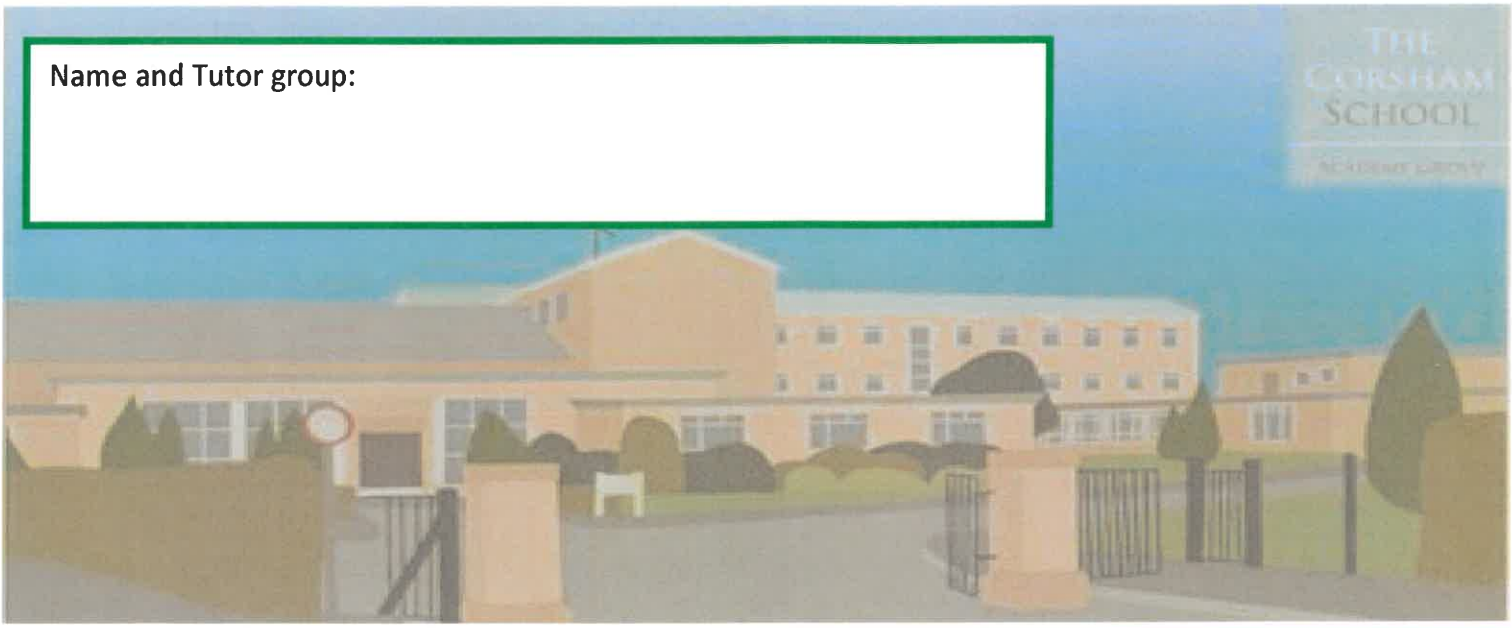
Name and Tutor group:



Year 8 Knowledge Organiser

Term 3

Contents

CORSHAM CHARACTER

INTELLECTUAL VALUES

The pursuit of truth, knowledge and understanding.

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

PERFORMANCE VALUES

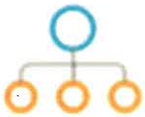
Maximum effort, maximum focus.

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

DREAM BELIEVE ACHIEVE

Choose any of the following activities to complete your homework

	Look, Cover, Write, Check	Definitions to key words	Flashcards	pictures
Stage 1	Look at & study an area of your knowledge organiser 	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 organiser 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 

	Self quizzing	Mindmaps	Paired retrieval	Speak, Cover, Write, Check
Stage 1	Use your knowledge organiser to create quiz questions. 	Create a mindmap of everything you can remember from your knowledge organiser 	Give a family member/friend the knowledge organiser to hold 	Read out loud the information from the knowledge organiser several times. 
Stage 2	Write down the answers to your quiz 	Check your knowledge organiser & use a green pen to make any corrections. 	Get them to test you using the knowledge organiser 	Cover up your knowledge organiser and write everything you remember 
Stage 3	Keep self-quizzing until you get all the answers correct 	Add additional information to your mindmap or make connections to other knowledge 	Write down your answers to their questions 	Check. Correct mistakes in green and add anything you missed. 

LEARNTOSTUDYUSING...

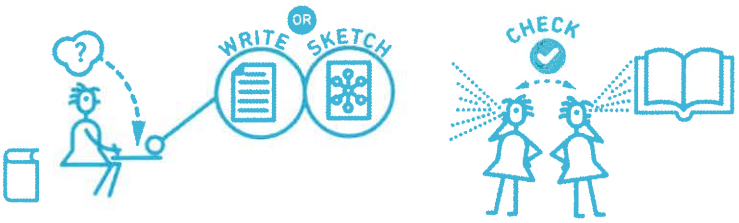
Retrieval Practice

PRACTICEBRINGINGINFORMATIONTOMIND

LEARNINGSCIENTISTS.ORG

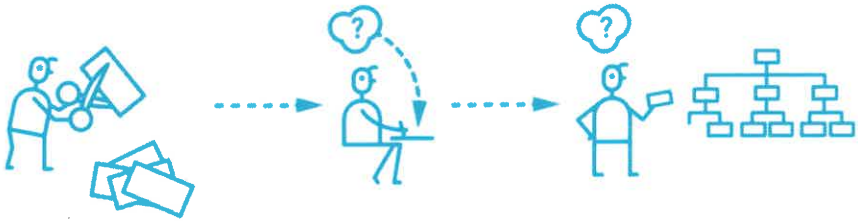
HOW TO DO IT

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.

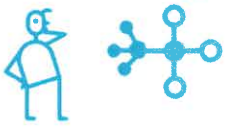
You can also make flashcards. Just make sure you practice recalling the information on them, and go beyond definitions by thinking of links between ideas.



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 8 ART

Expressive Portraits

EXAMPLES OF FINAL OUTCOMES:

YOU WILL LEARN:

Skills to produce a a series of expressive portraits inspired by contextual sources like Maria Rivens, Frida Kahlo/Mexican Folk Art and Fauvism. You will make use of mono-printing and layering techniques while using decorative qualities to convey your portrait.

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:

Maria Rivens

Frida Kahlo

Frida Kahlo/Mexican Folk Art

Mexican Folk Art is highly decorative and uses organic patterns linked to nature. The art is typically inspired by ancient cultures like the Mayans and Aztecs.

Fauvism

Fauvism uses bright, bold and strong colours instead of realistic ones.

Short video about Fauvism

SCAN ME

Video about Frida Kahlo

SCAN ME

KEY VOCABULARY

Collage	Collage describes both the technique in which pieces of paper, photographs, fabric and other materials are arranged and stuck down onto a supporting surface.
Depth	Depth refers to the perceived distance between the background and the foreground of a composition.
Composition	The arrangement of elements within a work of art.
Monoprint	The monoprint is a form of printmaking where the image can only be made once.
Expressive	Effectively conveying meaning or feeling.
Fauvism	An art movement from 1905 to 1910, which is characterized by strong colours and fierce brushwork.

HOMEWORK TASKS:

Tick when complete

1. Artist research: Maria Rivens
2. Draw a portrait onto a different surface.
3. Draw an animal in a Fauvist style.
4. Create a Mexican Folk Art Papel picado.
5. Draw/add colour to an image of yourself or another person (magazine or printed).

HOW WELL AM I DOING?

My Progress

Name:	Project: Year 8 Tropical landscapes	Target grade:

Targets	Done ☑	Grade
Develop accuracy with colour mixing and directional marks for texture		
Explore the Sgraffito and wax resist techniques to develop the background foliage		
Create a full-page copy of a Rousseau animal in oil pastel		
Annotate to evaluate your work and to explain the Rousseau links- use key words		
Use mixed media in your final outcome showing skilful application of materials and paper folding techniques like origami		
Develop accuracy for foliage and leaf shapes in the foreground		
Practise mixing your paints to create more accurate colours		
Create a 3 layered composition using paint and mixed media		
Develop a clear and successful composition plan		
Present the information on Rousseau on a full page in your book with a title and images		
	End of project grade	

Teacher comment:

COMPUTING CORSHAM

Year 8 Python Knowledge Organiser

1: Key Words

Algorithm: A set of instructions or code used to solve a problem.

Syntax: The rules of the programming language that need to be followed in order for it to work.

Variables: Data that is stored in memory that is likely to change.

Program: Code compiled together to perform a specific function.

4: Data Types

String: A Variable data type that can store a combination of letters, characters and numbers.

Integer: A Variable data type that can store whole numbers.

Float: A Variable data type that can store decimal numbers.

Boolean: A Variable data type that stores either TRUE or FALSE.

7: Iteration

Iteration is used to repeat a set of instructions or commands in a program. It saves having to write them all out over and over again.

There are two loops in Python programming:
While - Checks if a condition is true and while it is true will keep repeating it.

For - Runs for a specific amount of times and stops when it reaches the desired number.

