g. **C – F – G**). Players **loop** this pattern, adding **turn-arounds** in bar **12** to restart it.

Its distinctive **structure** and authentic **emotive story-telling** style has shaped **jazz, rock, funk, soul, RnB** and today's **pop** music.

Improvisation

Students learn how to play **spontaneous blues melodies**, which is a large and **expressive part** of the genre. Solo improvisation practises the ability to **create emotive phrasing** and tunes.

Call and Response

A **conversational** music **tradition** from the **work-song** days of the blues, **Call and Response** has two musicians who **'talk'** to each other **through** their **instruments**.

Blues styles

1920s Delta Blues – Raw, acoustic Mississippi sound packed with emotion; **Robert Johnson** "Cross Road Blues" (1936).
1940s–50s Chicago Blues – Southern migrants electrify the blues for noisy clubs.
Muddy Waters "Hoochie Coochie Man" (1954).
1950s–60s Electric Blues – **B.B. King**'s searing guitar leads in "The thrill is gone" (1969).
1950s–60s Rhythm & Blues (R&B) – Blues meets gospel and jazz with a danceable back-beat; Ray Charles "What'd I Say" (1959).
1960s Blues-Rock – Loud riffs fuse blues roots with rock power; Led Zeppelin

Shuffle & Swing

Blues rhythm often splits the beat into **triplet feel** – "**shuffling**" between a pair or **one long** and **one short** note. This **swing rhythm** gives the music its **laid-back**, 'heartbeat' like groove.

Walking Bass & Riffs

A walking bass line 'walks' **steadily**, joining the chords together, glueing the whole sound into one **smooth vibe**. **Guitarists/pianists** layer catchy **riffs** over it to fill space between vocal phrases.

The Blues

Music

Students learn about musical patterns from 1600 onwards

Baroque: c. 1600 – 1750

Bach – "Toccata & Fugue in D minor"
Dramatic **three-note organ** motif repeats like a modern guitar riff.

Classical: c. 1750 – 1820

Beethoven – Symphony No. 5
Four-note "**da-da-da-DUM**" drives an entire movement. This shows how a tiny rhythmic **motif** can power a **composition**.

Key words

Motif – short, easily recognised idea.
Crescendo – gradual loudness build.
Minimalism – built on repeating riffs.
Synthesizer – electronic keyboard.

Romantic c.1820-1910

Grieg – 'In the Hall of the Mountain King' (1875) Creeping two-bar riff repeats while **tempo** and **dynamics** increase. Builds the **tension** by **layering – a technique** that inspired later video game music.

Tchaikovsky – '1812 Overture'
Bass-drum motif plus real **cannon blasts**: **theatrically dramatic** orchestration long before **stadium rock.** Used in fireworks displays to this day.

Modern 1910 - 1950

Holst – "Mars" (The Planets)
Relentless **5/4 ostinato** under **dissonant** chords paints **war**. Inspired blockbuster scores from ***Star Wars*** to ***Gladiator***.

Orff -"O Fortuna" (Carmina Burana 1936)
Chant-like **minor**-chord **riff** with huge dynamic swings. Classic choice for epic movies and TV programs.

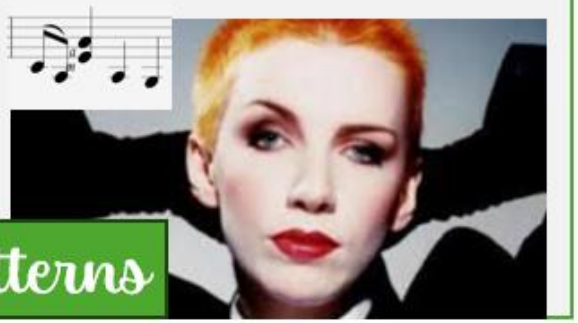
Film and TV 1950 - 1990

Henry Mancini – "Peter Gunn Theme"
Driving bass-**guitar** riff mixed **jazz** instrumentation with **rock**. Inspired themes for spy and detective-shows.

John Williams – "Imperial March"
This menacing 3 note **minor** riff **foreshadows Darth Vader -** A simple, **memorable motif** of a movie franchise.

Synth-Pop 1978 - 1990

Harold Faltermeyer – "Axel F" Very **catchy 3**-note synth **hook** with a **drum machine** gave a classic **1980s** soundtrack riff. Highly **memorable** riffs like this helped push **synths** and **sequencers** into **mainstream** film scores.

