

Name and Tutor group:



Year 9 Knowledge Organiser

Term 3

Contents

Page 1-2: How to use your Knowledge Organiser

Page 3	Art
Page 4	Computing
Page 5	Drama
Page 6	DT (Food)
Page 7-8	DT (RM)
Page 9	DT (Textiles)
Page 10	Graphic Design
Page 11	English
Page 12-13	French
Page 14-17	Geography
Page 18	History
Page 19-21	Maths
Page 22	RE
Page 23	Science

CORSHAM CHARACTER

INTELLECTUAL VALUES

The pursuit of truth,
knowledge and
understanding.

Be reflective. Be curious. Be
open-minded. Be creative.



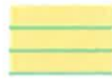
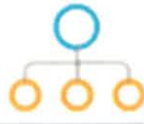
PERFORMANCE VALUES

Maximum effort, maximum
focus.

Be resilient. Always Persevere.
Contribute to Teamwork.
Be ambitious.



DREAM BELIEVE ACHIEVE

	Look, Cover, Write, Check	Definitions to key words	Flashcards	pictures
Stage 1	Look at & study an area of your knowledge <u>organiser</u>. 	Write down the key words & definitions 	Write key words, dates/formulae, equations/quotes on one side & answers on the other 	Draw pictures/diagrams/cartoon strips 
Stage 2	Cover up your knowledge <u>organiser</u> and write everything you remember 	Cover up the definitions. How many can you remember? Repeat. 	Include pictures or diagrams if it helps. Read through them. 	Label your pictures/diagrams/cartoon strips 
Stage 3	Check. Correct mistakes in green and add anything you missed. Repeat 	Check. Correct mistakes in green pen. Which ones do you find hard to remember? 	Test yourself and get someone to test you. 	Explain out loud to yourself or family/friend what your images show 
	<u>Self quizzing</u>	<u>Mindmaps</u>	Paired retrieval	Speak, Cover, Write, Check
Stage 1	Use your knowledge <u>organiser</u> to create quiz questions. 	Create a <u>mindman</u> of everything you can remember from your knowledge <u>organiser</u>. 	Give a family member/friend the knowledge <u>organiser</u> to hold 	Read out loud the information from the knowledge <u>organiser</u> several times. 
Stage 2	Write down the answers to your quiz 	Check your knowledge <u>organiser</u> & use a green pen to make any corrections. 	Get them to test you using the knowledge <u>organiser</u>. 	Cover up your knowledge <u>organiser</u> and write everything you remember 
Stage 3	Keep self-quizzing until you get all the answers correct 	Add additional information to your <u>mindman</u> or make connections to other knowledge 	Write down your answers to their questions 	Check. Correct mistakes in green and add anything you missed. 

Choose any of the following activities to complete your homework



LEARNINGSIENTISTS.ORG

LEARN TO STUDY USING ...

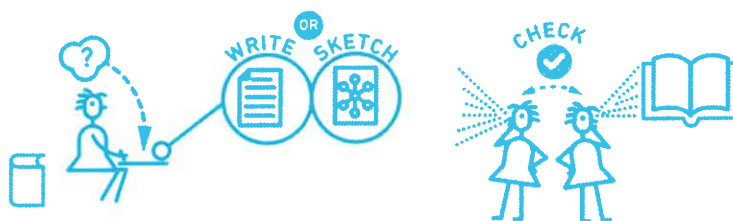
Retrieval Practice

PRACTICE BRINGING INFORMATION TO MIND



HOW TO DO IT

Put away your class materials, and write or sketch everything you know. Be as thorough as possible. Then, check your class materials for accuracy and important points you missed.



Take as many practice tests as you can get your hands on. If you don't have ready-made tests, try making your own and trading with a friend who has done the same.



You can also make flashcards. Just make sure you practice recalling the information on them, and go beyond definitions by thinking of links between ideas.



HOLD ON!



Retrieval practice works best when you go back to check your class materials for accuracy afterward.



Retrieval is hard! If you're struggling, identify the things you've missed from your class materials, and work your way up to recalling it on your own with the class materials closed.



Don't only recall words and definitions. Make sure to recall main ideas, how things are related or different from one another, and new examples.

RESEARCH

[Read more about](#) Roediger, H. L., Putnam, A. L., & Smith, M. A. (2011). Ten benefits of testing and their [retrieval practice](#)

applications to educational practice. In J. Mestre & B. Ross (Eds.), *Psychology of learning and motivation: Cognition in education*, (pp. 1-36). Oxford: Elsevier. [as a study strateg](#)

KNOWLEDGE ORGANIZER – YEAR 9 ART

Toys

EXAMPLES OF FINAL OUTCOMES:

YOU WILL LEARN:

Skills to produce two accurate still life studies of toys using pencil shading and oil pastels. You will then produce your own final outcome using layers and paper cutting.

WHY AM I LEARNING THIS?

The foundation skills in this project will enable you to tackle the varied concepts, artists, techniques and processes throughout Year 7. You will build on your knowledge and skills with each project as they increase in difficulty, enabling you to express yourself in a confident way.

CONTEXTUAL KNOWLEDGE:

Sarah Graham

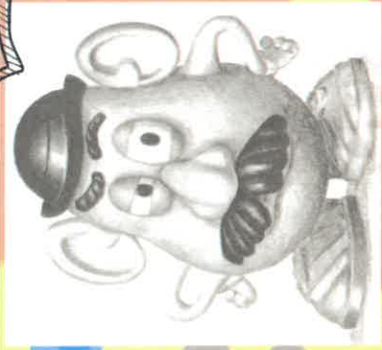


Jeff Koons



Jeff Koons uses themes and subjects from popular culture in his work including toys, ornaments and advertising.

Sarah Graham paints in a photorealistic style. Colour and composition are often the focus on her work. She enjoys painting objects that evoke a sense of childhood and joy.



KEYWORDS

Proportion

Tone

Mark-making

Shape

Form

Photography

The relationship of one part of a whole to other parts.

The lightness or darkness of something – this could be shade, or how dark or light a colour appears.

Different lines, patterns and textures.

A shape is an area enclosed by a line. It is 2 dimensional and can be geometric or organic.

Forms are 3 dimensional shapes. They occupy space, like people!

A photograph is an image produced by the action of light onto light sensitive paper.

HOMEWORK TASKS:

Tick when complete

1. Creative toy photoshop.
2. Retro toys drawing.
3. Sarah Graham copy.
4. Homework 4.
5. Homework 5.
6. Homework 6.

HOW WELL AM I DOING?

My Progress in Year 9 Art									
Name:	Project: Term 1 & 2 - Toys						Target Grade:		
	Targets						Good	Very Good	Excellent
Draw the toy accurately showing good proportions and form.									
Show a variety of dark and light shading to suggest form (3D) and texture.									
Develop areas of textural shading to show the form of the toy as smooth/shiny surfaces, hair/fur.									
Draw the toy accurately showing good proportions and form.									
Use oil pastels to develop layers of colours and tone in your toy drawing.									
Show a variety of different pencil techniques to create form, texture, and tone.									
Show skilled and accurate application of pencil to show tone in your toy final outcome.									
Show accurate paper cutting skills and overlaying of mixed media.									
Complete a detailed, colourful, and accurate final outcome include an image of a toy with a paper overlay.									
End of Project Grade:									

How to make your drawings appear 3D:

<https://youtu.be/aFEZtGrVAdw>

Year 9 Database Knowledge Organiser

Keywords	
Word	Meaning/Description
Database	A Database is a collection of data.
Form	A form is used to make the database more user friendly.
Table	A table is a collection of rows.
Data Type	A data type is a data storage format that can contain a specific type or range of values.
Integers	Integers are whole numbers. For example: 4, 27, 65535.
Boolean	Boolean values are either 'True' or 'False' or 1 or 0.
Primary Key	A primary key is a unique number for an entity.
Row	A row is a collection of column values.
Field Size	The field size is the maximum size of characters allowed for each entry field.

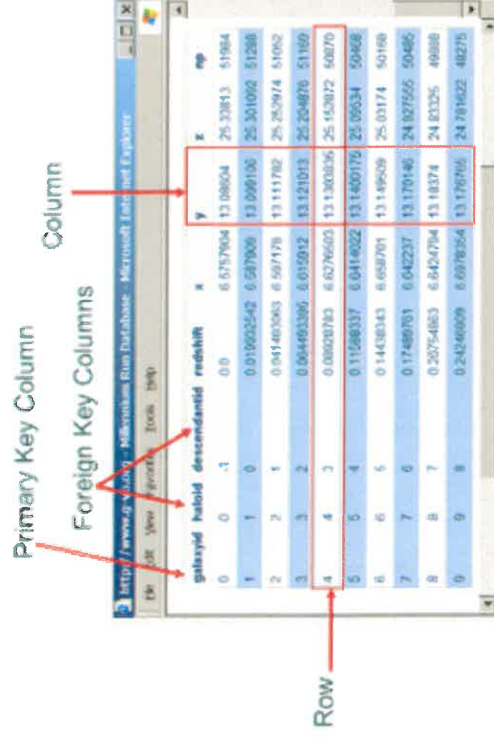


Primary Key Column

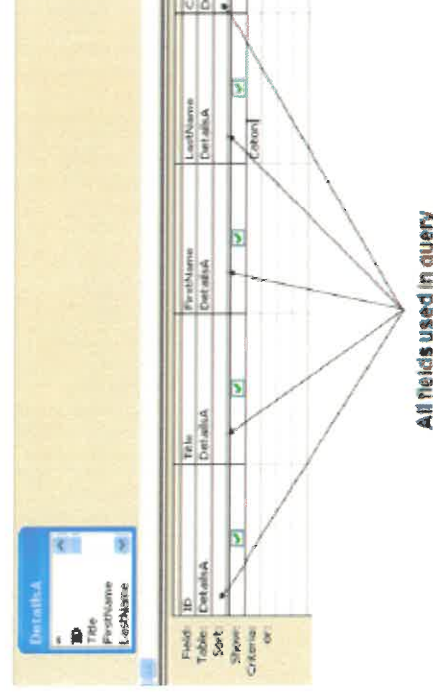
Foreign Key Columns

Column

Row



id	name	year	genre	length	rating	cost	mp
0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0
2	2	1	1	1	1	1	1
3	3	2	2	2	2	2	2
4	4	3	3	3	3	3	3
5	5	4	4	4	4	4	4
6	6	5	5	5	5	5	5
7	7	6	6	6	6	6	6
8	8	7	7	7	7	7	7
9	9	8	8	8	8	8	8



Data types

Field Name	Data Type
ID	AutoNumber
projectTitle	Long Text
partyID	Number
receiveDate	Date/Time
dueDate	Date/Time
deliveryDate	Date/Time
prepay	Currency
cost	Currency
projectTypeID	Number
lines	Number
pages	Number
words	Short Text
settled	Yes/No
projectComment	Long Text



Drama – Year 9 Term 3

"Dare to be dull."

"Make a connection with the other player."

"Just make a choice."

"Never expect a certain answer or reaction. Just listen and react to what was *actually* said."

THE
CORSHAM
SCHOOL
NATIONAL CURRICULUM

Links to Comp 1 and 2

improvising is inventing and creating content spontaneously. It's a great way to generate new ideas and for creating and developing characters, using a variety of useful techniques.

Improvisation

This improvisational exercise is excellent for creating entirely new and unplanned characters and scenarios.

Where, who, what?

Choose a location, eg a supermarket or a roller coaster.

Select characters, eg an astronaut or an I.T. manager.

Finally, choose a motivation for the character, eg they are looking for a partner or want to be famous at any cost.

Each piece of information should be randomly selected, so that they don't necessarily match up. This can make for interesting and very humorous drama.



Spontaneous improvisation which is completely unplanned can generate dialogue or scenarios that you feel work for the piece you are creating. This can then be refined, rehearsed and included in your finished **devised** piece

A **constraint** is a condition that you must apply to a scene, so that you're improvising within a set of rules. Here are some ideas for working with constraints when improvising.

Space

A very small space, such as a lift. Characters must behave as they would normally but within a tiny playing area.



A vast space, such as across a giant mountain range.

Consider how changing **proximity** affects body language, vocal tone and volume and interaction, between characters. There may be something that works and could be included in your devised piece.

Examples – Mock the Week, Whose Line Is it Anyway? Outnumbered. The Office.

"Be more brave than impressive."

"It doesn't matter what you're doing on stage, as long as you sell it."

Tips for success

-Listen to your partner.

A scene will often 'go stale' if the people involved are not responding genuinely to each other. Improv is all about **teamwork** and the relationship you have with each other. The better the relationship, the better the scene will be to the audience.