Examples:

```
while answer != "London":
    answer = input("What is the capital of London?");
```

Or

```
for i in range(5):
    movie = input("What is one of your top 5 favourite movies?")
```

2: Printing

To **print** out a statement or a **variable** we use the code below:

Printing a new message:

```
print("Hello World");
```

Printing the value of a variable:

```
print(x);
```

Printing a message with variables included:

```
print("Hello",name,"your are",age,"years old today");
```

KS3 Computer Science LINK

8: Inputs

To allow your Python program to get information from the user you will need to use the **input** command. Make sure you use the correct command for what you are asking for.

String inputs (such as a name):

```
input("Enter your name");
```

Integer inputs (for whole number responses):

```
int(input("What is your age?"));
```

Float inputs (for decimal number responses):

```
float(input("What is your shoe size?"));
```

3: Variables

Variables are simply a place on the computer's memory that is given a name in order for it to remember it.

In Python you create a variable by writing the name of the variable followed by an =.

Examples:

```
name = "Spongebob";
age = 14;
```

6: Selection

Selection is used to allow the program to make a choice and take a different path.

The keywords used in Python are:

if - checks if the **condition** is true, if so the program runs the indented code below it.

elif - if the first if fails then this elif condition is checked, there can be multiple of these.

else - if all if and elif statements are not true the the code indented below else will run.

Example:

```
colour - input("Enter your favourite colour");
if colour == "Red":
    print("Reminds me of tomatoes");
elif colour == "Blue":
    print("Reminds me of the sea!");
else:
    print("If it ain't Red or Blue then I ain't interested");
```

BLOCKING

Planning your positioning and movement around the stage, including entrances and exits.

Year 8 TEECHERS Term 3
Scripted work

SET DESIGN

Deciding on the different elements that will be used to create a visual interpretation of the environment/setting of the scene.

PERFORMANCE SKILLS

High / Low

Vocals - Pitch: How high or low your voice is.

Vocals - Pace: The speed that you speak at.

Vocals - Emphasis: 'Highlighting' a specific word or phrase, by changing at least one aspect of your vocals.

Vocals - Power: The amount of tension in your voice. This is not the same as volume - you can have large vocal power at a low volume.

Spatial Awareness: The ability to see yourself, (in relation to other actors/set), in the stage space to create a specific effect.

'Teechers' is a play written by John Godber in 1985. It is a play within a play in which three students perform for their teachers.
The three actors multirole throughout the performance providing an account of their time in secondary school.

Key Characters:
Lilian Hobson "Hobby" –fed up with her friends.
Gail Saunders – The flirty one
Ian Salt "Salty" – The fired soul, doesn't know what he'll do with his life after leaving school.
Mr Nixon – the drama teacher
Mrs. Hudson – the headmistress, renamed Mrs. Parry for the play, loud and large with a terrible dress sense.
Bobby Moxon – (Oggy Moxon) Bully of the school who scares teachers and students alike.
Ms. Whitham – Hopeless English teacher, eager to leave
Mr. Basford – The deputy head and maths teacher. Hates children, typically nasty.
Miss Jackie Prime – The sports teacher, young and bouncy.
Doug – The caretaker. Grouchy and assertive.
Mr. Dean – A teacher who thinks that all of the kids love him.

DRAMA TERMS

Script: The entire play written down. Scripts include all the dialogue that the characters speak, stage directions and a brief overview of the setting.

Proxemics: The use of space/distance to communicate relationship.

Given Circumstances: Everything that the script tells you. The 'world' of the play - the things that make the play that play and not a different play.

- Environmental - Geographic location (inc. climate), date, year, season, time of day. Also includes the economic environment: the character's relationship to wealth or poverty, and the class of the character in relationship to the society in which they live.

- Previous Action - Any action mentioned in the play's dialogue that reveals any incident or action that took place before the current action of the play/scene began. Often called, "exposition".

- Polar Opposition/Attitude - Beliefs held by a character that are in direct opposition to the world in which the character lives. This opposition creates conflict. Conflict creates dramatic action.

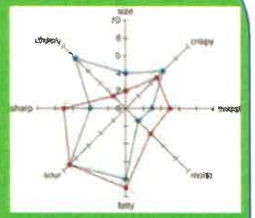
DIG DEEPER QUESTIONS

How could you use vocal skills to communicate subtle changes to a character's emotions?
How might environmental given circumstances influence a set designer?
How might you as an actor use given circumstances to craft your character?
What do you think is the most important part of the 'page to stage' process?
Why is blocking an important part of the 'page to stage' process?
Why are proxemics so important when creating meaning?
How can eye contact change the meaning of a line of dialogue?
What makes a successful, scripted performance?

Year 8 Food Knowledge Organiser.

Sensory Analysis

Using technical descriptive words to evaluate food products. Using our senses - taste, texture, aroma and appearance. We often record this information onto a star (sensory) profile.



Discrimination testing These are used to detect differences between two or more products.

Hedonic testing

These are used to see how much we like the products

Healthy eating

What happens if we eat too much fat: • Weight gain, Obesity • Heart disease • Type 2 diabetes	**What happens if we eat too much sugar:** • Tooth decay • Weight gain – obesity
What happens if we eat too much salt: • Raised blood pressure • Increased risk oh heart disease and stroke	**What happens if we don't eat enough fibre:** • Helps digestion and prevents constipation • lower risk of heart disease, stroke, Type 2 diabetes and bowel cancer

Washing Up Routine

RINSE

STACK

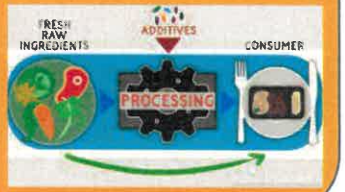
WASH

DRAIN

DRY

Food provenance

Food that is grown, food that is caught, food that is reared.



EatWell Guide

The eatwell guide shows us how much of what we eat should come from each food group. What other information can you see that will help us make healthy choices?

Health and Safety Rules in our Kitchen

- Wash hands thoroughly with soap and hot water
- Tie hair back
- Put on a clean apron
- Blazer and jumper off and roll up sleeves
- Bags under the table and chairs pushed under
- Sensible behaviour
- Listen to instructions
- No running in the kitchen
- Do not cough or sneeze onto food
- Use the correct colour chopping board
- Clear up spills immediately
- Do not mix raw and cooked food on the same board
- Follow the washing up routine

Food Hygiene

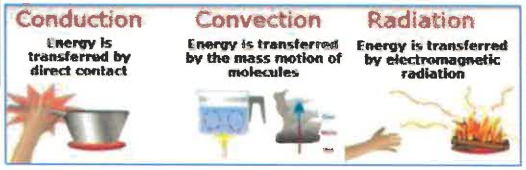
- **Food Poisoning:** Illness caused from eating contaminated food.
- **Bacteria:** Microscopic living organisms – some are good and some are bad!
- **High risk foods:** Foods that are high in protein and high in moisture. These foods need to be cooked and stored correctly to avoid harm

Keywords

- Raising agent
- Obesity
- Type 2 diabetes
- Nutrients
- Balanced diet
- Provenance
- Coronary heart disease
- Conduction
- convection
- Hedonic testing

Practical

- Pasta bake
- Turkey burgers
- Chocolate brownies
- Pasta/rice salad
- Pineapple upside down cake
- Pizza
- croissants



KS3 YEAR 8 D&T RESISTANT MATERIALS

Tools and Equipment

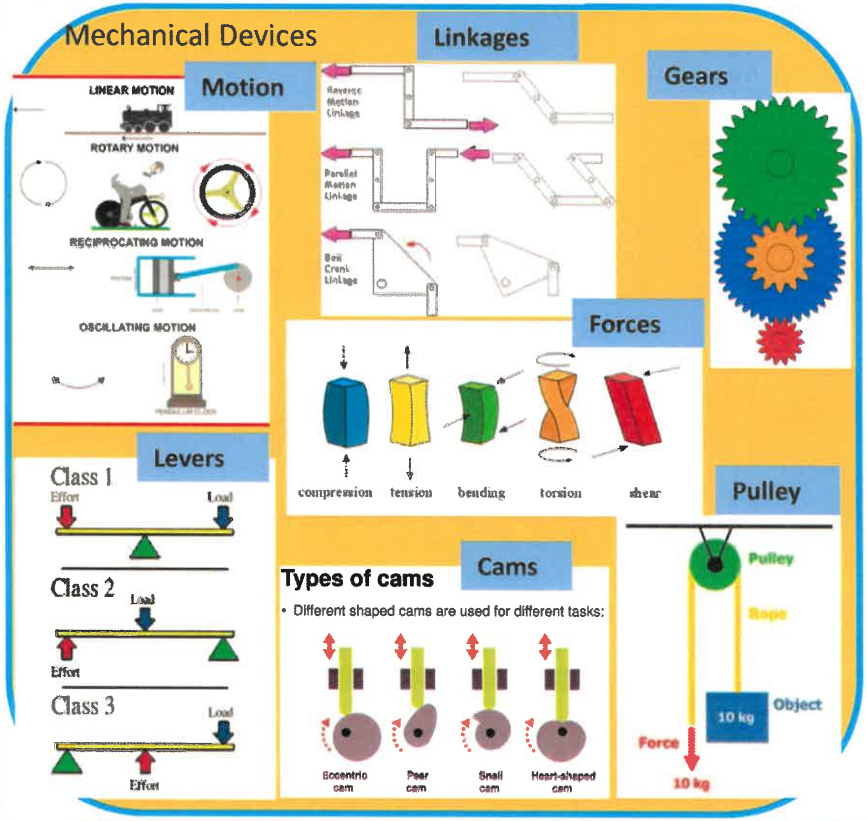
Measuring and marking

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
Jig		A tool used to control the location and/or motion of another tool