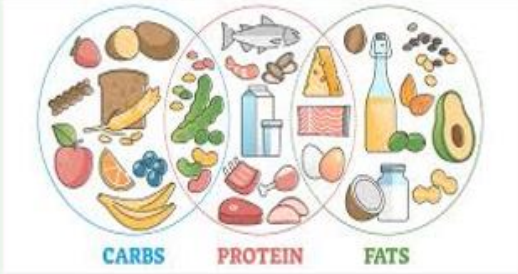


History of Repeated musical patterns

PE

Year 8 Physical Education Term 1

1 **Macronutrients:**
The three main macronutrients are carbohydrates, proteins, and fats. They provide energy for exercise and are essential for growth, repair, and overall health.



2 **Micronutrients**:
These include **vitamins (e.g., A, C, D)** and **minerals (e.g., calcium, iron)**. They support **immune function, bone health**, and help the body convert food into energy.

3 **Balanced Diet**:
A diet that includes the **correct proportions** of all essential nutrients. This helps maintain **energy levels**, supports growth and development, and prevents illness.

4 **Carbohydrates**:
The body's **preferred energy source**, especially during high-intensity exercise. Found in foods like **rice, pasta, bread, and cereals**. Essential for fuelling muscles.

5 **Proteins**:
Needed for **muscle growth, repair**, and recovery after exercise. Found in foods like **meat, fish, eggs, dairy, and legumes**. Important for athletes to support training.

6 **Fats**:
Provide a **concentrated source of energy** and help the body absorb fat-soluble vitamins (A, D, E, K). Important for **hormone production** and healthy cell membranes.

Healthy Eating

PE

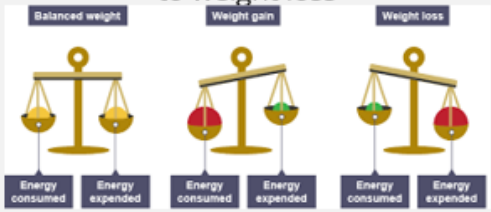
Year 8 Physical Education Term 1

7

Hydration:
Water is essential for **regulating body temperature**, transporting nutrients, and removing waste. Dehydration can reduce performance and lead to heat-related illnesses.

8

Energy Balance:
The relationship between the **calories consumed** (diet) and **calories used** (exercise). Positive balance (more calories in than out) can lead to weight gain; negative balance (more out than in) can lead to weight loss



9

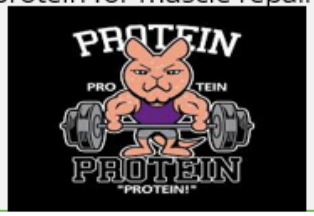
Obesity Risks:
Consistently eating more calories than the body uses can lead to **obesity**, increasing risks of diseases like **type 2 diabetes, heart disease, and some cancers**.

10

Under-eating Risks:
Not eating enough can lead to **fatigue, muscle loss, decreased immune function**, and poor performance in physical activity.

11

Diet for Exercise:
Athletes need to match their diet to their sport. For example, **endurance athletes** need more carbohydrates for energy, while **strength athletes** need more protein for muscle repair.



12

Recovery Nutrition:
After exercise, eating a combination of **carbohydrates** (to refill energy stores) and **proteins** (to repair muscles) helps the body recover quickly and prepare for the next session.

Healthy Eating

Science

Keywords

Hazard	Anything that has the potential to cause harm or damage
Risk	The harm or damage that could be caused by a hazard
Accuracy	The closeness of a measurement to its true value
Precision	How close measurements are to each other
Reliable	Similar data can be reproduced under same conditions

Scientific Method

Hypothesis: What you predict will happen, based on prior knowledge e.g. As X increases, Y will increase because…….

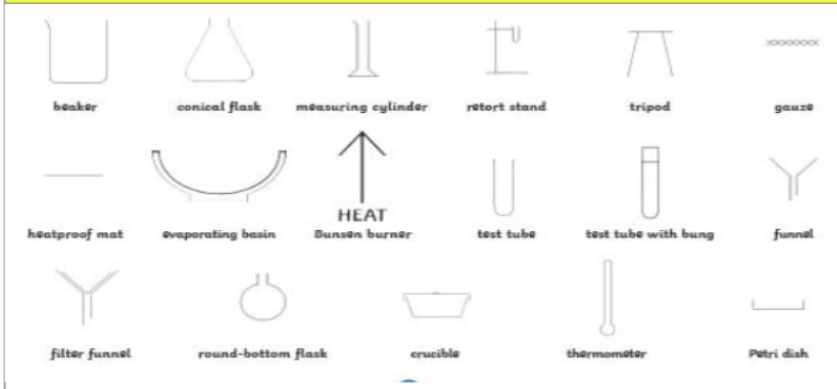
Independent Variable: The thing that is being changed
Dependent Variable: The thing that is being observed/measured
Control Variables: All the things that are being kept the same e.g. volume, concentration, mass, time