-Use 'yes, and...'

When your partner tells you something in an improv scene, accept it and then add something to the conversation. If you're partner starts by asking you why you've come to a party dressed as a pineapple, don't tell them that you think they're seeing things. Ask them why they're the only one who hasn't come dressed as a giant piece of fruit and that you have a spare costume in your car if they need it. Scenes where actors deny what their partners are saying often go dry very quickly and offer nothing for the audience. It's also a good way to annoy your partners.

-Don't necessarily try to be funny.

Sure, comedy is great, but one person trying to make the audience laugh often alienates the others on stage.

-Accept your mistakes.

Like any learning process, you will make mistakes. It's how you learn. Don't beat yourself up if you forgot a key rule of improv or your scene wasn't particularly good. Make some general notes for yourself and put it behind you. Next time you get up to improvise, treat it like a fresh start and be positive.

- **Improvisational Theater (improv):** is a form of theater where most or all of what is performed is created at the moment it is performed.

- In its purest form, the dialogue, the action, the story and the characters are created collaboratively by the players as the improvisation unfolds.

- Improv exists in performance as a range of styles of improvisational comedy as well as some non-comedic theatrical performances.

- It is sometimes used in film and television, both to develop characters and scripts and occasionally as part of the final product.



Year 9 Food Knowledge Organiser.

Key Practical Skills

- **Flaky Pastry – Lamination.** The dough is rolled and folded to produce layers. Fat is placed in between the layers and this melts, leaving a space that is filled with steam from the water and fat added to the pastry. Trapped expand between the causing light crisp layers of pastry to develop. (**Sausage rolls**)
- **Short Crust pastry – Shortening.** The fat is rubbed into the flour with fingertips. It coats flour to prevent the long gluten strands from forming. This is called shortening. (**Cheese and Onion Pasties**)
- **Whisking Method – Mechanical Raising Agents.** When the eggs and sugar are whisked together this traps air bubbles as the protein from the egg stretches and surrounds the air bubbles to form an air-in-liquid foam. This is a mechanical raising agent. (**Swiss Roll**)
- **Fruit and Vegetable preparation – Water** soluble vitamins (B group & C) are easily damaged or lost during preparation and cooking. Correct preparation and cooking will minimise these losses. (**Thai Curry, Bolognese/chilli, Carrot Cake**)
- **Presentation skills –** presenting and styling food is very important at GCSE. Decorations on savoury food are called garnish and decoration on sweet foods. (Samosas, Cheesecake)



Key Topics

Food and the environment :

Food waste – Manufacturers, retailers and consumers waste millions of tonnes of food a year for a variety of reasons

food poverty -defined as the inability to acquire or consume an adequate or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so

Food provenance – food that is grown, food that is caught, food that is reared. E.g. organic

Food miles – how far food has travelled from farm to fork

Food and Nutrition:

Nutrition – main nutrients , functions and sources

Food Choices – There are many reasons why we choose the food we eat, but they can often be related to religion and culture, ethical and moral beliefs, medical conditions or personal preference. This affects the diets they eat

Food intolerance – a reaction to a specific food

Allergen – A substance in food that may cause an allergic reaction



Personal Skills

- Confidence
- Organisation
- Teamwork
- Time management

Nutrient	Functions	Examples
Carbohydrates & Fibre	• Energy • Aids Digestion • Fills us up	• Pasta, Rice, Bread, Cereals, potatoes
Vitamins & Minerals	• Keeps us healthy • Protect from illness • Each vitamin and mineral has a specific job	• Most foods we eat contain at least one vitamin and/ a mineral • Such as - Meat, fish, alternatives, fruit, vegetables, dairy, cereals, bread pasta
Proteins	• Repairs and replaces worn and old cells and tissues. • Builds muscle and makes us strong • growth	• Meat – lamb, pork, beef • Fish – cod, tuna, sardines • Pulses and beans – lentils, chick peas, beans, peas • Alternatives – soya, tofu, Quorn • Dairy products – milk, cheese, yoghurt
Fats	• Give us energy • Protect our bodies • Insulate • Needed to use fat soluble vitamins	- Saturated fats–meat, lard, cheese, cream, eggs - Unsaturated – oily fish, avocado's, oils such as sunflower, olive, rapeseed vegetable.

Nutritional Analysis

Evaluate the nutritional content of some of our practical outcomes using explore food which is an online nutritional analysis tool. Adapt recipes and compare.



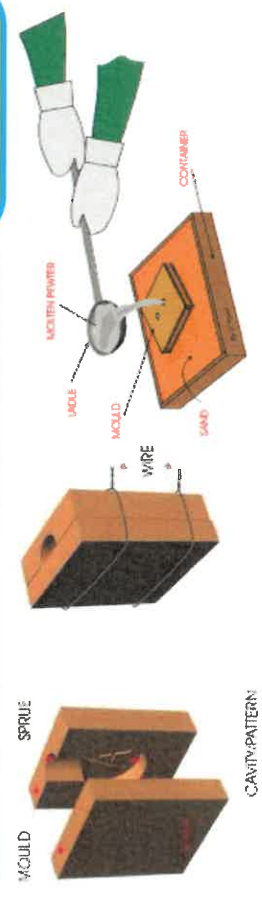
Keywords

- Nutrients
- Carbohydrate
- Protein
- Lamination
- Shortening
- Garnish
- Food miles
- Food Provenance
- Saturated and unsaturated fats
- vegetarian

KS3 YEAR 9 D&T RESISTANT MATERIALS

METALS

Tools and Equipment	
Measuring and marking	
Steel rule	An accurate tool for measuring and marking out
Try square	A tool used to check right angles on wood or plastic
Template	A template is a tool used to mark out shapes repeatedly
Cutting	
Hack saw	A general purpose metal work saw
Metal vice	Supports work whilst cutting or finishing
Pillar drill	A machine used to make holes in materials
Laser cutter	CAM: Laser cutting is the use of a high-powered laser to cut, etch and engrave your material



Metals and Alloys	
Ferrous Metals: <i>these metals contain iron</i>	Low Carbon Steel High Carbon Steel Cast Iron
Non-ferrous Metals: <i>these are pure metals</i>	Aluminium Copper Tin Zinc
Alloys: <i>a mix of one pure metal and another element</i>	Brass Stainless steel High speed steel

Shaping and finishing	
Metal file	Used to shape or smooth wood, metal or plastic
Wet and Dry Paper	An abrasive paper used to smooth the surface or edges of plastic
Draw filing method	A technique used to produce a fine filed surface
Cross Filing method	A technique used to produce a fine filed surface
Pewter casting mould	Heating metal into liquid form and pouring it into a mould

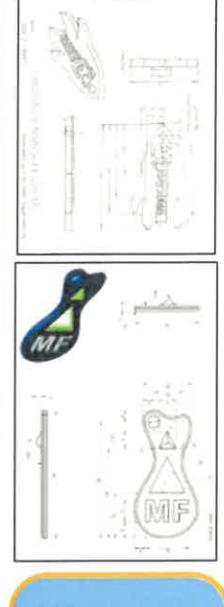


Keywords

Ideation
Specification
Research
Manufacture
Design

Evaluation
Orthographic
Pewter
Mould
Sprue

Manufacturing	
Brazing Hearth	Raises metal to high temperatures using a blow torch
Welding	Fusing together two metals of the same type using a filler
Brazing	Fusing together two metals using spelter (a type of filler)
Annealing	The process of softening metals to make it workable
Casting	Heat metal to liquid and pour into a mould



What is good design?

Clear ideas
Annotations
Measurements
Content
Presentation
Balance

Maths in DT:

Multiplication
Divide
Add / Subtract
Measurement conversion
Ratios
Percentages
Surface area

Health and Safety in DT:

- Listen to your teacher's instructions
- Always wear an apron
- Long hair should be tied back
- Don't use equipment you are not trained on
- Always stand up during practical lessons
- When using machines, always wear safety glasses
- Only use the stop button in an emergency
- Work quietly and be sensible and careful at all times

KS3 YEAR 9 D&T RESISTANT MATERIALS

Tools and Equipment

Measuring and marking

Steel rule



An accurate tool for measuring and marking out

Try square



A tool used to check right angles on wood or plastic

Template



A template is a tool used to mark out shapes repeatedly

Shaping and finishing

Metal file



Used to shape or smooth wood, metal or plastic

Wet and Dry Paper



An abrasive paper used to smooth the surface or edges of plastic

Disc sander



A machine used to smooth the edges of materials

What is good design?

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Memphis Design Movement

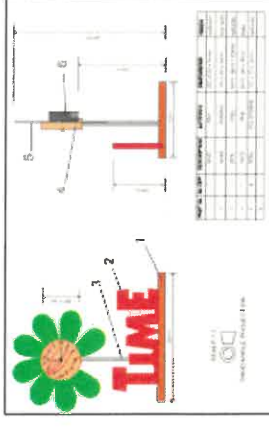
Ettore

Sottsass



POLYMERS

Orthographic Drawing



Keywords

Template
Polymer
Tensol Cement

Evaluation

6Rs
Sustainable
Manufacture

Health and Safety in DT:

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KS3 YEAR 9

Tools and Equipment

Measuring and marking

Measuring Tape
Fabric tape measure used to measure

Tailor's chalk
A temporary mark on fabric

Template / Pattern
A template / pattern is a tool used to mark out shapes repeatedly

Constructing

Sewing needle
Helps to sew fabric together

Embroidery needle
A needle with a larger eye to accommodate embroidery thread

Sewing machine
Machine sews fabric together

Pins
A temporary method to hold fabric in place

Tacking stitch
A temporary stitch to hold fabric together

Types of Seams:

- Plain
- French
- Flat felled
- Bound
- Lapped

Maths in DT:

- Multiplication
- Divide
- Add / Subtract
- Measurement conversion
- Ratios
- Percentages
- Surface area

Stencils

What?

- A stencil is a template used to transfer patterns
- It can be used multiple times
- It is one way of adding decoration to fabric

How?

- You can create a stencil by hand or using CAD
- You can use card, paper or thin, sturdy plastic to make it
- You can use a craft knife to cut by hand or CAM; laser cutter
- You need to think about islands/bridges
- Gently dab the paint using a sponge – too much paint might bleed under the stencil.
- Gently remove and wait to dry.

Woven Fabric



Knitted Fabric



Keywords

- Design
- Product analysis
- Research
- Evaluation
- Stitch
- Scissors
- Sewing machine
- Customer
- Environment
- Function
- Material
- Seam allowance
- UCD
- Fastener
- Stencil



DT TEXTILES

Cutting

Fabric shears



Scissors used for cutting fabric

Thread scissors



Scissors used for cutting thread

Stitch ripper



Used for removing sewn stitches from fabric

Pinking shears



Creates a zig zag cut edge for decoration to prevent fraying

Fasteners

Buttons



Decorative fasteners used in conjunction with a button hole

Zip



Tape with zipper teeth which interlock

Poppers / press studs



A pair of interlocking disks, usually made from metal or plastic



Health and Safety in DT:

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What is good design?