Shaping and finishing

Metal file		Used to shape or smooth wood, metal or plastic
Glass paper		An abrasive paper used to smooth the surface or edges of wood
Disc sander		A machine used to smooth the edges of materials

Mechanical Devices



2 point perspective

Cutting

Tenon saw		A hand saw with a stiff back used to cut straight lines in wood – back saw action
Coping saw		A hand saw used to cut complex shapes in wood and plastic
Scroll saw		A machine saw used to cut complex shapes in wood and plastic
Bench hook		Held against the front edge of a bench or table to support work
Pillar drill		A machine used to make holes in materials
Chisel		Used for carving or cutting a hard material such as wood, stone, or metal by hand
Laser cutter		CAM: Laser cutting is the use of a high-powered laser to cut, etch and engrave your material

Traditional wood joints:
- Butt Joint
- Lap / Rebate Joint
- Finger Joint
- Dovetail Joint
- Mitre Joint

Maths in DT:
- Multiplication
- Divide
- Add / Subtract
- Measurement conversion
- Ratios
- Percentages
- Surface area

What is good design?
- Clear ideas
- Annotations
- Measurements
- Content
- Presentation
- Balance

Keywords

Research	Pulley
Design	Linkage
Evaluation	Lever
Wood joint	Motion
Mechanical	Force

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 8

DT TEXTILES

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

Textiles Dyes:

Natural Dyes

- Plants
- Food / spices
- Grass / tree bark / leaves
- Onions / beetroot
- Cochineal

Chemical Dyes

Dyes which are man-made using chemicals: consistent and vibrant.

Fibre Categories:

Natural Fibres

Plant based natural fibres:

- Cotton
- Linen
- Flax
- Coir (coconut)

Animal based natural fibres:

- Wool
- Angora
- Silk

Man-made Fibres

- Polyester
- Acrylic
- Nylon

Fabric Construction:

Woven
Knitted
Bonded

Keywords

Islamic
Religion
Design
Product analysis
Research
Evaluation
Stitch
Scissors
Sewing machine
Customer
Environment
Function
Material
Seam allowance
Hem
Tie-Dye
Printing
Tesselate
UCD
Mordant

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

Adding Colour

Tie-dye		A type of resist dye
Batik		A type of resist dye which uses wax
Block Printing		Engraved wooden blocks to produce repeat patters
Fabric paint / pens		Paint / pens which can be applied to fabrics

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**

Types of Seams:

Plain
French
Flat felled
Bound
Lapped

Maths in DT:

Multiplication
Divide
Add / Subtract
Measurement conversion
Ratios
Percentages
Surface area

What is good design?

Clear ideas
Annotations
Measurements
Content
Presentation
Balance

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
- Work quietly and be sensible and careful at all times

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-heals 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 *Much Ado About Nothing*, 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."

VERT

Qu'est-ce qu'on peut faire? • *What can you do?*

On peut ...	*You can ...*
aller à un concert	*go to a concert*
aller au théâtre	*go to the theatre*
faire les magasins	*go shopping*
faire un tour en segway	*go on a tour by segway*
faire une balade en bateau-mouche	*go on a boat trip*
manger au restaurant	*eat in a restaurant*
visiter les monuments	*visit the monuments*
visiter les musées	*visit the museums*

D'accord? • *Do you agree?*

À mon avis ...	*In my opinion ...*
c'est vrai	*it's true*
c'est faux	*it's false*
Je suis d'accord.	*I agree.*
Je ne suis pas d'accord.	*I disagree.*

J'aime ... • *I like ...*

J'adore ...	*I love ...*
Je n'aime pas ...	*I don't like ...*
Je déteste ...	*I hate ...*
aller au cinéma (avec mes amis)	*going to the cinema (with my friends)*
aller aux concerts (rock)	*going to (rock) concerts*
aller voir des matchs (au Parc des Princes)	*going to watch matches (at the Parc des Princes)*
faire du roller (au Trocadéro)	*roller-blading (at the Trocadéro)*
faire les magasins	*going shopping*
prendre des photos	*taking photos*
retrouver mes copains	*meeting up with my mates*

Des questions touristiques • *Tourist questions*

C'est où, le musée?	*Where is the museum?*
C'est ouvert quand?	*When is it open? (day or date)*
C'est ouvert à quelle heure?	*At what time is it open?*
C'est combien, l'entrée?	*How much does it cost to get in?*
Est-ce qu'il y a ...	*Is there ...*
une cafétéria/une boutique de souvenirs?	*a cafeteria/a souvenir shop?*

Des informations touristiques • *Tourist information*

horaires d'ouverture	*opening times*
ouvert tous les jours	*open every day*
sauf le lundi	*except Mondays*
ouvert du (mardi) au (dimanche)	*open from (Tuesday) to (Sunday)*
fermé	*closed*
de 10h00 à 17h00	*from 10 a.m. to 5 p.m.*
tarifs d'entrée	*admission prices*
adultes	*adults*
jeunes	*young people*
enfants	*children*
gratuit	*free*
Il y a (une cafétéria).	*There is (a cafeteria).*
Il n'y a pas de (boutique de souvenirs).	*There isn't a (souvenir shop).*

Les mots essentiels • *High-frequency words*

à quelle heure?	*when?/at what time?*
quand?	*when? (for day, month, year, etc.)*
combien?	*how much?/how many?*
où?	*where?*
un peu	*a bit*
beaucoup (de)	*a lot (of)*
d'abord	*first of all*
ensuite	*next*
puis	*then*
après	*afterwards*
finalement	*finally, lastly*

À Paris • *In Paris*

J'ai passé le 14 juillet à Paris.	*I spent the 14th July in Paris.*
J'ai acheté des souvenirs.	*I bought some souvenirs.*
J'ai (beaucoup) dansé.	*I danced (a lot).*
J'ai envoyé des cartes postales.	*I sent postcards.*
J'ai mangé au restaurant.	*I ate in a restaurant.*
J'ai regardé le défilé/le feu d'artifice.	*I watched the parade/the fireworks.*
J'ai rencontré un beau garçon/une jolie fille.	*I met a good-looking boy/a pretty girl.*
J'ai visité ...	*I visited ...*
le musée du Louvre/la tour Eiffel/les catacombes	*the Louvre museum/the Eiffel Tower/the Catacombs*

C'était comment? • *What was it like?*

C'était ...	*It was ...*
beau	*beautiful*
bizarre	*weird*
ennuyeux	*boring*
génial	*great*
intéressant	*interesting*
marrant	*funny/a laugh*
nul	*rubbish*
Ce n'était pas mal.	*It wasn't bad.*

ROUGE

À Paris • In Paris

J'ai gagné un concours.	*I won a competition.*
J'ai passé une semaine à Paris.	*I spent a week in Paris.*
J'ai visité la tour Eiffel.	*I visited the Eiffel Tower.*
J'ai mangé au restaurant.	*I ate in a restaurant.*
J'ai admiré la Pyramide du Louvre.	*I admired the Louvre Pyramid.*
J'ai regardé le feu d'artifice.	*I watched the fireworks.*
J'ai acheté des souvenirs.	*I bought some souvenirs.*
J'ai rencontré un beau garçon/une jolie fille.	*I met a good-looking boy/a pretty girl.*
J'ai envoyé des cartes postales.	*I sent some postcards.*
J'ai pris des photos.	*I took some photos.*
J'ai vu la *Joconde*.	*I saw the* Mona Lisa.
J'ai attendu le bus.	*I waited for the bus.*
J'ai très bien dormi.	*I slept very well.*
Je n'ai pas visité Notre-Dame.	*I didn't visit Notre-Dame.*
On a fait les magasins.	*We went shopping.*
On a bu un coca.	*We drank a cola.*
On a fait un tour de la ville en segway.	*We did a tour of the town by segway.*
On a fait une balade en bateau-mouche.	*We went on a boat trip.*

alors	*so, therefore*
donc	*so, therefore*
car	*because*
parce que	*because*
dernier/dernière	*last*
beaucoup (de)	*a lot (of)*
d'abord	*first of all*
ensuite	*next*
après	*afterwards*
finalement	*finally*

C'était comment? • What was it like?

C'était ...	*It was ...*
J'ai trouvé ça ...	*I found it ...*
bien	*good*
bizarre	*weird*
cool	*cool*
cher	*expensive*
effrayant	*scary*
ennuyeux	*boring*
fabuleux	*wonderful/fantastic*
génial	*great*
horrible	*horrible/terrible*
intéressant	*interesting*
marrant	*funny/a laugh*
nul	*rubbish*
Ce n'était pas mal.	*It wasn't bad.*

Des informations touristiques • Tourist information

horaires d'ouverture	*opening times*
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de 10h00 à 17h00	*from 10 a.m. to 5 p.m.*
fermé (le lundi et les jours fériés)	*closed (on Mondays and bank holidays)*
tarifs d'entrée	*admission prices*
plein tarif	*full price*
tarif jeune	*price for young people*
gratuit (pour les enfants jusqu'à 13 ans)	*free (for children up to 13 years old)*
visites guidées	*guided tours*
(pas de) toilettes	*(no) toilets*

Les mots essentiels • *High-frequency words*

à quelle heure?	*at what time?*
quand?	*when?*
combien?	*how much/how many?*
combien de temps?	*how long?*
comment?	*how?*
où?	*where?*
qui?	*who?*
avec qui?	*who with?*

Tu as voyagé comment? • How did you travel?

en avion	*by plane*
en bus	*by bus*
en car	*by coach*
en métro	*by underground*
en train	*by train*
en voiture	*by car*
à vélo	*by bicycle*
à pied	*on foot*

Un voyage • A journey

Je suis allé(e) (à Paris).	*I went (to Paris).*
Je suis parti(e)/arrivé(e) à (dix heures).	*I left/arrived at (ten o'clock).*
Le train est parti/arrivé à (huit heures).	*The train left/arrived at (eight o'clock).*
Je suis sorti(e).	*I went out.*
Je suis resté(e) (chez moi).	*I stayed (at home).*
Je suis rentré(e) (chez moi).	*I went/got home.*
Je suis monté(e).	*I went up.*

Qui a volé la *Joconde*? • Who stole the *Mona Lisa*?