Method: Step by step instructions of how to change the independent variable, measure the dependent variable, control all other variables, repeat measurements, perform calculations on collected data

Conclusion: What have you found out? Was your hypothesis correct? Does your data support your hypothesis? Explain the results using scientific knowledge

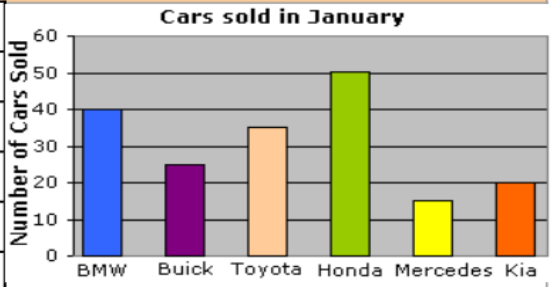
Evaluation: How reliable is your data (could someone follow your method and collect a similar set of results)? Are their anomalies? How could you make it more reliable?

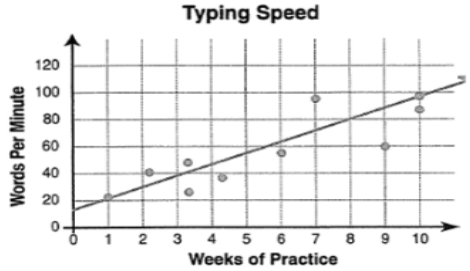
Drawing Scientific Diagrams



Presenting Data in a Graph

S	Scale
P	Pencil & ruler
A	Axis
T	Title
U	Units
L	Line of best fit if appropriate
A	Accuracy





Bar Graph:
Categoric/Discrete data

Line Graph:
Continuous data

Science Skills

Science

Keywords

Displacement	Distance moved in a given direction.
Linear relationship	When two variables are graphed and show a straight line which goes through the origin, and they can be called directly proportional.
Newton	Unit for measuring forces (N).
Resultant force	A single force that has the same effect as all the forces acting on the object.
Friction	The force opposing the relative motion of two solid surfaces in contact.
Tension	Force extending or pulling apart.
Contact force	One that acts by direct contact.

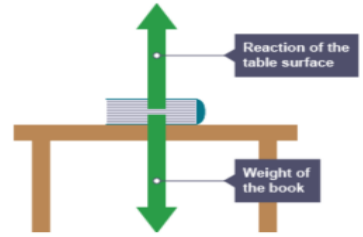
Isaac Newton's Laws of Motion

Newton's First Law
If the resultant force on an object is zero, the object stays at rest if it is stationary, or it keeps moving with the same speed in the same direction.

Newton's Second Law
F=ma
Where F = unbalanced force (N), m = mass (kg) & a = acceleration (m/s^2)

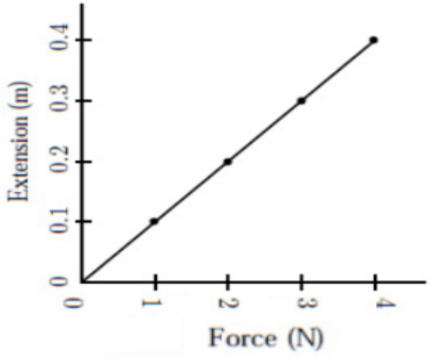
Newton's Third Law

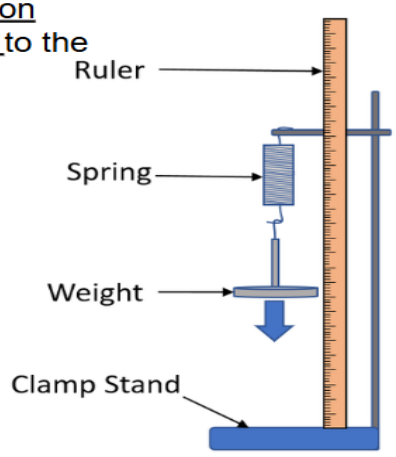
When two objects interact with each other, they exert equal and opposite forces on each other.



Hooke's Law

Hooke's law says that the extension of a spring is directly proportional to the force on the spring.