- Clear ideas
- Annotations
- Measurements
- Content
- Presentation
- Balance

Maths in DT:

- Multiplication
- Divide
- Add / Subtract
- Measurement conversion
- Ratios
- Percentages
- Surface area



A is for **Aesthetics**

C is for **Cost**

C is for **Customer**

E is for **Environment**

S is for **Size**

S is for **Safety**

F is for **Function**

M is for **Material**



Year 9 Graphic Design

Key information:

Target audience - Age range

Concept - Bold, beautiful illustrations which celebrate endangered animals

Media - Fine liners, felt tip pens/coloured pencils



GRAPHICS



THE PRINCIPLES OF DESIGN

Line



Different tools make different kinds of lines

Shape



Shapes come in many types and sizes

Color



Every color can be bright, dull, dark, or light

Value



Value refers to dark and light in painting or drawing

Form



Form is three-dimensional, and takes up space

Texture



Texture is how a surface of something feels or looks

Space



We use space to make space in art



Balance

Contrast

Emphasis

Movement

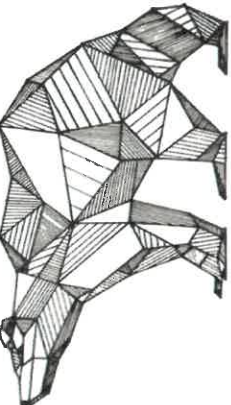
Pattern

Rhythm

Unity



Graphics Artists
Luke Dixon
Craig Redman





English – 'Much Ado About Nothing'

PLOT	
Act 1	Don Pedro, returns triumphant from battle and seeks refuge in Messina. Leonato, welcomes Pedro and his soldiers with open arms, and the sudden influx of men into the town soon stirs up some romance. Claudio instantly falls in love with Hero, and Beatrice is reunited with her old flame, Benedick – the man she loves to hate.
Act 2	Leonato gives permission for his daughter to marry Claudio in seven days time. Hearing that they only have one week to ruin the wedding, Don John and his henchmen soon devise a plan – they intend to trick Claudio with false evidence into thinking that Hero has been unfaithful to him the night before their wedding. Meanwhile, Don Pedro tricks Benedick into thinking that Beatrice is head-over-heels in love with him.
Act 3	Don John prepares to execute his plan. He finds Claudio and tells him of Hero's impurity. At first disbelieving, Claudio eventually agrees to go with Don John and see for himself. Dogberry, a bumbling constable, instructs his watchmen to be extra vigilant because of the important wedding in the morning. The watchmen later overhear Don John's henchmen drunkenly bragging about how they successfully tricked Claudio – they are promptly arrested.
Act 4	Claudio publicly reveals Hero's infidelity halfway through the marriage ceremony. Hero is stunned by the accusation and soon faints in the chaos that follows. Once the wedding party disbands, the Friar becomes suspicious and convinces Leonato, Beatrice and Benedick to pretend that Hero died from shock until they discover who has slandered her – Benedick immediately suspects Don John. Left alone, Beatrice and Benedick finally declare their love for each other.
Act 5	People turn against Claudio; both Leonato and Benedick accuse him of wronging Hero, and then Dogberry reveals Don John's henchmen. Claudio realizes that he was tricked by Don John and tries to apologize to Leonato. Leonato is surprisingly forgiving (because he knows that his daughter didn't actually die). He says that he will forgive Claudio if he marries his cousin the following day. At the wedding, Claudio is amazed when Hero is revealed to be alive and as virtuous as ever. Benedick and Beatrice finally admit their love for each other in public.

THEMES AND CONTEXT	
Love and Masquerade- Every step in romance takes place by way of masquerade. Hero is won for Claudio by Don Pedro in disguise. Benedick and Beatrice are brought together through an elaborate prank. Claudio can be reconciled with Hero only after her faked death.	
Courtship, wit and warfare- The social world—masquerade balls, witty banter, romance and courtship—with the military world. War of wit and love are compared to real wars in a metaphor that extends through every part of the play.	
Language, perception and reality- Tricks of language alone repeatedly change the entire situation of the play. Overheard conversations cause Benedick and Beatrice to fall in love, and the sonnets they have written one another stop them from separating once the prank behind their romance has been revealed.	
Marriage, shame and freedom- For the characters of <i>Much Ado About Nothing</i> , romantic experiences are always connected to issues of freedom and shame. If dignity comes from having a strong and free will, then love, desire and marriage are a threat to it.	
Masculinity - Beards are a complicated symbol of masculinity (Benedick's beard symbolizes his rugged bachelorhood, while Claudio's clean-shaven face indicates his "softness," and vulnerability).	

CHARACTERS	
Don Pedro	The Prince of Aragon. He is always involved in the affairs of the other characters. Don Pedro woos Hero for Claudio.
Leonato	Governor of Messina and father to Hero.
Claudio	A young Florentine soldier who fights for Don Pedro, and a friend of Benedick.
Hero	Leonato's daughter. Beatrice's cousin, and the beloved of Claudio.
Beatrice	Leonato's niece, an extremely witty and strong-willed young woman. Beatrice has a "merry war," of wits and insults with Benedick, whom she hates.
Benedick	A witty young Lord of Padua and a soldier. He is extraordinarily successful with women, but is fanatically committed to a bachelor's life.
Antonio	Leonato's brother.
Don John	When the play begins, Don John has just been defeated by his brother in battle. Out of desire for revenge and a general bad attitude, Don John schemes to destroy the marriage of Hero and Claudio.

KEY QUOTES	
Leonato	A1:S1 - "There is a kind of merry war betwixt Signior Benedick and her; they never meet but there's a skirmish of wit between them."
Beatrice	A1:S1 - "I had rather hear my dog bark at a crow, than a man swear he loves me."
Don John	A1:S2 - "I cannot be said to be a flattering honest man, it must not be denied but I am a plain-dealing villain."
Claudio	A2: S1 - "Friendship is constant in all other things Save in the office and affairs of love"
Benedick	A2: S3 - "Happy are they that hear their detractions, and can put them to mending."
Dogberry	A4: S2 "O that he were here to write me down an ass! but, masters, remember that I am an ass; though it be not written down, yet forget not that I am an ass."

• Furniture and appliances

Les domiciles • Homes

j'habite	<i>I live</i>
la maison	<i>house</i>
l'appartement (m)	<i>flat</i>
la rue	<i>street/road</i>
à la campagne	<i>in the country</i>
dans un village	<i>in a village</i>
dans une ville	<i>in a town</i>

Les adjectifs • Adjectives

petit	<i>small</i>
grand	<i>big</i>
beau/belle	<i>beautiful</i>
joli(e)	<i>pretty</i>
vieux/vieille	<i>old</i>
nouveau/nouvelle	<i>new</i>
neuf/neuve	<i>brand new</i>
moderne	<i>modern</i>
confortable	<i>comfortable</i>
gros(se)	<i>big (for animals and objects)/fat</i>

Les pièces • Rooms

Chez moi, il y a ...	<i>In my home, there is/are ...</i>
la chambre (de mes parents/de ma sœur)	<i>(my parents'/my sister's) bedroom</i>
ma chambre	<i>my bedroom</i>
la cuisine	<i>kitchen</i>
le jardin	<i>garden</i>
la salle à manger	<i>dining room</i>
la salle de bains	<i>bathroom</i>
le salon	<i>living room</i>
les toilettes	<i>toilet</i>
Il n'y a pas de ...	<i>There isn't a .../There aren't any ...</i>

Le dîner • Evening meal

du fromage/du poisson	<i>cheese/fish</i>
du poulet/du riz	<i>chicken/rice</i>
de la soupe	<i>soup</i>
de la viande	<i>meat</i>
des crêpes	<i>pancakes</i>
des crudités	<i>crudités</i>
des escargots	<i>snails</i>
des légumes	<i>vegetables</i>
des pâtes	<i>pasta</i>
des plats à emporter	<i>takeaway food</i>
des pommes de terre	<i>potatoes</i>
des tomates	<i>tomatoes</i>
un fruit	<i>a piece of fruit</i>
un steak-frites	<i>steak and chips</i>
un yaourt	<i>a yoghurt</i>
une mousse au chocolat	<i>a chocolate mousse</i>
Je suis végétarien(ne).	<i>I'm a vegetarian.</i>

Le petit déjeuner • Breakfast

Qu'est-ce que tu prends pour le petit déjeuner?	<i>What do you have for breakfast?</i>
Je mange/Je prends ...	<i>I eat/I have ...</i>
du beurre/du pain	<i>butter/bread</i>
de la confiture	<i>jam</i>
des céréales	<i>cereals</i>
un croissant	<i>a croissant</i>
un pain au chocolat	<i>a pain au chocolat</i>
une baguette	<i>a baguette</i>
une brioche	<i>a brioche (sweet loaf)</i>
une tartine	<i>a slice of bread and butter</i>
Je bois/Je prends ...	<i>I drink/I have ...</i>
du café/du lait/du thé	<i>coffee/milk/tea</i>
du chocolat chaud	<i>hot chocolate</i>
du jus d'orange	<i>orange juice</i>

Les prépositions • Prepositions

dans/devant	<i>in/in front of</i>
derrière	<i>behind</i>
entre	<i>between</i>
sous	<i>under(neath)</i>
sur	<i>on</i>
à côté de	<i>next to</i>
à droite de/à gauche de	<i>on the right of/on the left of</i>
en face de	<i>opposite</i>

Les provisions • Food shopping

Il faut acheter ...	<i>I/We/You must buy ...</i>
du chocolat	<i>chocolate</i>
du fromage/du jambon	<i>cheese/ham</i>
de la crème Chantilly	<i>whipped cream</i>
de la farine	<i>flour</i>
des bananes	<i>bananas</i>
des champignons	<i>mushrooms</i>
des fraises	<i>strawberries</i>
des œufs	<i>eggs</i>
des pommes	<i>apples</i>

Les domiciles • Homes

J'habite dans ...	<i>I live in...</i>
une grande maison	<i>a big house</i>
une petite maison	<i>a small house</i>
un grand appartement	<i>a big flat</i>
un petit appartement	<i>a small flat</i>
une grande ville	<i>a big town</i>
une petite ville	<i>a small town</i>
un grand village	<i>a big village</i>
un petit village	<i>a small village</i>
Je voudrais habiter ...	<i>I'd like to live ...</i>
à la campagne	<i>in the country</i>
à la montagne	<i>in the mountains</i>
au bord de la mer	<i>at the seaside</i>
dans un vieux château	<i>in an old castle</i>
dans une vieille chaumière	<i>in an old cottage</i>
dans une ferme	<i>on a farm</i>

Les meubles • Furniture

le bureau	<i>desk</i>
le canapé	<i>settee/sofa</i>
le lit	<i>bed</i>
le frigo	<i>fridge</i>
l'armoire (f)	<i>wardrobe</i>
la chaise	<i>chair</i>
la machine à laver	<i>washing machine</i>
le lavabo	<i>wash basin</i>
la douche	<i>shower</i>
la fenêtre	<i>window</i>
la table	<i>table</i>
la télé-satellite	<i>satellite TV</i>

Les pièces • Rooms

Chez moi, il y a ...	<i>In my home, there is/there are ...</i>
(six) pièces	<i>(six) rooms</i>
le salon	<i>the living room</i>
le jardin	<i>the garden</i>
la cuisine	<i>the kitchen</i>
la salle à manger	<i>the dining room</i>
la salle de bains	<i>the bathroom</i>
ma chambre	<i>my bedroom</i>
la chambre de (mes parents/ma sœur/mon frère)	<i>(my parents'/my sister's/my brother's) bedroom</i>
Il n'y a pas de (jardin).	<i>There isn't a (garden).</i>

Le dîner • Evening meal

D'habitude, on mange ...	<i>Usually, we eat ...</i>
du poisson	<i>fish</i>
du poulet	<i>chicken</i>
de la pizza	<i>pizza</i>
de la viande	<i>meat</i>
des fruits	<i>fruit</i>
des pâtes	<i>pasta</i>
des plats à emporter	<i>takeaway food</i>
Comme dessert, je prends ...	<i>For dessert, I have ...</i>
du yaourt	<i>yoghurt</i>
une mousse au chocolat	<i>a chocolate mousse</i>
de la glace (à la fraise)	<i>(strawberry) ice-cream</i>
Je suis végétarien(ne).	<i>I'm a vegetarian.</i>
Le soir, on mange à (six heures).	<i>In the evening, we eat at (six o'clock).</i>

Le petit déjeuner • Breakfast

Pour le petit déjeuner, je prends ...	<i>For breakfast, I have ...</i>
du beurre	<i>butter</i>
du café	<i>coffee</i>
du chocolat chaud	<i>hot chocolate</i>
du jus d'orange	<i>orange juice</i>
du lait	<i>milk</i>
du pain	<i>bread</i>
du thé	<i>tea</i>
de la confiture	<i>jam</i>
des céréales	<i>cereal</i>
une tartine	<i>a slice of bread and butter</i>
Je ne mange rien.	<i>I don't eat anything.</i>

Les prépositions • Prepositions

dans	<i>in</i>
devant	<i>in front of</i>
derrière	<i>behind</i>
sous	<i>under(neath)</i>
sur	<i>on</i>

Au carnaval • At the carnival

je vais .../on va ...	<i>I'm going to .../we're going to ...</i>
aller au carnaval	<i>go to the carnival</i>
boire un coca	<i>drink a cola</i>
chanter et danser (sur le char)	<i>sing and dance (on the float)</i>
manger au restaurant	<i>eat in a restaurant</i>
participer au défilé	<i>take part in the parade</i>
porter un costume de (pirate)	<i>wear a (pirate) costume</i>
prendre des photos (avec mon portable)	<i>take photos (on my mobile phone)</i>
regarder le défilé/le feu d'artifice	<i>watch the parade/the fireworks</i>
Je vais m'amuser.	<i>I'm going to have fun.</i>
On va s'amuser.	<i>We're going to have fun.</i>

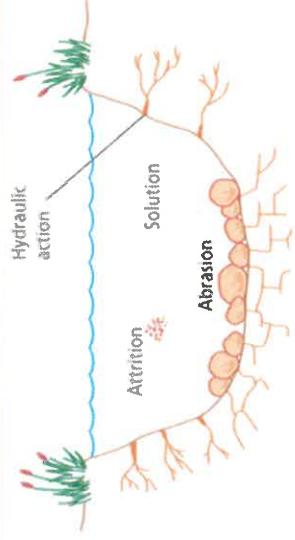
Les provisions • Food shopping

il faut acheter ...	<i>I/we you need to buy ...</i>
un litre de lait	<i>a litre of milk</i>
un paquet de farine	<i>a packet of flour</i>
(quatre) tranches de jambon	<i>(four) slices of ham</i>
un kilo de bananes	<i>a kilo of bananas</i>
500 grammes de pommes	<i>500 grams of apples</i>
250 grammes de fraises	<i>250 grams of strawberries</i>
une tablette de chocolat	<i>a bar of chocolate</i>
une bombe de crème Chantilly	<i>a spray can of whipped cream</i>
six œufs	<i>six eggs</i>

Les mots essentiels • High-frequency words

chez (moi)	<i>at (my) place</i>
comme dessert	<i>for dessert</i>
il y a ...	<i>there is/there are ...</i>
il n'y a pas de ...	<i>there isn't a/any ...</i>
ne ... rien	<i>nothing</i>
pour	<i>for</i>

Erosion	
Erosion attacks and wears away the cliff. There are four types.	
Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolved rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.