Tu as visité le Louvre quand?	*When did you visit the Louvre?*
Tu es allé(e) avec qui?	*Who did you go with?*
Tu es allé(e) comment?	*How did you get there?*
Tu es arrivé(e)/parti(e) à quelle heure?	*At what time did you arrive/leave?*
Après, tu es allé(e) où?	*Afterwards, where did you go?*
Tu es resté(e) combien de temps?	*How long did you stay?*
Qu'est-ce que tu as fait?	*What did you do?*
Est-ce que tu as volé la *Joconde*?	*Did you steal the* Mona Lisa?

Yr8 Geog: Can we provide resources for 9 billion people?

What is a natural resource?

Something that occurs naturally (without any human help) which we can make use of. These include soil, water, crops, sunlight.

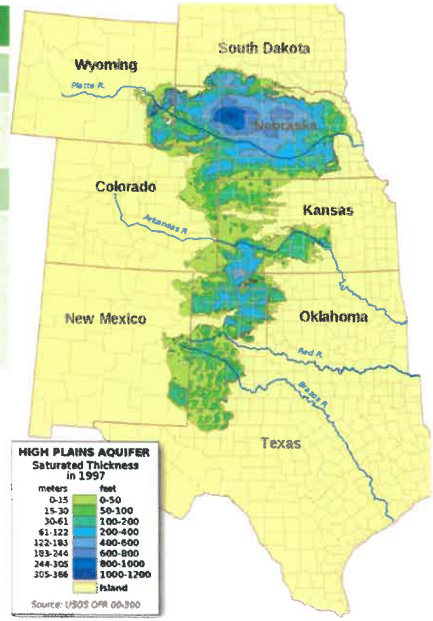
Renewable resources	Non renewable resources
A resource that we can keep using and it will not run out. e.g. wind, sunlight	If we continue to use the resource it will run out. This is also called a finite resource. e.g. copper, oil, gas

The Ogallala

The Ogallala is an aquifer in the USA..

An aquifer is an underground rock that stores water This can happen if the rock is permeable.

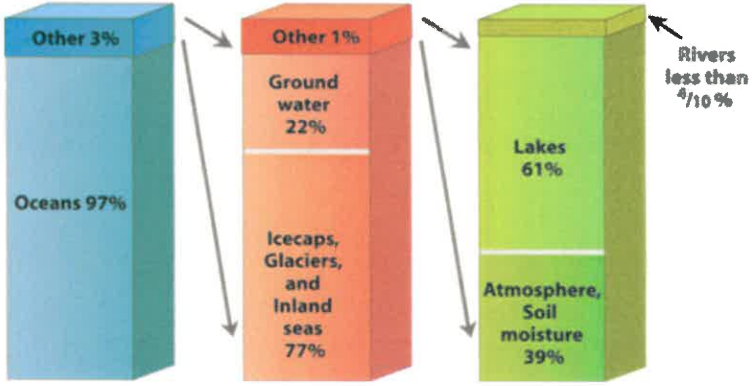
What an aquifer can do	What is the problem
The Ogallala provides enough water to grow the crops needed to feed America. It is huge and covers 8 US states.	The USA has been using the aquifer for a century as a result the water levels in the aquifer are dangerously low. When this water runs out USA will not be able to grow all the crops it grows today.



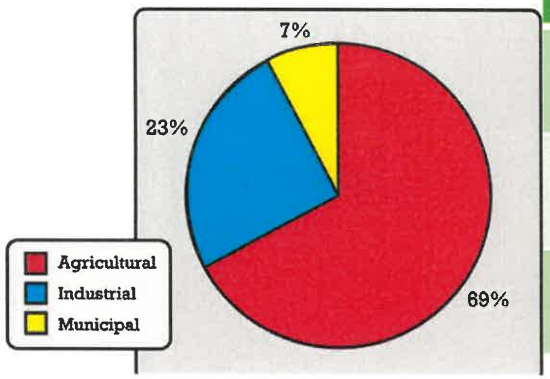
Tackling water stress

Stop wasting it	In 2020 in the UK, 3 billion litres of water was wasted. Fixing leaks can reduce this. Farming wastes a lot of water but by using "drip irrigation", farmers can be efficient with the water they use.
Recycle it	In the UK, the waste water is cleaned then returned to rivers. In some countries the waste water is cleaned then used for crops. In some cities the waste water is super cleaned and used for drinking. 90% of water in Israel is recycled.
Move it	We can transfer water from areas that have a lot to areas that don't. In China they have built canals that move water from the wet south to the dry north. This reduces water insecurity.
Take it from the sea	Desalination is the process of turning salt water into drinking water. This in theory is great as there is an infinite supply of water however this is very expensive and uses a lot of electricity.

Distribution of Water on Earth



Global Water Use



Global water use

Globally we use most of our water for farming. However, the more developed we are the more water we will use at home. This is because we need more water for appliances such as washing machines

The Earth has a vast amount of water but 97% of it is unusable as it is in the sea. OF the 3% of fresh water 70% is locked away in glaciers and ice caps so we can't access it.

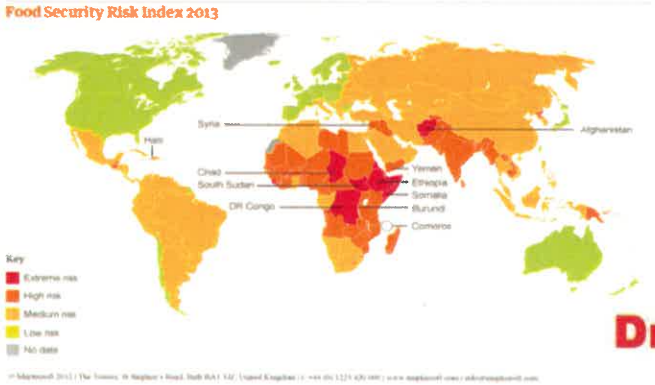
Water stress is where a country doesn't have enough water to meet its needs. This can happen to either a lack of fresh water or too many people in the country.

Yr8 Geog: Can we provide resources for 9 billion people?

What is food insecurity?

Food security is where a country provides enough food to healthily feed their entire population. Currently 2 billion people are not food secure, these countries are mostly found in Africa.

Physical causes of food insecurity	Human causes of food insecurity
• Pests and disease destroys crops • Not enough rainfall to grow crops • Climate change reduces rainfall	• Conflict in the country means food can't be transported. • Poverty means food can't be transported. • Poverty means they can't buy enough food.



Drought Resistant Crops

IS the UK food secure?

The UK has a high level of food security. However, many families struggle with food insecurity.

Reasons why the UK does not have full food security

Population growth	Our population is growing and we are becoming more developed so we want a wider range of food. Plus we create a lot of food waste.
Politics	Government make trade deals for trading food..A lot of trade is taxed (tariffs) If countries increase their tariffs, food becomes more expensive and so families may not be able to afford the food they want. Currently we import 30% of our food from the EU
Climate change	Other countries are going to have less food to sell us. British farmers will struggle with heatwaves and floods.

Reducing food waste

Food miles explain how far food has travelled to get to your plate. The more developed a country is the greater the food miles and the more impact on the planet. More food miles means that you carbon footprint has been increased.

Eating produce in season	IF we can eat produce that is grown locally in season it will reduce the amount of food miles. This will reduce your own carbon footprint.
Eating up left oever.	Eating left overs means that less food gets sent to landfill sites will in turn reduce the amount of methane being

Tackling food insecurity

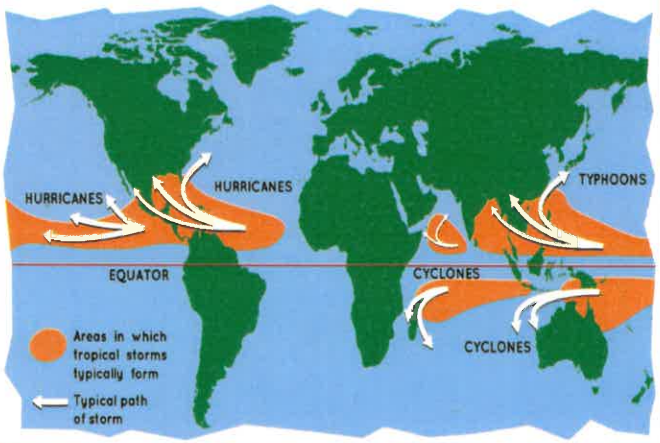
Aid and charity work	By providing help to local farmers in LIDCs, (seeds and fertiliser). More crops can be grown and local families can become food secure.
Technology	Mobile phones are now all over the world. Local people in LIDCs can apply for food vouchers on their mobile phones.
Drought resistant crops	Technology has meant that we can now develop crops which can be grown with minimal water – perfect for countries that get a lot of drought.