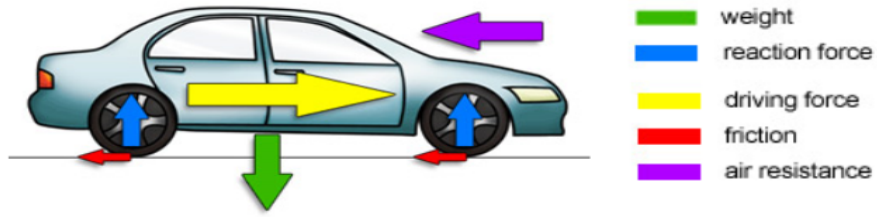




Contact Forces

Drawing Force Diagrams

You can use arrows to show the size and direction of a force.
Example:



Science

Keywords

Fluid	A substance that can flow, a gas or a liquid.
Pressure	The effect of a force on the surface of a solid object or the container for a fluid
Upthrust	The upward force that a liquid or gas exerts on a body floating in it.
Atmospheric pressure	The pressure caused by the weight of the air above a surface.
Area	The area of a shape is a measure of the two dimensional space that it covers. A shape's area can be measured in square centimeters, square metres or square kilometres

Pressure

Floating and sinking

An object will float if weight is equal to the upthrust.

How to work out if an object will sink or float:
1. Measure the mass of an object.
2: Work out the weight (weight = mass x gravitational field strength (10))
3. Submerge the object in water and work out how much water was displaced. (water level in the cylinder after - water level before)
4. Work out the mass of displaced water. Water has a mass of 0.001kg per $1cm^3$. So your answer will be:
Mass of water displaced (step 3) x 0.001 = _____
5. Work out the weight of water displaced (answer to step 4 x 10).
6. The weight of the displaced water is equal to the upthrust, You can now compare the weight of the object and the upthrust to judge whether it will float or sink.

Calculating pressure

$$\text{Pressure (Pa)} = \frac{\text{Force (N)}}{\text{Area } (m^2)}$$

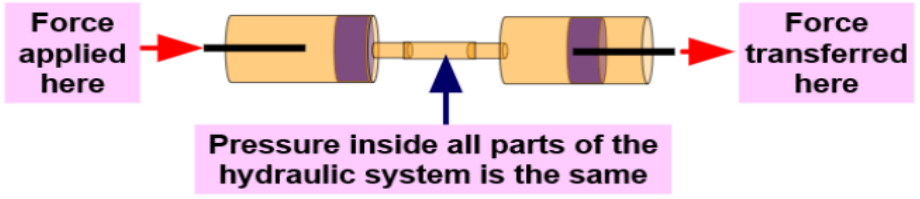
If the force is in N and the area is in m^2, the unit for pressure is Pa.
However, if the force is in N and the area is in cm^2, the unit for pressure is N/cm^2.

Worked example:
An elephant that weighs 40,000N stands on one leg during a circus performance. The area on the bottom of the elephant's foot is $0.4m^2$.

$$\text{Pressure} = \frac{\text{Force}}{\text{Area}} = \frac{40{,}000\ N}{0.4\ cm^2} = 100{,}000\ Pa$$

Hydraulic systems

Hydraulic systems use the principle that pressure is transmitted throughout a liquid.
They are used to transfer movement from one part of a machine to another without linking the parts mechanically.
All hydraulic systems use two pistons linked via a pipe carrying a special oil called hydraulic fluid.
The piston where the force is applied is called the master piston, and the piston where the force is transferred is called the slave piston.

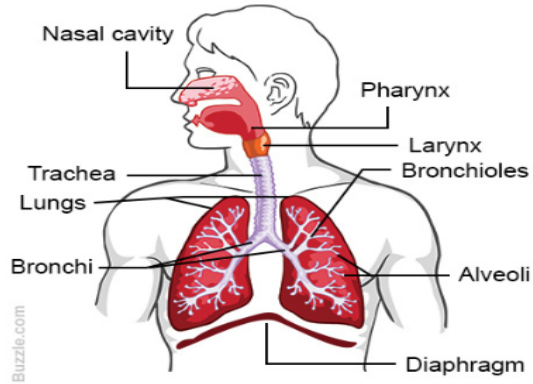


Science

Keywords

Breathing	The inflation and deflation of the lungs by the contraction of the diaphragm and intercostal muscles.
Lung volume	Measure of the amount of air breathed in or out.
Respiration	Reaction which release energy from glucose.
Gas exchange	Process involving gases moving in and out of our blood.
Aerobic respiration	Breaking down glucose with oxygen to release energy and producing carbon dioxide and water.
Anaerobic respiration	Releasing energy from the breakdown of glucose without oxygen, producing lactic acid (in animals).
Fermentation	Yeast anaerobically respiring to produce ethanol and carbon dioxide.