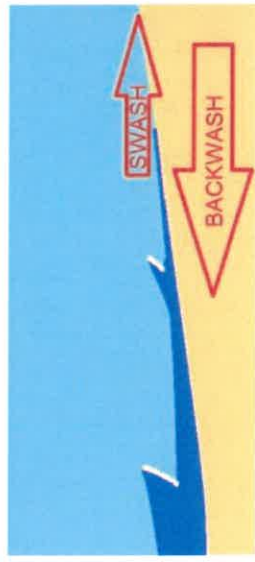


Weathering	
Weathering weakens rocks and helps mass movement occur. There are 3 types.	
Chemical weathering	All rain is slightly acidic. Consequently the acid in the rain can dissolve the calcium carbonate in the rocks.
Physical weathering (freeze thaw)	In winter, water can enter cracks in rocks, when it freezes, the ice expands and weakens the cracks further.
Biological weathering	Plants can weaken the rocks due to their roots. Animals can also weather rocks.

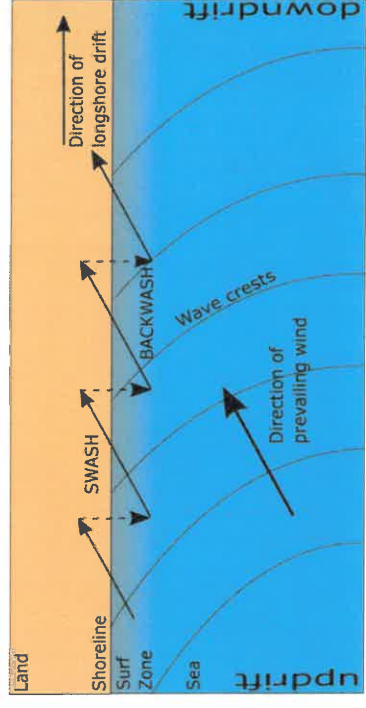
Geography: How the Sea shapes and attacks our land?

Types of waves

The swash is the wave going onto the beach and the backwash is the wave coming off the beach

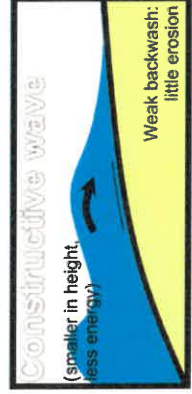


Longshore drift



Swash hits the beach at an angle due to the prevailing wind, depositing sand on the beach.
Backwash goes straight back because of gravity and removes the swash.
This zig zag pattern continues along the beach.
AS a result, long shore drift removes material from one side of the beach and deposits it at the other, changing the shape of the beach.

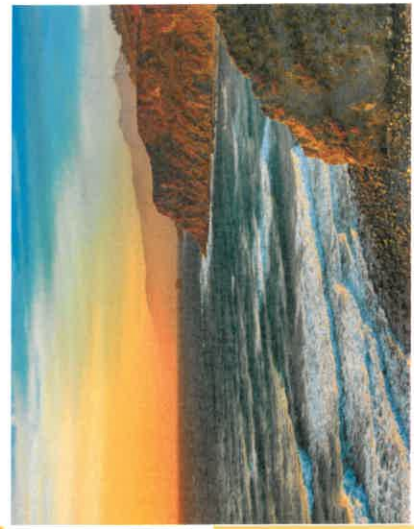
Types of waves



Constructive waves
These are tall waves that crash onto the beach.
They have a strong backwash which results in the wave removing sand from the beach.



Destructive waves
These are smaller waves that push onto the beach.
They have a weaker backwash and so can deposit sand on the beach.



Geography:

How the Sea shapes and attacks our land?

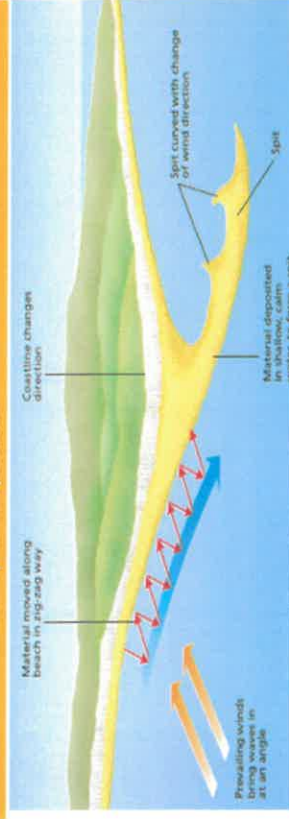
Formation of Coastal Stack



Example: Old Harry rocks, Dorset

- 1) Hydraulic action widens cracks in the cliff face over time.
- 2) Further abrasion widens the crack to form a cave.
- 3) Caves from both sides of the headland break through to form an arch.
- 4) Weathering weakens the arch and it collapses as mass movement leaving a stack.
- 5) Further weathering and erosion leaves a stump.

Formation of Coastal Spits - Deposition



Example: Spurn Head, Holderness Coast

- 1) Longshore drift moves sediment along a beach.
- 2) When the land changes direction (at an estuary) deposition causes the beach to extend into the sea.
- 3) A spit is eventually formed, then a change in wind direction forms a hook.
- 4) Sheltered area behind spit encourages deposition, salt marsh forms.



Formation of Bays and Headlands



- 1) Waves attack the coastline.
- 2) Softer rock is eroded by the sea quicker forming a bay, calm area cases deposition.
- 3) More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.



Management: soft engineering

Soft engineering strategies are designed to be more natural and less artificial but still reduce beach or cliff erosion.

Beach replenishment

After long shore drift has moved material along a beach, beach replenishment can put it back. This can be done via boats pumping sand onto the beach or by trucks moving the sand back to where it came from. This means the beach can act as a natural barrier.

Managed retreat

Managed retreat is where people allow the sea to flood inland areas that are not of use. This reduces costs of defence and can also create valuable wetlands for ecosystems.

Do nothing

This decision to do nothing is based on the fact that the sea will always erode so should we pay for defences to be constantly replaced or just let nature take its toll?

Management: Hard engineering

Hard engineering strategies are artificial (man made) structures designed to reduce coastal erosion or long shore drift.

Groynes

Groynes can be made of wood or rocks. They stick out into the sea at right angles and are designed to reduce long shore drift. This keeps sand on the beach so the beach can act as a natural barrier.

Rip Rap

Rip Rap are large boulders placed in front of cliffs or human structures. They are designed to absorb the power of the waves, reducing erosion.

Sea wall

Sea walls are placed where coastal towns are right on the beach. They reduce the chance of flooding and reduce erosion. However they do not look in keeping with the natural environment

Gabions

Gabions are rocks in cages. The both absorb the energy of the waves and support cliffs to stop them collapsing.

What is development?	
Development is an improvement in living standards through better use of resources .	
Economic	This is progress in economic growth through levels of industrialisation and use of technology.
Social	This is an improvement in people's standard of living. For example, clean water and electricity
Environmental	This is advances in the management and protection of the environment.

Measuring development

There are used to **compare and understand** a country's level of development.

Economic indicators examples	
Employment type	The proportion of the population working in primary, secondary, tertiary and quaternary industries.

Gross Domestic Product (GDP) per capita
This is the total value of goods and services produced in a country per person, per year.

Gross National Income (GNI) per capita
An average of gross national income per person, per year in US dollars.

Social indicators examples	
Infant mortality	The number of children who die before reaching 1, per 1000 babies born.

Literacy rate
The percentage of population over the age of 15 who can read and write.

Life expectancy
The average lifespan of someone born in that country.

Mixed indicators	
Human Development Index (HDI)	A number that uses life expectancy, education level and income per person.

Variations in the level of development	
LDCs	Poorest countries in the world. GNI per capita is low and most citizens have a low standard of living.
EDCs	These countries are getting richer as their economy is progressing from the primary industry to the secondary industry. Greater exports leads to better wages.
ACs	These countries are wealthy with a high GNI per capita and standards of living. These countries can spend money on services.

Are we happy living in an uneven world

Physical factors affecting development

Natural Resources	Natural Hazards
- Fuel sources such as oil. - Minerals and metals for fuel. - Availability for timber. - Access to safe water.	- Risk of tectonic hazards. - Benefits from volcanic material and floodwater. - Frequent hazards undermines redevelopment.

Climate	Location/Terrain
- Reliability of rainfall to benefit farming. - Extreme climates limit industry and affects health. - Climate can attract tourists.	- Landlocked countries may find trade difficult. - Mountainous terrain makes farming difficult. - Attractive scenery attracts tourists.

Human factors affecting development	
Politics	- Aid can help some countries develop key services and infrastructure faster. Aid can improve projects such as schools, hospitals and roads. - Too much reliance on aid might stop other trade links becoming established. - Countries that export more than they import have a trade surplus. This can improve the national economy. - Having good trade relationships. Trading goods and services is more profitable than raw materials.

Education	
- Education creates a skilled workforce meaning more goods and services are produced. - Educated people earn more money, meaning they also pay more taxes. This money can help develop the country in the future. - Lack of clean water and poor healthcare means a large number of people suffer from diseases. People who are ill cannot work so there is little contribution to the economy. - More money on healthcare means less spent on development.	

Aid	
- Corruption in local and national governments. - The stability of the government can effects the country's ability to trade. - Ability of the country to invest into services and infrastructure. - Colonialism has helped Europe develop, but slowed down development in many other countries. - Countries that went through industrialisation a while ago, have now develop further.	



Uneven development

Development is globally uneven with most ACs located in Europe, North America and Oceania. Most EDCs are in Asia and South America, whilst most LDCs are in Africa. Remember, development can also vary within countries too.

Consequences of Uneven Development

Levels of development are different in different countries. This uneven development has consequences for countries, especially in wealth, health and education.

Wealth
People in more developed countries have higher incomes than less developed countries.

Health
Better healthcare means that people in more developed countries live longer than those in less developed countries.

Education
More developed countries have better standards of education available than those in less developed countries.

Sustainable Development Goals

These are targets for all countries to reach to help the whole world beat poverty and increase global development.



GOAL 5: GENDER EQUALITY



Our mission: to end all forms of discrimination against women and girls and to advance gender equality as a driver of economic growth and sustainable development

KEY PROBLEMS

Women have lower rates of employment than men, and are paid less for the same job.



Stereotypical gender roles and traditions such as early marriage continue to harm girls.



Women have less access to decision-making positions than men.



Are we happy living in an uneven world

Can aid help speed up development?

Positives of Aid	Negatives of Aid
Aid can improve sanitation and health and reduce death rate. Aid can help countries increase output with technology. Can rebuild livelihoods after a disaster	Aid doesn't always reach the people that need it. Countries can become dependent on the aid rather than develop themselves.

Positives	Negatives
Improves the lives of local, rural population by a) Improving health through drinking milk b) Increasing crop yields through using manure c) Increasing income by selling extra crops or offspring.	Does not help the whole country become more industrialised. Aid is reliant on donations given by the public of ACs

How will gender equality speed up development

Gender Equality is Sustainable Development goal #5	
How it will help	What are the barriers
Equal opportunities is a basic human right. Reducing domestic violence in LDCs will help the country develop	It takes a long time to change countries views and opinions, especially in traditional societies.