Yr8 Geog: Are climatic hazards more extreme?

What and where are Tropical Storms.

They are known by many names, including **hurricanes** (North America), **cyclones** (India) and **typhoons** (Japan and East Asia).

They all occur in a band that lies roughly between the tropics of Cancer and Capricorn and despite varying wind speeds are ferocious storms. Some storms can form just outside of the tropics, but generally the distribution of these storms is controlled by the places where sea temperatures rise above 27°C.



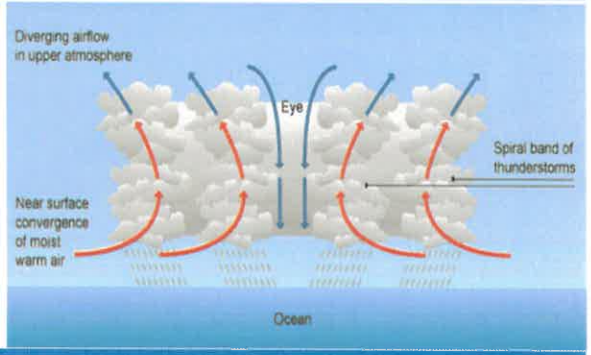
Formation of Tropical Storms

1	The sun's rays heats large areas of ocean in the summer. When the ocean temperature exceeds 27.5 degrees a tropical storm can form.
2	The rising warm moist air leads to a low pressure weather system. This eventually turns into a thunderstorm. As long as there is only a gentle breeze the clouds will remain compact.
3	Due to the Earth's rotation the thunderstorm will eventually start to spin. (anticlockwise in the northern hemisphere) This is called the Coriolis effect.
4	When the spinning clouds produce winds of stronger than 74mph, a tropical storm (such as a hurricane) is officially born. In the centre of the storm is a high pressure cloudless area called "the eye".
6	When the tropical storm hit land, it loses its energy source (the warm ocean) and it begins to lose strength. Eventually it will 'blow itself out'.

Storm Surges

Hazards of tropical storms

Strong winds	It is the wind speed that dictates what category a tropical storm is allocated. A category 5 can rip off roofs, send shrapnel flying which can injure or block evacuation routes.
Torrential rain	Rain can cause flooding inland as river burst their banks plus also landslides as the water makes the slopes unstable.
Storm surge	The most significant hazard. Storm Surges are caused by a rise in sea level under the tropical storm. This causes the sea to flood inland, especially in low lying flat countries. The sea water can destroy poorly built houses, roads and block emergency services.

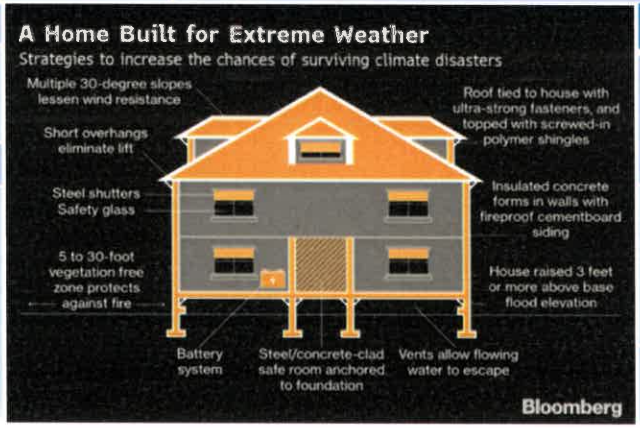


Case Study: Typhoon Haiyan 2013

Causes

Started as a tropical depression on 2rd November 2013 and gained strength. Became a Category 5 "super typhoon".

Effects	Management
• Almost 4,000 deaths. • 130,000 homes destroyed • Water and sewerage systems destroyed caused diseases. • Emotional grief for lost ones.	• The UN raised £190m in aid. • USA & UK sent helicopter carrier ships deliver aid remote areas. • Education on typhoon preparedness.



How can we reduce the impact of tropical storms

Predicting and warning	Computers can predict the paths of tropical storms and give warnings to countries that might be affected. This can happen for all countries, however it is the effectiveness of the evacuation that determines how successful the management will be.
Protecting buildings	The level of protection will depend on the level of development for each area. New buildings can be designed to be storm proof and on stilts to protect from flooding. Other buildings can have emergency generators installed, shutters on the windows to stop glass from shattering and trees removed from gardens to reduce debris.
Plan	Evacuation routes are planned and people know where the evacuation shelters are. An emergency survival kit is ready to go

Yr8 Geog: Are climatic hazards more extreme?

Is the UK weather becoming more extreme?

Regular heatwaves with increased temperatures.	Climate change means that in our summers, when we have high pressure it means that we are more likely to have heat waves. These heat waves are becoming hotter, more intense, longer and more regular. In the UK the 10 hottest years on record have all occurred since 2006.
More intense storms	In the last 5 years, the UK is receiving more regular storms. We are now receiving at least 2 major storms a year between November and March. Here the wind speed can cause significant damage and the coast line can be battered by waves and winds. The Met Office now name storms as they happen more regularly.
More severe snow storms	With more common and intense storms the likelihood of receiving more snow storms increases. School have had to shut in the UK in 4 out of the last 5 years.
Increased chance of flooding from intense rainfall.	The likelihood of a flash flood in the UK is increasing. A lot of intense rain over a short period can cause rivers to burst their banks and flood the area. This has happened in many areas of the UK over the last 10 years.

Somerset Floods

Causes

Physical: Somerset received 3 times the usual rainfall between 2013-2014. It was the wettest winter on record. This made the ground saturated. A high tide and sea storm surge reduced the amount of water that could flow into the sea.
Humans: Lots of new housing around Bridgewater meant that there was a lot of concrete. This meant that less water infiltrated into the soil and more was stored as surface run off.

Primary impacts	Secondary impacts
• £80 million of damage • 600 homes damaged • Farmland was underwater for 3 months. • Some villages were only accessible by boat	• The floods damaged crops which meant that farmers could no longer earn a profit. • People's way of life was completely disrupted and could not see friends or relatives for months.

What happened to reduce the impacts?

Residents were moved to emergency accommodation
Pumping stations were set up to reduce river levels.
Volunteer groups were set up.
A 20 year Somerset Flood Action Plan costing £20 million was created to reduce future impacts

UK heat waves

Causes

With climate change, summer time high pressure events mean that heat waves are hotter, more intense, last longer and are more common.

Primary impacts	Secondary impacts
• Trainlines buckle • There is a strain on the NHS as elderly struggle with the heat. • More hospital admissions due to severe sun burn • Some tarmac on roads has melted, closing the roads. • Rivers run dry	• Commuters were unable to get to work as the train lines closed. • Waiting time in A&E increases. • Aquatic life in rivers die as water is reduced.

What happened to reduce the impacts?

Hose pipe bans in residential areas saves water.
Campaigns to get people to save water at home were sent out on TV.
Adverts to ensure people where a hat and apply sunscreen helped to reduce heat stroke.

The Beast from the East

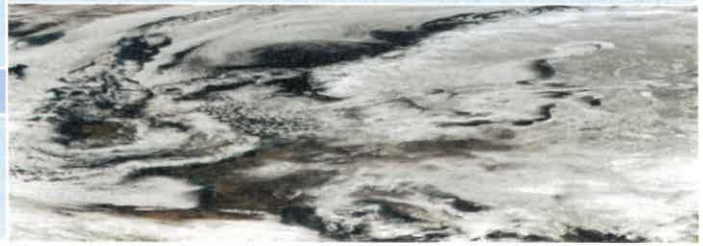
Causes

The change in the UK's usual westerly winds to easterly winds caused brought cold temperatures from Siberia. This brought snow and freezing temperatures.

Primary impacts	Secondary impacts
• 50 cm snow • Gusts of 70mph • Temperatures -12 • Snow drifts 7 meters	• Schools closed • Shops ran out of food as roads were closed • Motorists were stranded in freezing conditions on the motorway

What happened to reduce the impacts?

The military helped rescue stranded motorists, stranded drivers were given hot food and foil blankets.
Snow ploughs were sent to clear the roads.



Enquiry: Was Victorian justice fairer?

History – Year 8
Knowledge Organiser
Topic 3

Outline: During the 19th and 20th centuries, what it meant to be a criminal and how you were punished changed enormously. Though punishments could still be cruel and unusual, there were some important changes that were making life fairer. However, who you were still often affected how a crime was investigated and whether you received a fair trial.

Date	Event	Description
1717	Transportation began	Prisoners were sent to Australia to serve out their time instead of facing the death penalty.
1823	Prison reforms	Prisons were made safer and fairer for the prisoners with more focus on rehabilitation.
1829	Metropolitan Police set up	First British police force which was in London and nicknamed "peelers" or "bobbies" after their founder Robert Peel.
1888	Whitechapel murders	The police failed to catch a serial killer in London, partially due to negative attitudes about the victims.
1916	Conscience clause in WW1	Those conscripted to fight in WW1 could apply to avoid this due to their beliefs about war.
1969	Abolition of the death penalty	Though the last execution was in 1965, the death penalty was abolished 4 years later due to several miscarriages of justice.

Key individuals

Elizabeth Fry. She campaigned for reform of prisons to make them safer and also have the aim of rehabilitation instead of just punishing a prisoner.