Structure of the Lungs



Trachea - Carries air from the mouth and nose to the lungs.
Bronchi - Two tubes which carry air to the lungs.
Bronchioles - Small tubes in the lung.
Alveoli - Small air sacs found at the end of each bronchiole.
Diaphragm - A sheet of muscle found underneath the lungs.

Breathing & Respiration

Respiration

Aerobic respiration in animals:

Glucose + oxygen → carbon dioxide + water

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

Anaerobic respiration in animals:

Glucose → lactic acid

$C_6H_{12}O_6 \rightarrow 2C_3H_6O_3$

A poisonous waste product called lactic acid is produced, which can be removed by reacting it with oxygen:

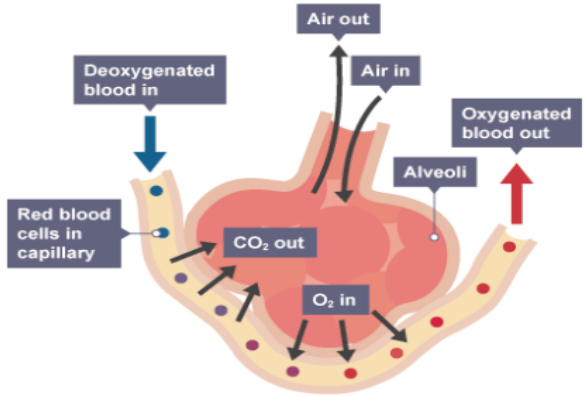
Lactic acid + oxygen → carbon dioxide + water

Anaerobic respiration in yeast (fermentation):

Glucose → Ethanol and carbon dioxide

Gas Exchange

Gas exchange takes place in the alveoli, the tiny air sacs at the end of the bronchioles.
1. Oxygen molecules diffuse **from** the alveolus **into** the blood in the capillary, moving from higher to lower concentration.
2. Carbon dioxide molecules diffuse **from** the blood in the capillary **into** the alveolus, moving from higher to lower concentration.

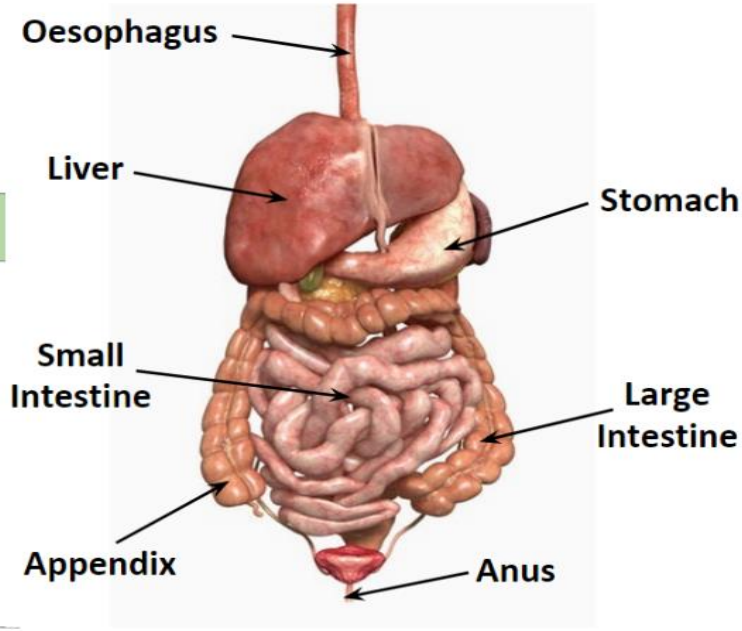


Science

Digestion

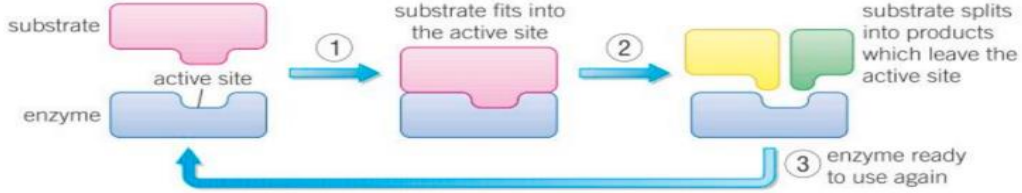
Keywords	
Enzyme	A biological catalyst
Substrate	Molecule(s) acted on by an enzyme
Active Site	The site on enzymes where the substrate binds
Denature	Change the shape of the active site
Carbohydrates	The body's main source of energy. 2 types: simple (sugars) and complex (starch).
Lipids	Fats and oils. A source of energy.
Protein	Nutrient your body uses to build new tissue for growth and repair.
Stomach	Where food is mixed with acidic juices and churned
Small intestine	Where digestion is completed and nutrients are absorbed by the blood.
Large intestine	Where water is absorbed and faeces are formed.