Escaping from poverty

For people who live in poverty in LDCs, one of the options for them is to migrate to ACs. Thousands of migrants attempt this dangerous journey every week in an attempt to earn and send home money.

The consequence of this escaping from poverty that many people put their lives at risk in crossing the sea. IT also means there is an increase in the illegal trade of people smuggling.



Enquiry: How did the Holocaust happen?

Outline: When the Nazi Party came to power in Germany in 1933, they targeted many different groups and made life for them increasingly more difficult. The main group who was targeted were Jewish people and the Nazis began a gradual policy of persecution which led to the genocide that we call the Holocaust today.

Date	Event	Description
1933	Targeting of Jewish people begins	Nazi party began banning Jewish people from places and jobs.
1935	Nuremberg Laws	Greater persecution with laws on who Jewish people could marry.
1938	Kristallnacht	Attack on Jewish people in Germany where shops and synagogues were targeted.
1941	First use of Auschwitz as a death camp	First murder of people at Jewish people. 1.1 million were killed there.
1941	Holocaust by bullets began	Targeting of mainly Jewish people in eastern Europe by mobile killing squads.
1942	Wannsee Conference	Meeting to decide on the Final Solution to the Jewish question = mass murder of Jewish people
1945	Liberation of Auschwitz	Soviet soldiers helped to close the camp.

Furthering learning

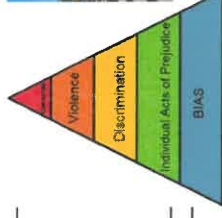
Want to find out more about the Holocaust?



Historical skill focus: significance

- What factors affect significance?
- How do we judge short and long term significance?

History – Year 9 Knowledge Organiser Topic 2



Key individuals



Oskar Schindler. Used Jewish people as slave labour in his factory but then saved as many workers as possible from death in the Holocaust.



Anne Frank. Jewish writer who kept a diary whilst hiding from the Nazis in a house in Amsterdam. Her family was betrayed and only her father survived.



Dina Pronicheva. One of Few survivors of the Massacre of Jewish people at Babi Yar in Kiev in 1941 where 33,771 were murdered In a day.



Leon Greenman. A Holocaust survivor who dedicated his life to educating people about the Holocaust. He lost his wife and child in the Holocaust.

Recent genocides:

1994 Rwanda
1995 Bosnia
2003 – Darfur
2014 – Uyghur
2017 - Rohingya

Key vocabulary:

Auschwitz-Birkenau: largest death camp where 1.1 million died. Located in Poland.

Concentration camp: place where prisoners were kept as slave labour. **Dachau:** first concentration camp near Munich, Germany.

Death camp: camp set up with the main aim of killing as many as possible.

Einsatzgruppen: Nazi units sent out to round up and kill people, mainly Jewish people in eastern Europe.

Final Solution: the name of the project to kill as many Jewish people as possible.

Genocide: mass murder of a group of people which is organised.

Ghetto: areas of cities where Jewish people were forced to live in overcrowded and dirty conditions.

Holocaust: when over 11 million people were murdered by the Nazis in Europe, including 6 million Jewish people. The word means “burned sacrifice”

Holocaust by bullets: murder of groups of people by the Einsatzgruppen in eastern Europe.

Indoctrinate: brainwash people into believing certain ideas using media, education and propaganda.

Kristallnacht: pogrom of Jewish people in Germany in 1938.

Liberation: setting people free from captivity.

Massacre: murder of several people at once.

Persecution: unfair treatment of people which is relentless.

Pogrom: massacre of Jewish people.

“Resettlement”: a Nazi term which referred to the deportation of Jewish people to the east. Really it meant their murder.

Scapegoat: when someone is blamed for an event even though it isn't their fault.

Shoah: the Jewish word for the events of the Holocaust. It means “catastrophe”

Wannsee: where the final solution was decided, near to Berlin.

Year 9 – reasoning with number...

Numbers

What do I need to be able to do?

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

- Identify integers, real and rational numbers
- Work with directed number
- Solve problems with number
- Find HCF/ LCM
- Add/ Subtract fractions
- Multiply/ Divide fractions
- Write numbers in standard form

Keywords

Integer: a whole number that is positive or negative

Rational: a number that can be made by dividing two integers

Irrational: a number that cannot be made by dividing two integers

Inverse operation: the operation that reverses the action

Quotient: the result of a division

Product: the result of a multiplication

Multiples: found by multiplying any number by positive integers

Factor: integers that multiply together to get another number

Integers, real and rational numbers

Rational – root word: ratio

Real numbers: $\frac{2}{3}$ stems from 2.1 ($\frac{2}{3}$ of the whole)

Irrational numbers: $\sqrt{2}$ the solution is a decimal that never ends and does not repeat

The square root of a negative is not a real number and cannot be found

HCF/LCM

1 is a common factor of all numbers

Common factors are factors two or more numbers share

HCF – Highest common factor

HCF of 18 and 30

18: 1, 2, 3, 6, 9, 18

30: 1, 2, 3, 5, 6, 10, 15, 30

HCF = 6

LCM – Lowest common multiple

LCM of 9 and 12

9: 9, 18, 27, 36, 45, 54

12: 12, 24, 36, 48, 60

LCM = 36

The first time their multiples match

Standard form

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

$6 \times 10^5 + 8 \times 10^5$

= 600000 + 800000

= 1400000

= 1.4×10^6

$(1.5 \times 10^5) \div (0.3 \times 10^3)$

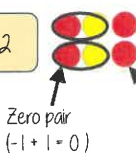
$15 \div 0.3 \times 10^5 \div 10^3$

= 5×10^2

Directed number

Addition

$$2 + -4 = -2$$



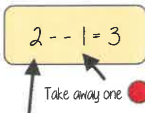
Generalisation

$$+ - = -$$

Subtraction

$$2 - 1 = 1$$

Representation for calculation



$$2 - -1 = 3$$

Start with the representation of 2

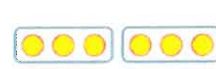
Generalisation

$$- - = +$$

"Subtract" – means take away or remove

Multiplication

$$-2 \times -3 = 6$$



The act of making counters into their negative is turning them over

Divisions are the inverse operations



$$a = 5$$

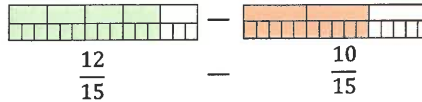
$$b = -4$$

Brackets around negative substitutions helps remove calculation errors

$$2a - b = 2 \times 5 - (-4) = 10 + 4 = 14$$

Addition/ Subtraction of fractions

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



$$= \frac{2}{15}$$

Use equivalent fractions to find a common multiple for both denominators

Multiplication/ Division of fractions

Shade in 3 parts

Repeat it on this many rows

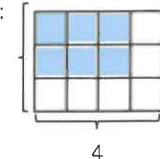
$$\frac{3}{4} \times \frac{2}{3}$$

This many columns

This many rows

$$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$$

Modelled:



Parts shaded

Total number of parts in the diagram

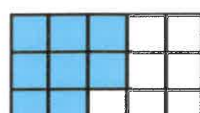
Remember to use reciprocals

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

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

Multiplying by a reciprocal gives the same outcome

Represented



$$= \frac{8}{15}$$

Year 9 – reasoning with number...

Using Percentages

What do I need to be able to do?

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

- Use FDP equivalence
- Calculate percentage increase and decrease
- Express percentage change
- Solve reverse percentage problems
- Solve percentage problems (calculator and non calculator problems)

Keywords

Percent: parts per 100 – written using the % symbol

Decimal: a number in our base 10 number system. Numbers to the right of the decimal place are called decimals.

Fraction: a fraction represents how many parts of a whole value you have.

Equivalent: of equal value.

Reduce: to make smaller in value.

Growth: to increase/ to grow.

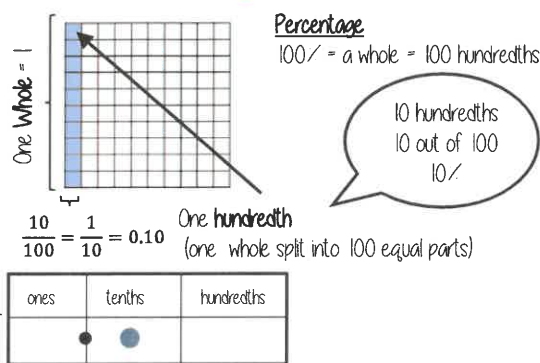
Integer: whole number, can be positive, negative or zero.

Invest: use money with the goal of it increasing in value over time (usually in a bank).

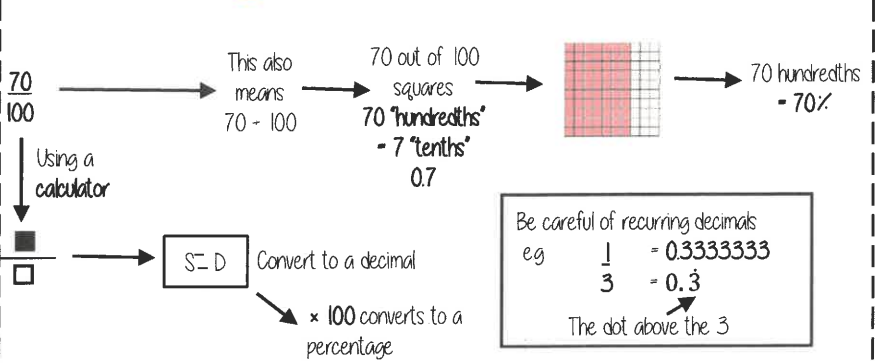
Multiplier: the number you are multiplying by.

Profit: the income take away any expenses/ costs.

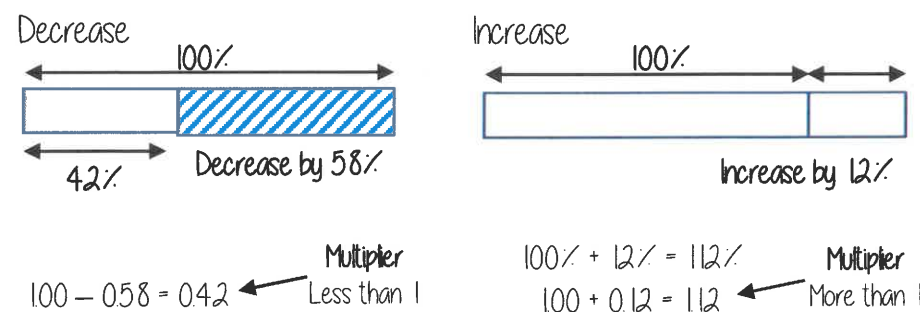
FDP Equivalence



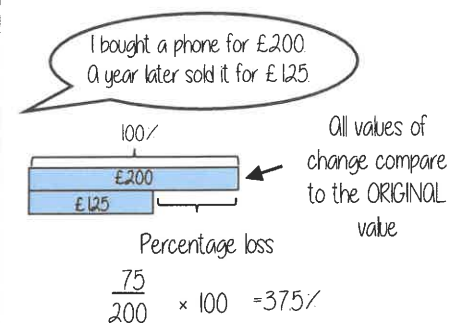
Converting FDP



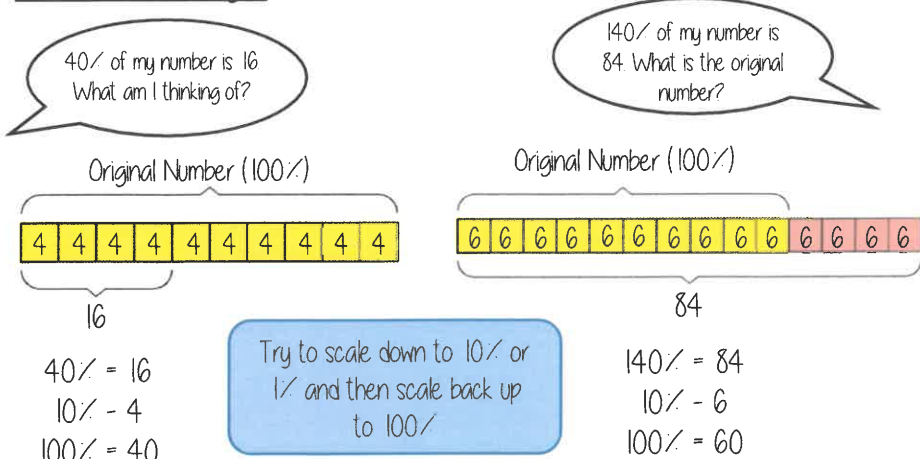
Percentage Increase/ Decrease



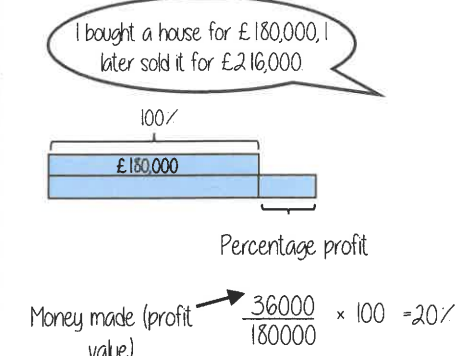
Percentage change



Reverse Percentages



$$\frac{\text{Difference in values}}{\text{Original value}} \times 100$$



Year 9 – reasoning with number...