Derek Bentley. One of the last People in the UK to be executed for a crime. His case increased pressure on the government to end the death penalty as his conviction was seen by many as unfair in 1953.

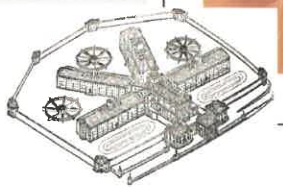
Fenner Brockway. Set up a society in WW1 to help men who didn't want to fight. Campaigned for peace all his life and was arrested several times for his beliefs.

Josephine Butler. Social reformer in London in the 19th century who helped those in poverty and fought to improve the rights of women and children in poverty.

Key vocabulary:

Bloody code: when the death penalty was used for more crimes.
Conscientious objector: someone who is allowed to avoid fighting during a war and instead undertakes non-violent work.
Convict: someone who has been found guilty (convicted) of a crime.
Death penalty: execution of a prisoner as punishment for a crime. It was intended to deter people from breaking the law.
Execution: killing someone for committing a crime.
Martyr: someone who dies for their beliefs.
Misogyny: a hatred of women.
Pacifist: someone who doesn't believe that wars should be fought.
Penal colony: where prisoners were transported away from Britain to serve their sentence. Australia was the main location.
Prison: a place where people are sent to wait for their trial or as a punishment.
Prison hulk: a ship anchored off the coast for prisoners to live and work on.
Rehabilitation: preparing a prisoner to re-join society so they can avoid breaking the law again.
Slum: an area in a city where the houses are poorly built and it is overcrowded. People in poverty live there.
Social reformer: someone who campaigns to improve the lives of people, especially those in poverty.
Transportation: a punishment to avoid the death penalty where convicts were sent by boat to Australia to work.
Whitechapel: an area in the East End of London where most people lived in dire poverty.
Workhouse: where people in poverty are sent to live if they cannot support themselves. They have to work there too.

Furthering learning
Want to find out more about Victorian crime And punishment?



Historical skill focus: similarity & difference

- Why is the past similar to life now?
- Why does the past differ to life now?

Prior learning?
Justice
Patriarchy
Misogyny

Year 8 - algebraic techniques..
Brackets, Equations & Inequalities

What do I need to be able to do?

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

- Form Expressions
- Expand and factorise single brackets
- Form and solve equations
- Solve equations with brackets
- Represent inequalities
- Form and solve inequalities

Keywords

Simplify: grouping and combining similar terms
Substitute: replace a variable with a numerical value
Equivalent: something of equal value
Coefficient: a number used to multiply a variable
Product: multiply terms
Highest Common Factor (HCF): the biggest factor (or number that multiplies to give a term)
Inequality: an inequality compares who values showing if one is greater than, less than or equal to another

Form expressions

For unknown variables, a letter is normally used in its place

More than – ADD
Less than/ difference – SUBTRACT

e.g 4 more than t → t + 4
8 less than k → k - 8

Only similar terms can be grouped together

e.g Find the perimeter of this shape
(Perimeter = length around outside of shape)

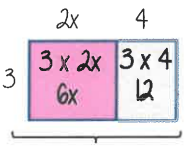
t + 2t + 1 + t + 2t + 1 → 6t + 2

Directed numbers

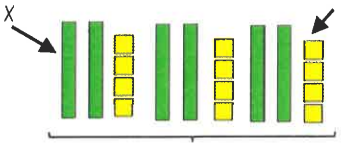
+ + → +
- - → +
+ - → -
- + → -

e.g a = -5 and b = 2
a^2 = a x a = -5 x – 5 = 25
b + a = 2 + - 5 = -3

Multiply single brackets 3 (2x + 4)



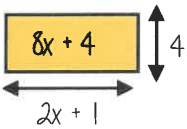
6x + 12



6x + 12

Different representations of 3(2x+4) = 6x + 12

Factorise into a single bracket 8x + 4



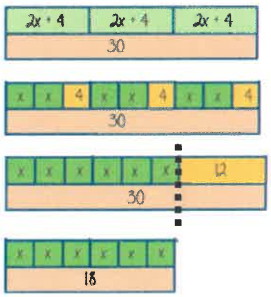
Try and make this the **highest common factor**

The two values **multiply** together (also the area) of the rectangle

8x + 4 ≡ 4 (2x + 1)

Note:
8x + 4 ≡ 2(4x + 2)
This is factorised but the HCF has not been used

Solve equations with brackets 3 (2x + 4) = 30



3 (2x + 4) = 30
Expand the brackets
6x + 12 = 30
- 12 - 12
6x = 18
÷ 6 ÷ 6
x = 3

Substitute to check your answer
This could be negative or a fraction or decimal

Simple Inequalities

< less than
≤ Less than or equal to
> More than
≥ More than or equal to

x < 10
Say this out loud
"x is a value less than 10"

10 > x
Say this out loud
"10 is more than the value"

Note:
x< 10 and 10>x represent the same values

x + 2 ≤ 20
"my value + 2 is less than or equal to 20"
x ≤ 18
The biggest the value can be is 18

Form and solve inequalities

Two more than treble my number is greater than 11

Find the possible range of values

Form

x → x3 → +2 → 11

3x + 2 > 11

Solve

x ← -3 ← -2 ← 11

x > 3

Check

This would suggest any value bigger than 3 satisfies the statement
3 x 3 + 2 = 11 ✓ 10 x 3 + 2 = 32 ✓

Algebraic constructs

Expression
A sentence with a minimum of two numbers and one maths operation

Equation
A statement that two things are equal

Term
A single number or variable

Identity
An equation where both sides have variables that cause the same answer includes ≡

Formula
A rule written with all mathematical symbols
e.g area of a rectangle A = b x h

Year 8 – algebraic techniques...

Sequences

What do I need to be able to do?

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

- Generate a sequence from term to term or position to term rules
- Recognise arithmetic sequences and find the nth term
- Recognise geometric sequences and other sequences that arise

Keywords

Sequence: items or numbers put in a pre-decided order
Term: a single number or variable
Position: the place something is located
Linear: the difference between terms increases or decreases (+ or -) by a constant value each time
Non-linear: the difference between terms increases or decreases in different amounts, or by x or ÷
Difference: the gap between two terms
Arithmetic: a sequence where the difference between the terms is constant
Geometric: a sequence where each term is found by multiplying the previous one by a fixed non zero number

Linear and Non Linear Sequences

Linear Sequences – increase by addition or subtraction and the same amount each time
Non-linear Sequences – do not increase by a constant amount – quadratic, geometric and Fibonacci

- Do not plot as straight lines when modelled graphically
- The differences between terms can be found by addition, subtraction, multiplication or division

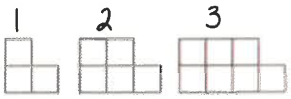
Fibonacci Sequence – look out for this type of sequence

0 1 1 2 3 5 8 ...

Each term is the sum of the previous two terms

Sequence in a table and graphically

Position: the place in the sequence



3 5 7

"The **term** in **position** 3 has 7 squares"

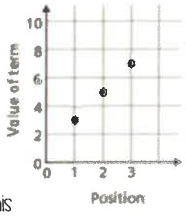
Term: the number or variable **(the number of squares in each image)**

In a table

Position	1	2	3
Term	3	5	7

+2 +2

Graphically



Because the terms increase by the same addition each time this is **linear** – as seen in the graph

Sequences from algebraic rules

This is substitution!

$3n + 7$ — This will be linear - note the single power of n The values increase at a constant rate

$3n^2 + 7$ — This is not linear as there is a power for n

$2n - 5$ → Substitute the number of the term you are looking for in place of 'n'

eg
1st term = 2 (1) – 5 = -3
2nd term = 2 (2) – 5 = -1
100th term = 2 (100) – 5 = 195

Checking for a term in a sequence

Form an equation

Is 201 in the sequence 3n – 4?

$3n - 4 = 201$ ← Term to check

Algebraic rule

Solving this will find the position of the term in the sequence
ONLY an integer solution can be in the sequence

Complex algebraic rules

Misconceptions and comparisons

$2n^2$ — 2 times whatever n squared is

eg
1st term = 2 x 1^2 = 2
2nd term = 2 x 2^2 = 8
100th term = 2 x 100^2 = 2000

$(2n)^2$ — 2 times n then square the answer

eg
1st term = $(2 \times 1)^2$ = 4
2nd term = $(2 \times 2)^2$ = 16
100th term = $(2 \times 100)^2$ = 40000

$n(n + 5)$ ←

eg
1st term = 1 (1 + 5) = 6
2nd term = 2 (2 + 5) = 14
100th term = 100 (100 + 5) = 10500

You don't need to expand the expression

H Finding the algebraic rule

This is the 4 times table → 4, 8, 12, 16, 20....

4n

7, 11, 15, 19, 22 ← This has the same constant difference – but is 3 more than the original sequence

4n + 3

This is the constant difference between the terms in the sequence

4n + 3

This is the comparison (difference) between the original and new sequence

Year 8 - algebraic techniques...

Indices

What do I need to be able to do?