Molecule for testing	Food test	Positive result	Negative result
Protein	Biuret solution	Purple	Stays blue
Lipids	Ethanol	Solution goes milky	Solution stays clear
Starch	Iodine	Blue / black	Stays orange
Glucose	Benedict's solution & heat	Red	Stays blue



Enzymes

Enzymes break long food molecules into smaller particles ready for absorption. Without enzymes, the long food molecules would never be able to pass through the intestine. Enzymes are a specific shape - complementary to their substrate (the molecule they are breaking down). The enzyme has an 'active site' where it binds onto the substrate.



Science

Keywords

Natural resources	Materials from the Earth which act as raw materials for making a variety of products.
Mineral	Naturally occurring metal or metal compound.
Ore	Naturally occurring rock containing sufficient minerals for extraction.
Extraction	Separation of a metal from a metal compound.
Recycling	Processing a material so that it can be used again.
Electrolysis	Using electricity to split up a compound into its elements.

Displacement Reactions

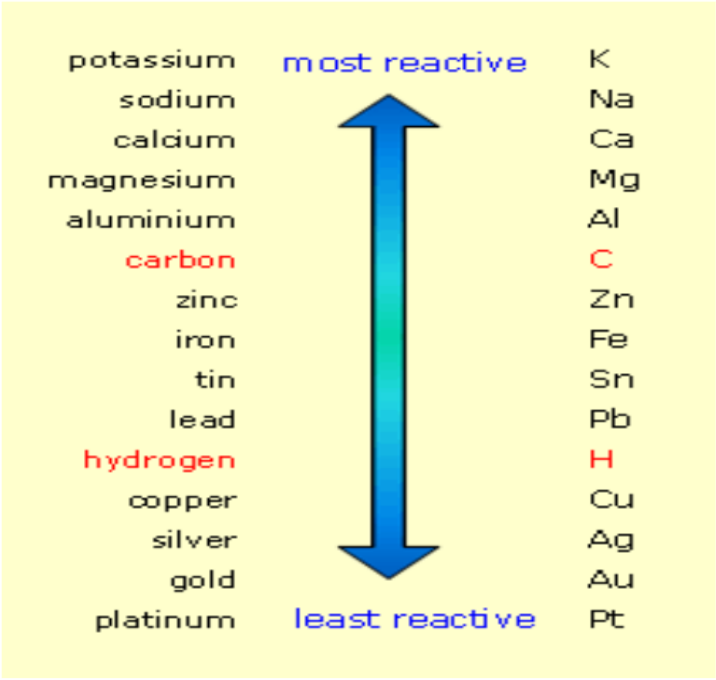
Some metals are more reactive than others. This is displayed in the reactivity series (on the left hand side).

A displacement reaction is where a more reactive metal takes the place of a less reactive metal in a compound.

Example:

Copper + silver nitrate → copper nitrate + silver

Copper is more reactive than silver, so the copper has 'stolen' the nitrate from the silver - therefore silver has been displaced.



Y8 - Earth's Resources

Extracting Metals

Metals can be extracted from their ores using different methods, depending on their reactivity.

1. Very unreactive metals occur native and do not form compounds, so they do not need extracting.

2. Metals less reactive than carbon on the reactivity series can be extracting with a displacement reaction using carbon. For example: Copper oxide + carbon → copper + carbon dioxide. Carbon is more reactive than copper, so copper is displaced.

3. Metals that are more reactive than carbon can be extracted using electricity (a process called electrolysis).

Science

Keywords	
Global warming	The gradual increase in surface temperature of the Earth and atmosphere
Fossil fuels	Remains of dead organisms that died millions of years ago that are burned as fuels
Carbon sink	Areas of vegetation, the ocean or the soil, which absorb and store carbon.
Greenhouse effect	Energy from sun is trapped in the atmosphere

Y8 - Climate