Maths & Money

What do I need to be able to do?

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

- Solve problems with bills and bank statements
- Calculate simple interest
- Calculate compound interest
- Calculate wages and taxes
- Solve problems with exchange rates
- Solve unit pricing problems

Keywords

Credit: money being placed into a bank account
Debit: money that leaves a bank account
Balance: the amount of money in a bank account
Expense: a cost/ outgoing
Deposit: an initial payment (often a way of securing an item you will later pay for)
Multiplier: a number you are multiplying by (Multiplier more than 1 = increasing, less than 1 = decreasing)
Per Annum: each year
Currency: the type of money a country uses
Unitary: one – the cost of one.

Bills and Bank Statements

Bills – tell you the amount items cost and can show how much money you need to pay

Some can include a total

Look for different units (Is it in pence or pounds)

Menu	Price
Milk	89p
Tea	£1.50

Bank Statements

Bank statement can have negative balances if the money spent is higher than the money coming into the account

Date	Description	Credit	Debit	Balance
19th Sept	Salary	£1500		£1500
19th Sept	Mortgage		£600	£900
25th Sept	Bday Money	£15		£915

Simple Interest

For each year of investment the interest remains the same

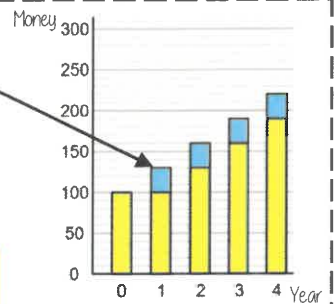
$$\frac{\text{Principal amount} \times \text{Interest Rate} \times \text{Years}}{100}$$

Principal amount is the amount invested in the account

e.g Invest £100 at 30% simple interest for 4 years

$$\frac{100 \times 30 \times 4}{100} = £120$$

This account earned **£120** interest
At the end of year 4 they have **£220**



Compound Interest

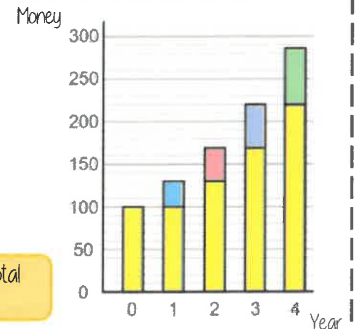
Interest is added to the current value of investment at the end of each year so the next year's interest is greater

$$\text{Principal amount} \times \text{Multiplier}^{\text{Years}}$$

e.g Invest £100 at 30% compound interest for 4 years

$$100 \times 1.3^4 = £285.61$$

This account has **£285.61** in total
at the end of the 4 years



Value Added Tax (VAT)

VAT is payable to the government by a business. In the UK VAT is 20% and added to items that are bought.

Essential items such as food do not include VAT.

Wages and Taxes

Salaries fall into tax brackets – which means they pay this much each month from their salary

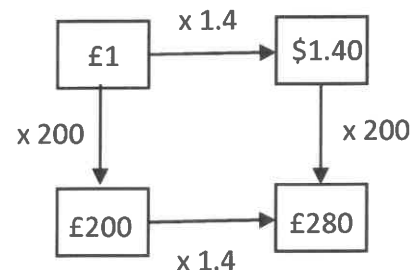
Taxable Income	Tax Rate
£12 501 to £50 000	20%
£50 001 to £150 000	40%
over £150 000	45%

Over time.

Time and a half – means 1.5 times their hourly rate

Double – 2 times their hourly rate

Exchange Rates



When making estimates it is also useful to use estimates to check if our solution is reasonable

Use inverse operations to reverse the exchange process

Common Currencies

United Kingdom	£	Pounds
United States of America	\$	Dollars
Europe	€	Euros

Unit Pricing

4 Oranges £1	5 cupcakes £1.20
-----------------	---------------------

To calculate unit per cost you divide by the cost.

Cupcakes are the best value as one item has the cheapest value

$$\begin{array}{lcl}
 4 = £1.00 & \div 2 & 5 = £1.20 \\
 2 = £0.50 & & \div 5 \\
 1 = £0.25 & \div 2 & 1 = £0.20
 \end{array}$$

Cost per Unit

There is a directly proportional relationship between the cost and number of units



HINDUISM

KNOWLEDGE ORGANISER



Overview

Hinduism is one of the world's major religions. It is the **world's 3rd largest religion**, with about 1.1 billion followers. It is around 5,000 years old.

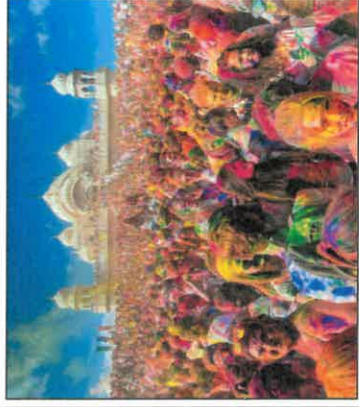
Hindus are the people who follow Hinduism. It is a very complex religion that is followed by different people in different ways.

Many gods are worshipped in Hinduism. All of these different Gods are believed to be a part of the supreme God named '**Brahman**.'

Hindus believe in **karma** and **reincarnation** – that when you die you are reborn as something else.

Hinduism does not have one holy book, but several sacred texts. **Mandirs** are Hindu worship buildings.

Image of Holi festival, celebrating the start of spring. People smear each other with colours.



Hindu Beliefs

Brahman and the Gods

-Hindus believe in one supreme God called Brahman. He can be found in everyone and everything, including the other Gods.

-Some of the important other Gods include 'Brahma' (the creator), 'Shiva' (the destroyer) and 'Vishnu' (the protector). These three together form the 'Trimurti' (trinity).

-Other gods include Ganesha (remover of obstacles), Hanuman (the monkey God), Lakshmi (the Goddess of wealth and good fortune), and Vishnu (the God who preserves life and stands up to evil).

Karma and Reincarnation

-Hindus believe that people are born again after they die, as another living thing (reincarnation).

-In each life the person is rewarded or punished for the things that they have said and done in their last life – this is called karma.

-Hindus believe that if they live a perfect life, they will be freed from birth and death to join the Gods (Moksha).



Festivals

-Hindus enjoy many festivals as a part of their religion. Holi festival marks the beginning of spring.

-Diwali, or the Festival of Lights, is held in the Hindu month of Ashwin (September of October in the western calendar). This event marks the Hindu New Year. Oil lamps are lit and floated down rivers to welcome the Goddess of Wealth. Fireworks are set off in order to ward off evil spirits.

-Hindu people also go on pilgrimages, for example to the River Ganges, which is sacred to Hindus.

Answers to Important Questions and Key Vocabulary

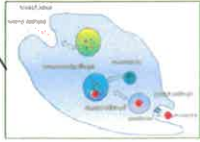
Where and how do Hindus worship? Why?	 	-Many Hindus worship at home in their own shrine – this could be anything from a room, an altar, or simply pictures or statues. -The Hindu building for communal worship is called a Mandir (Hindu temple). The temples are dedicated to different gods and are the focus of religious life. -At Mandirs, Hindu people often recite the names of Gods and Goddesses. They also offer water, fruit and flowers to the Gods.	Key Vocabulary
What are the Hindu holy books?		-There are many different types of holy texts in Hinduism. Perhaps the most sacred are called the Vedas. The Vedas guide people in their daily lives. They are written into the Sanskrit language. -About 15% of the world's population are Hindus. -India has the most Hindus by far – about 1 billion Indians are Hindus – this is around 80% of all Indians. -However, Nepal has the highest proportion of Hindus – about 83% of its population are Hindus. There are also lots of Hindus in Bangladesh, Indonesia, Malaysia, Pakistan and Sri Lanka. -Most of the populous countries in the world contain a population of Hindu people.	Hindu Brahman Karma Reincarnation Brahma Shiva Vishnu Holi Dewali
Where do most Hindus live in the world?		-There are many, many different forms of Hinduism, as different types have developed over the thousands of years since it was founded. -There are four main forms – Vaishnavism, Shaivism, Shaktism and Smartism. These four types can be broken down many more times! -Although they have small differences, each of the different forms follows the same rough principles.	Dhoti Sari River Ganges
How many different types of Hindu are there?			

Top 10 Facts!

- Hindus believe that all living things have souls.
- Because of this, very committed Hindus are vegetarians.
- Cows are considered to be particularly sacred, as they give milk to the people.
- People clean their houses, and then decorate them, to celebrate Diwali.
- Traditional Hindi clothes include a robe (dhoti) and shawl (chaddar) for men.
- Hindu women wear a long piece of clothing called a sari.
- Singing and dancing is an important part of Hindu worship, as is chanting.
- Big Hindu ceremonies include marriage (vivaha) and cremation (antyeshti).
- Hindu wedding celebrations last for many days. The bride and groom wear red and gold.
- After death, Hindus are cremated, and their remains are scattered in a nearby river.

Hindu Timeline

2500BCE: Evidence of Indus Valley Hindus.	1500 BCE: The oldest Hindu scriptures were created.	1300 BCE: The oldest Hindu hymns were composed.	800 BCE: The sacred text of the Mahabharata begins to be composed.	600CE: Hinduism begins to grow and flourish – prayers and songs written.	950-1050CE: A 'City of Temples' is built in India at Khajuraho – 80 still stand.	c. 1600 CE: The Hindu Renaissance begins. Many modern versions of sacred texts are found, translated and used.
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Phagocytes	Phagocytosis	Phagocytes engulf the pathogens and digest them.
Lymphocytes	Antibody production	Specific antibodies destroy the pathogen. This takes time so an infection can occur. If a person is infected again by the same pathogen, the lymphocytes make antibodies much faster.
	Antitoxin production	Antitoxin is a type of antibody produced to counteract the toxins produced by bacteria.

Detection and identification of plant diseases (bio only)		Identification
Detection	Stunted growth	Reference using gardening manual or website, laboratory test for pathogens, testing kit using monoclonal antibodies.
	Spots on leaves	
	Area of decay	
	growths	
	Malformed stem/leaves	
	Discolouration	
Presence of pests		

Nitrate ions needed for protein synthesis – lack of nitrate = stunted growth.

Magnesium ions needed to make chlorophyll – not enough leads to chlorosis – leaves turn yellow.

Plants have several ways of defending themselves from pathogens and animals

Physical	Mechanical
Thick waxy layers, cell walls stop pathogen entry	Thorns, curling up leaves to prevent being eaten
Chemical	
Antibacterial and toxins made by plant	

AQA GCSE INFECTION AND RESPONSE part 1

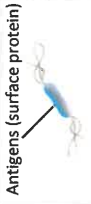
White blood cells are part of the immune system

Immune system

Non-specific defence systems

The human body has several non specific ways of defending itself from pathogens getting in

	Nose	Nasal hairs, sticky mucus and cilia prevent pathogens entering through the nostrils.
	Trachea and bronchus (respiratory system)	Lined with mucus to trap dust and pathogens. Cilia move the mucus upwards to be swallowed.
	Stomach acid	Stomach acid (pH1) kills most ingested pathogens.
	Skin	Hard to penetrate waterproof barrier. Glands secrete oil which kill microbes



Pathogens are identified by white blood cells by the different proteins on their surfaces **ANTIGENS**.

Pathogens may infect plants or animals and can be spread by direct contact, water or air

Pathogen	Disease	Symptoms	Method of transmission	Control of spread
Virus	Measles	Fever, red skin rash.	Droplet infection from sneezes and coughs.	Vaccination as a child.
Virus	HIV	Initially flu like systems, serious damage to immune system.	Sexual contact and exchange of body fluids.	Anti-retroviral drugs and use of condoms.
Virus	Tobacco mosaic virus	Mosaic pattern on leaves.	Enters via wounds in epidermis caused by pests.	Remove infected leaves and control pests that damage the leaves.
Bacteria	Salmonella	Fever, cramp, vomiting, diarrhoea.	Food prepared in unhygienic conditions or not cooked properly.	Improve food hygiene, wash hands, vaccinate poultry, cook food thoroughly.
Bacteria	Gonorrhoea	Green discharge from penis or vagina.	Direct sexual contact or exchange of body fluids.	Use condoms. Treatment using antibiotics.
Protists	Malaria	Recurrent fever.	By an animal vector (mosquitoes).	Prevent breeding of mosquitoes. Use of nets to prevent bites.
Fungus	Rose black spot	Purple black spots on leaves.	Spores carried via wind or water.	Remove infected leaves. Spray with fungicide.