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

- Add/ Subtract expressions with indices
- Multiply expressions with indices
- Divide expressions with indices
- Know the addition law for indices
- Know the subtraction law for indices

Keywords

Base: The number that gets multiplied by a power
Power: The exponent – or the number that tells you how many times to use the number in multiplication
Exponent: The power – or the number that tells you how many times to use the number in multiplication
Indices: The power or the exponent
Coefficient: The number used to multiply a variable
Simplify: To reduce a power to its lowest term
Product: Multiply

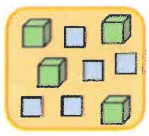
Addition/ Subtraction with indices

Coefficient, Power

$5x^2 + 4x^4$

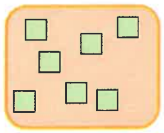
Term, Term

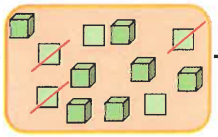
Expression



Each square represents x^2 and each cube represents x^4

Only similar terms can be simplified
If they have different powers, they are unlike terms

$5x^2 + 2x^2$ →  → $7x^2$

$5x^2 + 6x^4 - 3x^2 + x^4$ →  → $2x^2 + 7x^4$

Multiply expressions with indices

$4b \times 3a$
$\equiv 4 \times b \times 3 \times a$
$\equiv 4 \times 3 \times b \times a$
$\equiv 12ab$

$5t \times 9t$
$\equiv 5 \times t \times 9 \times t$
$\equiv 5 \times 9 \times t \times t$
$\equiv 45t^2$

$2b^4 \times 3b^2$
$\equiv 2 \times b \times b \times b \times b \times 3 \times b \times b$
$\equiv 2 \times 3 \times b \times b \times b \times b \times b \times b$
$\equiv 6b^6$

There are often misconceptions with this calculation but break down the powers

Addition/ Subtraction laws for indices

$3^5 \times 3^2 = (3 \times 3 \times 3 \times 3 \times 3) \times (3 \times 3) \rightarrow 3^7$

The base number is all the same so the terms can be simplified

Addition law for indices

$$a^m \times a^n = a^{m+n}$$

$3^5 \div 3^2 \rightarrow 3^3$

$\frac{3 \times 3 \times 3 \times \cancel{3} \times \cancel{3}}{\cancel{3} \times \cancel{3}} \rightarrow \frac{3^3}{3^0} \rightarrow \frac{3^3}{1}$

Subtraction law for indices

$$a^m \div a^n = a^{m-n}$$

Divide expressions with indices

$\frac{24}{36} \rightarrow \frac{\cancel{2} \times \cancel{2} \times 2 \times \cancel{3}}{\cancel{2} \times \cancel{3} \times 2 \times \cancel{3}} \rightarrow \frac{2}{3}$

$\frac{5a^3b^2}{15ab^6} \rightarrow \frac{\cancel{5} \times \cancel{a} \times a \times a \times \cancel{b} \times \cancel{b}}{3 \times \cancel{5} \times \cancel{a} \times \cancel{b} \times \cancel{b} \times b \times b \times b \times b} \rightarrow \frac{a^2}{3b^4}$

Cross cancelling factors shows cancels the expression

$\frac{23a^7y^2}{5db^6}$ This expression cannot be divided (cancelled down) because there are no common factors or similar terms

Key Words

- Utilitarianism
- Materialism
- Soul
- Ātman
- Personhood
- Self
- Evolution
- Sanctity of life
- Value
- Meaning
- Purpose
- Free Will
- Utopia/Dystopia

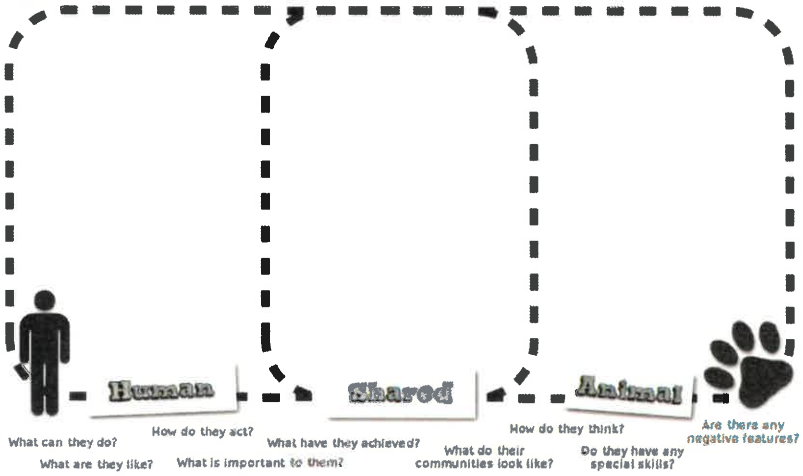
Key questions

What makes you, you?
How much is a person worth?
Are humans special?
What is the purpose of human life?
How free are humans?
What does the future hold for humanity?

Materialist View	Buddhist View	Christian View	Humanist View	Hindu View
Materialists believe that the only thing that exists is physical stuff like tables and trees and brains. You would argue that there's no such thing as the 'soul' or 'mind'. They think that what makes you who you are is really just a complex arrangement of cells in your brain. What makes you different to other people is the organisation of these cells. You believe that when the brain stops working, that's the end of you. The atoms and molecules that once made you, will find their way into other things.	Buddhists believe that this life is just one of many that you will experience. You think that your consciousness (your train of thought) moves from body to body when one body dies. You call this 'rebirth'. Though you can never remember events from a previous life, you hope that over many lifetimes, you become wiser with a hope of becoming 'enlightened' like the Buddha. Enlightenment will allow you to end your consciousness and achieve a state of 'non-self' where you are no longer reborn and no longer have to suffer these temporary existences.	Some Christians believe that there is both a physical and non-physical part of you. The physical part is the body along with your brain. The nonphysical part is called the soul. They believe that we live one life on Earth. Once that's up, the body will decay but your soul will be judged by God based on your actions in this life. The soul will then go to spend the rest of eternity either with God in Heaven, or away from God in Hell.	Humanists don't believe in God or the soul and you don't believe in the supernatural. You do believe in the value and worth of humanity though. You believe that human beings should form the centre of all of our ethical thinking. You believe that the individual person is important and as such humanist funerals are often conducted to celebrate and remember the life of the person who has passed away. You do not, however, believe that they live on in any other form than the memories we have of them.	Hindus believe that this life is just one of many that you will experience. You think that your atman moves from body to body when one body dies. You call this 'reincarnation'. They believe that your **atman** is the true essence of what you are and that your bodies are just temporary vessels to house it. You also believe that your atman is really one of many millions of pieces of **Brahman** (God) and it's ultimate goal is to be reunited with Brahman. This is known as Moksha and would mean you would stop being an individual and stop being reincarnated.

Are humans special?

Consider what sets humans apart and what links us with the rest of the animal kingdom.
Write a list of unique and shared features for humans and animals in the Venn diagram below.



What is the purpose of human life?

Express a view or give informed opinions about the purpose of human life.	5-6
Compare our attitudes to the purpose of life and analyse how these affect us.	6-7

Utilitarian	Christian	Aristotle
Utilitarians think that the purpose of life is to seek pleasure and avoid pain.	Christians believe that the purpose of life is to follow God's command and prepare ourselves to one day meet him and enter his kingdom.	The ancient Greeks thought that over the course of our life we need to reach our potential. We need to learn from other successful humans and copy their example.

Are any of these views similar to your own?
Imagine you held these different views, what would you need to change about your life immediately?

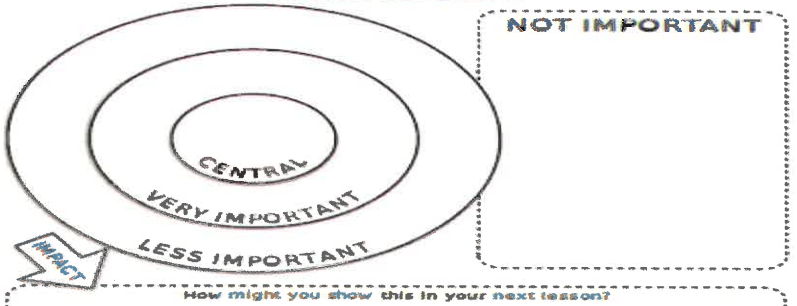
How much is a human worth?

Here are three other views on the value of humans.

Utilitarian	Christian	Aristotle
They think that the right action is the one that makes most people happy. You should base your decision on what will bring the best consequences for the group that are left. People are valuable if they serve a purpose.	They believe that all people are automatically valuable because we are all made by God **(sanctity of life)** No-one is better or more valuable than any other. They also believe that we should go out of our way to help the less fortunate and be self-sacrificing.	The ancient Greeks valued learning and education. They thought that in order for a society to function, it's important to have good role models. Good people are more useful in society than bad people.

What kind of conclusions would they draw on this task?
What do you think of their approaches?

What do you think are important aims in life?



How might you show this in your next lesson?

How might you show this in what you do this week?

How might you show this in the type of job you choose?

What will this mean you want to achieve by the end of your life?