Communicable diseases

Pathogens

Pathogens are microorganisms that cause infectious disease

Viruses live and reproduce inside cells causing damage

Bacteria may produce toxins that damage tissues and make us feel ill

Viruses	Bacteria (prokaryotes)	Protists (eukaryotes)	Fungi (eukaryotes)
e.g. cold, influenza, measles, HIV, tobacco mosaic virus	e.g. tuberculosis (TB), Salmonella, Gonorrhoea	e.g. dysentery, sleeping sickness, malaria	e.g. athlete's foot, thrush, rose black spot
DNA or RNA surrounded by a protein coat	No membrane bound organelles (no chloroplasts, mitochondria or nucleus). Cell wall. Single celled organisms	Membrane bound organelles. Usually single celled.	Membrane bound organelles, cell wall made of chitin. Single celled or multi-cellular

Traditionally drugs were extracted from plants and microorganisms		
Digitalis	Aspirin	Penicillin
Extracted from foxglove plants and used as a heart drug	A painkiller and anti-inflammatory that was first found in willow bark	Discovered by Alexander Fleming from the <i>Penicillium</i> mould and used as an antibiotic
		

Most new drugs are synthesised by chemists in the pharmaceutical industry.

Drugs have to be tested and trialled before to check they are safe and effective

New drugs are tested for:		
Efficacy	Make sure the drug works	
Toxicity	Check that the drug is not poisonous	
Dose	The most suitable amount to take	

Preclinical trials - using cells, tissues and live animals - must be carried out before the drug can be tested on humans.

Clinical trials use healthy volunteers and patients

Stage 1	Stage 2	Stage 3	Stage 4
Healthy volunteers try small dose of the drug to check it is safe record any side effects	A small number of patients try the drug at a low dose to see if it works	A larger number of patients; different doses are trialled to find the optimum dose	A double blind trial will occur. The patients are divided into groups. Some will be given the drug and some a placebo.

Specific to one binding site on the antigen. Can target specific chemicals or cells in the body

Monoclonal antibodies (Biology only HT)

Monoclonal antibodies

Identical copies of one type of antibody produced in laboratory

1. A mouse is injected with pathogen
2. Lymphocytes produce antibodies
3. Lymphocytes are removed from the mouse and fused with rapidly dividing mouse tumour cells
4. The new cells are called hybridomas
5. The hybridomas divide rapidly and release lots of antibodies which are then collected

Double blind trial: patients and scientists do not know who receives the new drug or placebo until the end of the trial. This avoids bias.



Discovery and drug development

Sometimes this makes them resistant to antibiotic drugs.

Bacteria can mutate

Antibiotics and painkillers

Antibiotics have greatly reduced deaths from infectious bacterial disease

antibiotics	e.g. <i>penicillin</i>	Kill infective bacteria inside the body. Specific bacterial infections require specific antibiotics.
Painkillers and other medicines	e.g. <i>aspirin</i> , <i>paracetamol</i> , <i>ibuprofen</i>	Drugs that are used to treat the symptoms of a disease. They do not kill pathogens

Antibiotics cannot be used to treat viral pathogens

It is difficult to develop drugs to kill viruses without harming body tissues because viruses live and reproduce inside cells

Vaccination

Used to immunise a large proportion of the population to prevent the spread of a pathogen

AQA INFECTION AND RESPONSE

Vaccination
Small amount of dead or inactive form of the pathogen
1 st infection by pathogen
Re-infection by the same pathogen

White blood cells detect pathogens in the vaccine. Antibodies are released into the blood.

White blood cells detect pathogens. Antibodies are made much faster and in larger amounts.

Created more side effects than expected (fatal in some cases) and are not as widely used as everybody hoped when first developed.

A person is unlikely to suffer the symptoms of the harmful disease and it's spread in a population is prevented

Monoclonal antibodies can be used in a variety of ways

Diagnosis	Detecting pathogens	Detecting molecules	Treatment
e.g. pregnancy test - measure the level of hormones	Can detect very small quantities of chemicals in the blood	Fluorescent dye can be attached so it can be seen inside cells or tissues	Bound to radioactive substance, toxic drug or chemical Cancer cells are targeted to normal body cells are unharmed

**Metals to the left of this line, non
metals to the right**

Metals and non metals

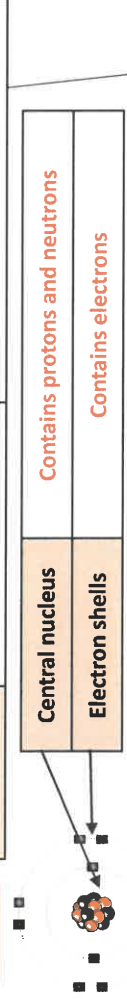
AQA GCSE
Atomic structure
and periodic
table part 2

**Transition metals
(Chemistry only)**

Compared to group 1	• Less reactive • Harder • Denser • Higher melting points	• Cu^{2+} is blue • Ni^{2+} is pale green, used in the manufacture of margarine • Fe^{2+} is green, used in the Haber process • Fe^{3+} is reddish-brown • Mn^{2+} is pale pink
Typical properties	• Many have different ion possibilities with different charges • Used as catalysts • Form coloured compounds	

-25-

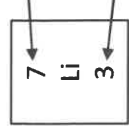
Atom	The smallest part of an element that can exist	Have a radius of around 0.1 nanometres and have no charge (0).
Element	Contains only one type of atom	Around 100 different elements each one is represented by a symbol e.g. O, Na, Br.
Compound	Two or more elements chemically combined	Compounds can only be separated into elements by chemical reactions.



Central nucleus		Contains protons and neutrons	
Electron shells		Contains electrons	
Name of Particle	Relative Charge	Relative Mass	Electronic shell
Proton	+1	1	1
Neutron	0	1	2
Electron	-1	Very small	3
			4

Relative electrical charges of subatomic particles

Mass number	The sum of the protons and neutrons in the nucleus	
Atomic number	The number of protons in the atom	Number of electrons = number of protons



Mixtures	Two or more elements or compounds not chemically combined together
Compounds	Can be separated by physical processes.

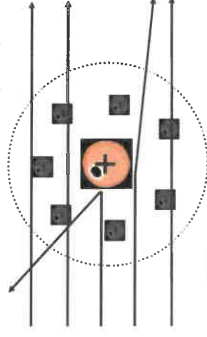
Method	Description	Example
Filtration	Separating an insoluble solid from a liquid	To get sand from a mixture of sand, salt and water.
Crystallisation	To separate a solid from a solution	To obtain pure crystals of sodium chloride from salt water.
Simple distillation	To separate a solvent from a solution	To get pure water from salt water.
Fractional distillation	Separating a mixture of liquids each with different boiling points	To separate the different compounds in crude oil.
Chromatography	Separating substances that move at different rates through a medium	To separate out the dyes in food colouring.

Pre 1900		Tiny solid spheres that could not be divided	Before the discovery of the electron, John Dalton said the solid sphere made up the different elements.
1897		A ball of positive charge with negative electrons embedded in it	JJ Thompson 's experiments showed that showed that an atom must contain small negative charges (discovery of electrons).
1909		Positively charged nucleus at the centre surrounded by negative electrons	Ernest Rutherford's alpha particle scattering experiment showed that the mass was concentrated at the centre of the atom.
1913		Electrons orbit the nucleus at specific distances	Niels Bohr proposed that electrons orbited in fixed shells; this was supported by experimental observations.

The development of the model of the atom

James Chadwick
Provided the evidence to show the existence of neutrons within the nucleus

A beam of alpha particles is directed at a very thin gold foil



Rutherford's scattering experiment

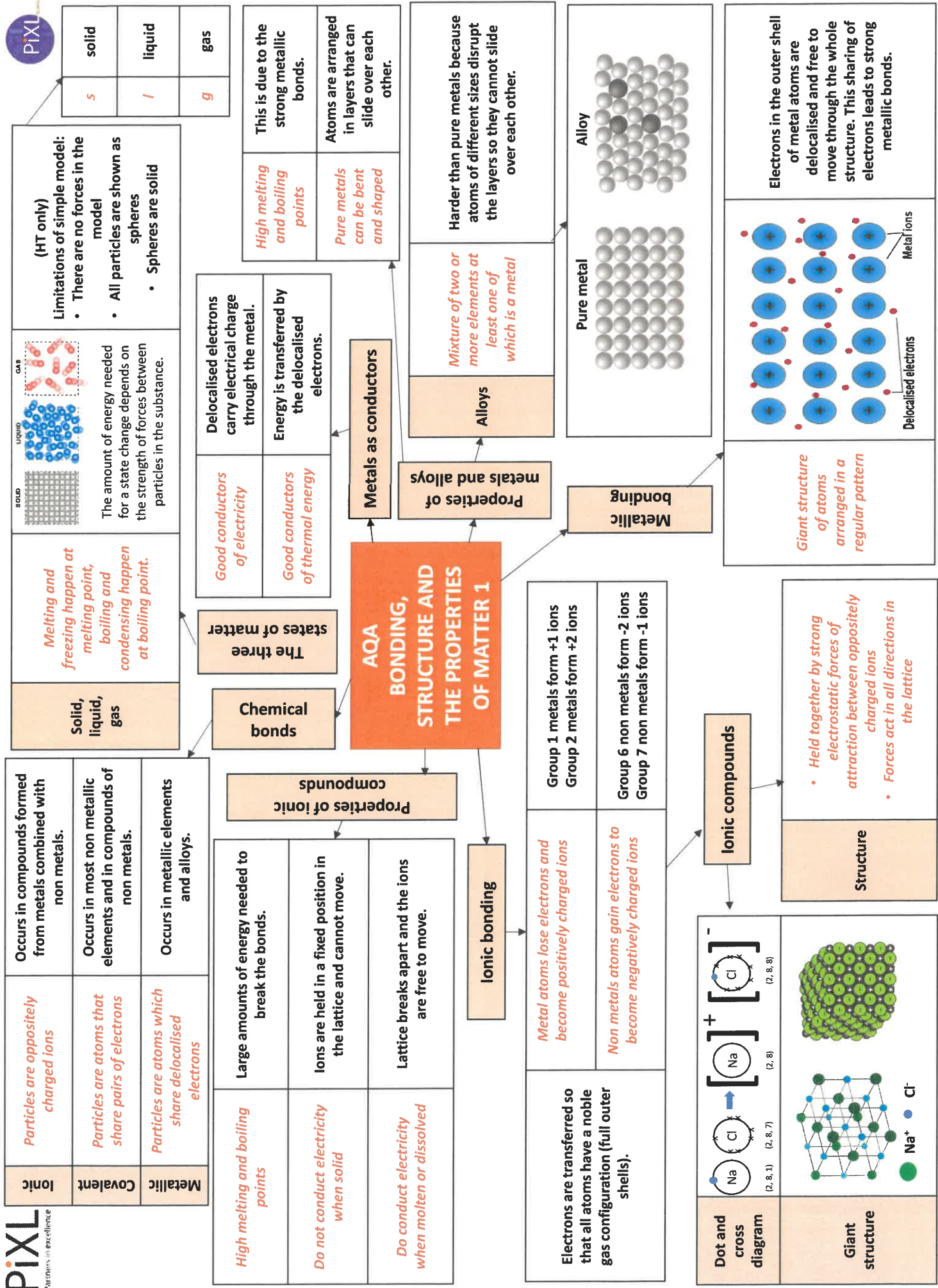
AQA GCSE Atomic structure and periodic table part 1

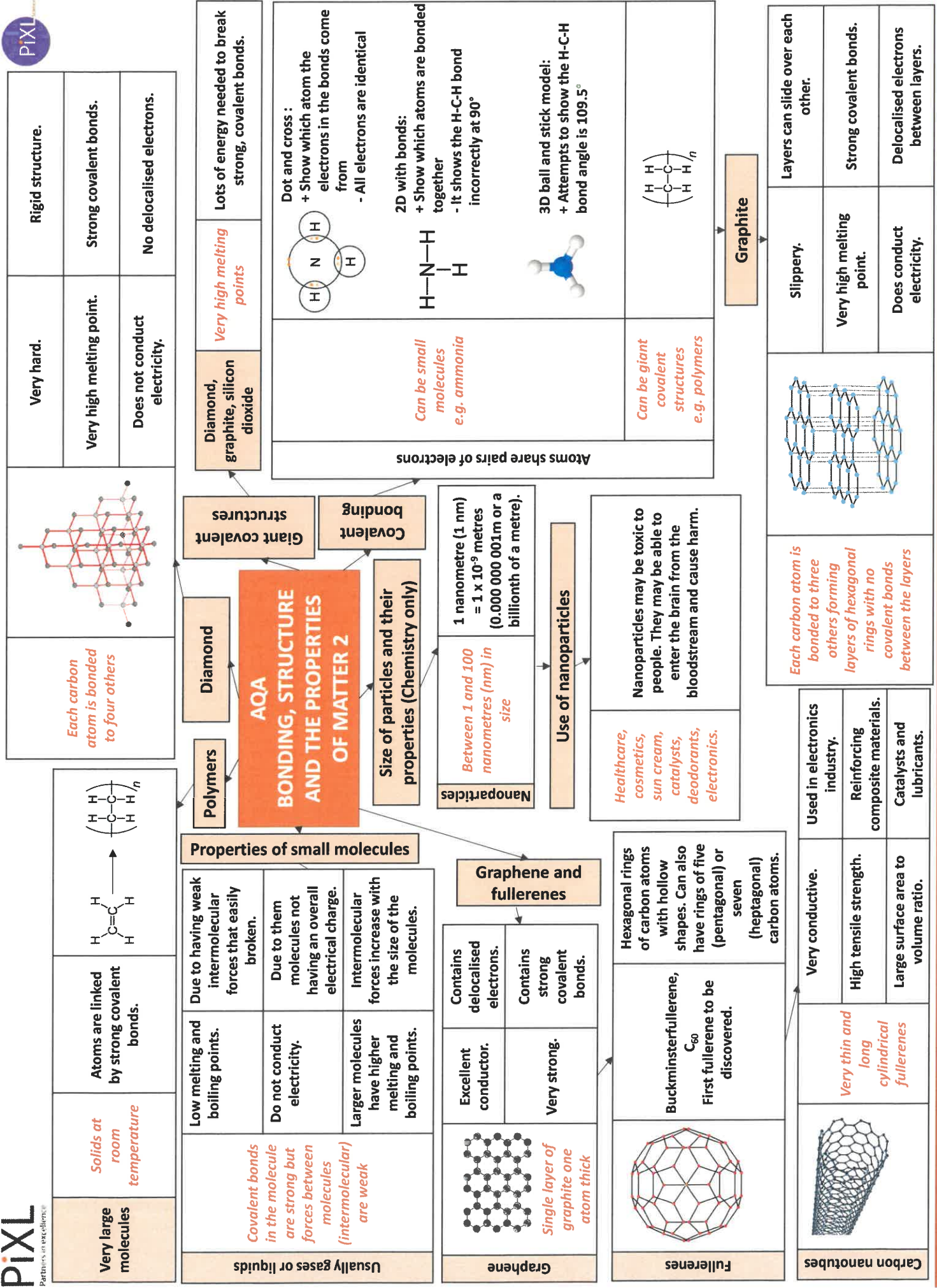
Most of the alpha particles passed right through.
A few (+) alpha particles were deflected by the positive nucleus.
A tiny number of particles reflected back from the nucleus.

Chemical equations	Show chemical reactions - need reactant(s) and product(s) energy always involves and energy change
Word equations	Does not show what is happening to the atoms or the number of atoms.
Symbol equations	Shows the number of atoms and molecules in the reaction, these need to be balanced.

Word equations	reactants → products magnesium + oxygen → magnesium oxide
Symbol equations	reactants → products 2Mg + O ₂ → 2MgO

Relative atomic mass	Atoms of the same element with the same number of protons and different numbers of neutrons
Isotopes	³⁵ Cl (75%) and ³⁷ Cl (25%) Relative abundance = (% isotope 1 x mass isotope 1) + (% isotope 2 x mass isotope 2) ÷ 100 e.g. (25 x 37) + (75 x 35) ÷ 100 = 35.5





Transport	<i>Petrol, diesel, kerosene produced from oil</i>	Used in cars, trains and planes.
Heating	<i>Gas and electricity</i>	Used in buildings.
Electricity	<i>Most generated by fossil fuels</i>	Used to power most devices.

Using renewable energy will need to increase to meet demand.

Renewable energy makes up about 20% of energy consumption.

Fossil fuel reserves are running out.

Energy demand is increasing as population increases.

These will run out. It is a finite reserve. It cannot be replenished.

e.g. Fossil fuels (coal, oil and gas) and nuclear fuels.

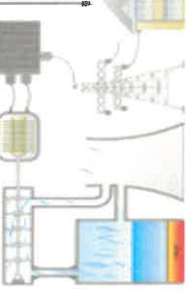
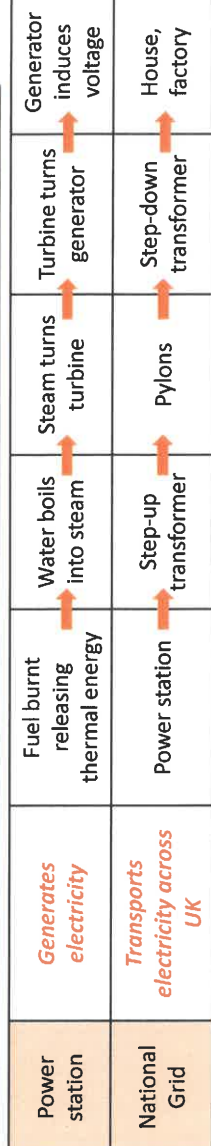
These will never run out. It is an infinite reserve. It can be replenished.

e.g. Solar, Tides, Waves, Wind, Geothermal, Biomass, Hydroelectric

Using fuels

Energy resources

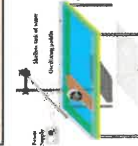
Power station – NB: You need to understand the principle behind generating electricity. An energy resource is burnt to make steam to drive a turbine which drives the generator.



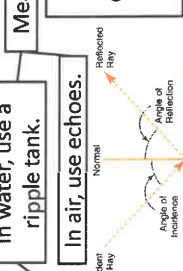
Energy resource	How it works	Uses	Positive	Negative
Fossil Fuels (coal, oil and gas)	<i>Burnt to release thermal energy used to turn water into steam to turn turbines</i>	Generating electricity, heating and transport	Provides most of the UK energy. Large reserves. Cheap to extract. Used in transport, heating and making electricity. Easy to transport.	Non-renewable. Burning coal and oil releases sulfur dioxide. When mixed with rain makes acid rain. Acid rain damages building and kills plants. Burning fossil fuels releases carbon dioxide which contributes to global warming. Serious environmental damage if oil spilt.
Nuclear	<i>Nuclear fission process</i>	Generating electricity	No greenhouse gases produced. Lots of energy produced from small amounts of fuel.	Non-renewable. Dangers of radioactive materials being released into air or water. Nuclear sites need high levels of security. Start up costs and decommission costs very expensive. Toxic waste needs careful storing.
Biofuel	<i>Plant matter burnt to release thermal energy</i>	Transport and generating electricity	Renewable. As plants grow, they remove carbon dioxide. They are 'carbon neutral'.	Large areas of land needed to grow fuel crops. Habitats destroyed and food not grown. Emits carbon dioxide when burnt thus adding to greenhouse gases and global warming.
Tides	<i>Every day tides rise and fall, so generation of electricity can be predicted</i>	Generating electricity	Renewable. Predictable due to consistency of tides. No greenhouse gases produced.	Expensive to set up. A dam like structure is built across an estuary, altering habitats and causing problems for ships and boats.
Waves	<i>Up and down motion turns turbines</i>	Generating electricity	Renewable. No waste products.	Can be unreliable depends on wave output as large waves can stop the pistons working.
Hydroelectric	<i>Falling water spins a turbine</i>	Generating electricity	Renewable. No waste products.	Habitats destroyed when dam is built.
Wind	<i>Movement causes turbine to spin which turns a generator</i>	Generating electricity	Renewable. No waste products.	Unreliable – wind varies. Visual and noise pollution. Dangerous to migrating birds.
Solar	<i>Directly heats objects in solar panels or sunlight captured in photovoltaic cells</i>	Generating electricity and some heating	Renewable. No waste products.	Making and installing solar panels expensive. Unreliable due to light intensity.
Geothermal	<i>Hot rocks under the ground heats water to produce steam to turn turbine</i>	Generating electricity and heating	Renewable. Clean. No greenhouse gases produced.	Limited to a small number of countries. Geothermal power stations can cause earthquake tremors.

Wave speed	Wave speed = frequency X wavelength	$V = f \times \lambda$
Wave period	Wave period = $1 \div \text{frequency}$	$T = 1 \div f$
Speed	Speed = distance $\div$ time	$v = d \div t$

Wavelength	Distance from one point on a wave to the same point of the next wave
Amplitude	The maximum disturbance from its rest position
Frequency	Number of waves per second
Period	Time taken to produce 1 complete wave



In water, use a ripple tank.
In air, use echoes.



Angle of incidence = angle of reflection
(i) = (r)

Reflection	Wave bounces off the surface.
Refraction	Waves changes direction at boundary.
Transmitted	Passes through the object.
Absorbed	Passes into but not out of; transfers energy and heats up the object.

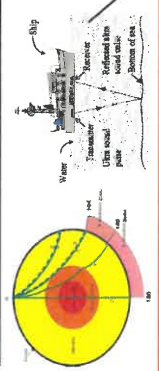


PHYSICS HIGHER ONLY

Frequencies between 20,000 Hz
Longitudinal waves cause ear drum to vibrate, amplified by three ossicles which creates pressure in the cochlea.

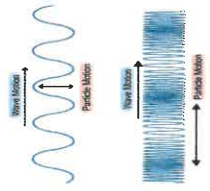
Seismic waves

P wave	S wave	Seismograph
Longitudinal	Transverse	Shows P and S waves arriving at different times.
Fast	Slow	
Travel through solids and liquids		By using the times the waves arrive at the monitoring centres, the epicentre of earthquake can be found. ($v = x \div t$).
Produced by earthquakes.		



Ultra sound	Partially reflected off boundary
Sonar	Reflected off objects

Used for medical and foetal scans.
Used to determine depth of objects under the sea.



Transverse wave	Vibration causing the wave is at right angles to the direction of energy transfer	Energy is carried outwards by the wave.	Water and light waves, S waves.
Longitudinal wave	Vibration causing the wave is parallel to the direction of energy transfer	Energy is carried along the wave.	Sound waves, P waves.

Transverse and Longitudinal waves

Waves in air, fluids and solids

AQA Waves

Short wavelengths have high frequency and high energy.

Electromagnetic waves

Continuous spectrum of transverse waves



Absorbed light changes into thermal energy store.

Black surfaces	Good emitters, good absorbers
White surfaces	Poor emitters, poor absorbers
Shiny surfaces	Good reflectors



EM waves refract

Black body radiation

e.g. Gamma

PHYSICS ONLY

Magnification = image size $\div$ object size

HIGHER: Lenses



HIGHER: Properties

EM wave	Danger	Use
Radio	Safe.	Communications, TV, radio.
Microwave	Burning if concentrated.	Mobile phones, cooking, satellites.
Infrared	Damage to eyes.	Heating, remote controls, cooking.
Visible	Sunburn, cancer.	Illumination, photography, fibre optics.
Ultra violet	Cell destruction, mutation, cancer.	Security marking, disinfecting water.
X-ray		Broken bones, airport security.
Gamma		Sterilising, detecting and killing cancer.

2F	Image same size, upside down, real.	Flat surface reflection.
2F - F	Image larger, upside down, real.	Specular
< F	Image bigger, right way, virtual.	Diffuse
		Low frequency, long wavelength.
		White
		Black
		High frequency, short wavelength.

Earth and Global warming
Ultraviolet, visible light, infra-red radiation penetrate atmosphere and heat up Earth's surface.
Longer wavelengths are radiated back, trapped by atmosphere.

Black body radiation
Constant temperature
Rate of absorption = rate of radiation
Intensity and wavelength of energy affects temperature.

PHYSICS ONLY

Units
Distance Metres (m)
Wave speed Metres per second (m/s)
Wavelength Metres (m)
Frequency Hertz (Hz)
Period Seconds (s)



Flat surface reflection.
Specular
Rough surface reflection.
Diffuse

Low frequency, long wavelength.	White
High frequency, short wavelength.	Black