P2 Chapter 2: Electromagnets
Knowledge organiser

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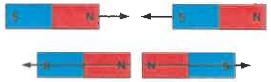
Question • Progress • Succeed

Magnets

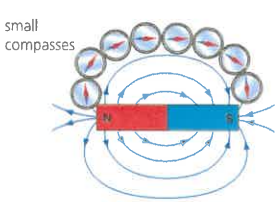
- A **magnet** has two poles, a north and a south pole
  - North poles **attract** south poles
  - South poles **attract** north poles
  - South poles **repel** south poles
  - North poles **repel** north poles



- **Magnetic materials** will experience a magnetic force when placed near a magnet, this is a type of non-contact force as the materials do not have to touch for the force to be apparent
- The three magnetic metals are iron, nickel and cobalt

Magnetic fields

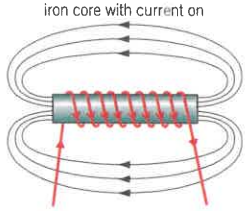
- A **magnetic field** is an area where a magnetic material will experience a force
- A **permanent magnet** will have it's own magnetic field
- **Magnetic field lines** represent the field, these always travel out of the north pole of the magnet, and into the south pole
- The closer together the magnetic field lines are, the stronger the magnetic field will be
- We can find out the shape of a magnetic field in two ways:
  - Using plotting compasses
  - Using iron filings



- The Earth has its own magnetic field, which acts like a giant bar magnet inside the centre of the Earth
- This magnetic field allows compasses to work when navigating around the Earth

Electromagnets

- **Electromagnets** are made by wrapping a coil of wire around a magnetic **core**
- Electromagnets only work when electricity is flowing through the coil, which means that they can be turned on and off
- Electromagnets are also stronger than **permanent** magnets
- The electromagnet will produce the same magnetic field shape as a bar magnet



- You can increase the strength of an electromagnet by:
  - Increasing the number of turns on the coil around the core of the electromagnet
  - Increasing the current which is flowing through the coil of wire
  - Using a more magnetic material for the core, e.g. iron rather than aluminium

Using electromagnets

Electric Bells

The electromagnet attracts the iron armature

↓

When it moves, it breaks the circuit, no longer allowing current to flow

↓

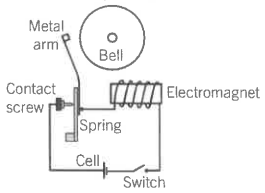
The coil and core are no longer magnetic meaning the spring is no longer attracted and returns to its original position

↓

The bell is rung once

↓

The circuit is complete again, restarting the process

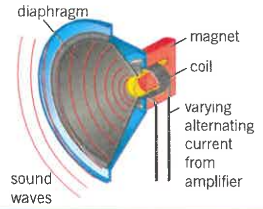


Circuit breakers

- Circuit breakers detect large changes in current in a house, and will break a circuit
- When a large current flows, the electromagnet becomes strong enough to attract an iron catch which will break a circuit
- They can then be reset and used again
- This makes them suitable as an electrical safety device in a home

Loudspeakers

- Loudspeakers use an electromagnet in order to generate sound
- A current passes through the coil and creates an electromagnet, this repels another permanent magnet which moves the cone in and out creating sound



Key terms Make sure you can write definitions for these key terms.

attract | core | circuit breaker | electromagnet | electric bell | loudspeaker | magnet | magnetic pole | magnetic field lines | magnetic material | permanent magnet | repel

P2 Chapter 1: Forces
Knowledge organiser

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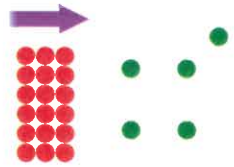
Friction and drag

- **Friction** is a force which will slow down a moving object due to two surfaces rubbing on one another
- The greater the friction, the faster an object will slow down, or the greater the force it will need to overcome the force of friction. For example, it is easier to push a block on ice than on concrete, as the ice is smoother and causes less friction

- When an object is moving through a fluid, either liquid or gas, the force which slows it down is known as **drag**
- The fluid particles will collide with the moving object and slow it down, meaning that more force is needed to overcome this
- Both drag and friction are **contact forces** as the two surfaces in friction, and the object and fluid particles in drag, come into contact with one another



A solid moves through a gas.

A solid moves through a liquid.

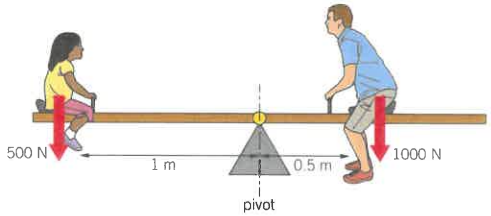
- Both drag and friction are forces so they are measured in **Newtons** (N)

Turning forces

- A **moment** is the turning effect of a force, it is measured in Newton meters
- We can calculate a moment with the equation:

moment (Nm) = force (N) × distance from the pivot (m)

- The size of the moment will increase as the distance from the **pivot** or the size of the force increases
- When an object, such as a seesaw, is balanced, the clockwise and the anticlockwise moments will be equal and opposite, which is known as **equilibrium**
- When forces are equal and opposite to each other, there is no **resultant force**

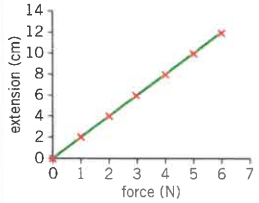


clockwise moment = force × distance on the right
= 1000 N × 0.5 m
= 500 Nm

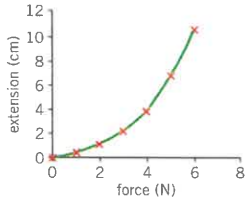
anticlockwise moment = force × distance on the left
= 500 N × 1 m
= 500 Nm

Hooke's law

- Some objects, like springs, can be stretched, the amount that they stretch is known as their **extension**
- A force needs to be applied to the spring for it to be stretched, we can achieve this by adding masses which exert the force weight
- A spring will continue to stretch until it passes it's **elastic limit**
- If an object obeys **Hooke's law** it will have a **linear relationship**: if the force applied to the spring is doubled, the extension will double too
- If an object does not obey Hooke's law, it will not have a linear relationship



This graph shows how the extension of a spring changes as you pull it



This graph shows the relationship between force and extension

Gas pressure

- **Gas pressure** is caused by the particles of a gas colliding with the wall of the container which they are in
- The more often that the particles collide with the wall of the container, the higher the pressure of the gas will be
- Gas pressure can be increased by:
  - Heating the gas so the particles move more quickly and collide with the container with a higher energy
  - Compressing the gas so there are the same amount of particles within a smaller volume meaning that there are more collisions
  - Increasing the amount of particles within the same volume so there are more collisions

- **Atmospheric pressure** is the pressure which the air exerts on you all of the time, nearer the ground there are more particles weighing down on you so the pressure is greater
- The higher you go, the smaller the atmospheric pressure, this is because there will be less particles weighing down on you

Pressure in solids

- The pressure which is exerted on a solid is known as **stress**
- The greater the area over which the force is exerted over, the lower the pressure, this is why snowshoes have a large area to prevent you sinking into the snow
- **Pressure** can be calculated using the following equation:

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

Pressure in liquids

- Liquids are **incompressible**
- The particles in a liquid are already touching, meaning that there is little space between them to compress
- Liquids will transfer the pressure applied to them, this is seen in hydraulic machines
- As the ocean gets deeper, the pressure will increase, this is because the pressure depends on the weight of the water above
- The greater the number of water molecules above, the higher the pressure will be

Key terms Make sure you can write definitions for these key terms.

air resistance, atmospheric pressure, contact force, drag, elastic limit, equilibrium, extension, friction, gas pressure, Hooke's law, incompressible, linear relationship, moment, newton, pivot, pressure, resultant force, stress

P2 Chapter 3: Energy
Knowledge organiser

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Work

- In physics, **work done** is the energy transferred when a force is used to move an object a certain distance
- Like energy, work is measured in **Joules** (J)
- Work can be done in a a range of situations e.g. lifting a book work is done against gravity, when you slide a book along a table work is done against friction
- We calculate work with the equation:

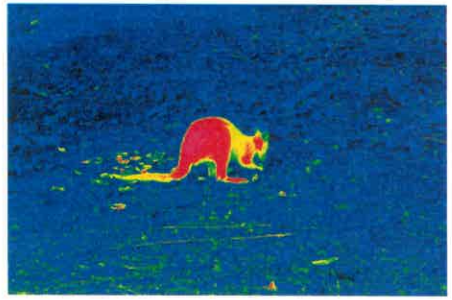
work done (J) = force (N) × distance moved (m)

- A **simple machine** makes it easier to lift things, they reduce the force needed
- A **force multiplier** uses a smaller **input force** (what you apply) to to generate a larger **output force** (what is created)
- If you increase the distance from the pivot, less input force is needed to be used for the same output force as before
- A **lever** is an example of a force multiplier, a longer lever will require a less input force than a shorter lever to produce the same output force

The physics of unscrewing a tight nut with a spanner

Radiation

- **Radiation** is a method of transferring energy without the need for particles
- An example of radiation is thermal energy being transferred from the Sun to us through space (where there are no particles)
- This type of radiation is known as **infrared radiation**, it is a type of wave just like light
- The hotter an object is the more infrared radiation it will emit (give out)
- The amount of radiation emitted and absorbed depends on the surface of the object:
  - Darker matte surfaces absorb and emit more infrared radiation
  - Shiny and smooth surfaces absorb and emit less infrared radiation, instead reflecting this
  - The amount of infrared radiation being emitted can be viewed on a **thermal imaging camera**



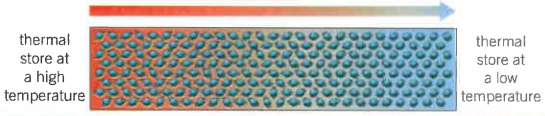
Energy and temperature

- The **temperature** of a substance is a measure of how hot or cold it is
- Temperature is measured with a **thermometer**, it has the units of degrees Celsius (°C)

- The **thermal energy** of a substance depends on the individual energy of all of the particles, it is measures in Joules (J)
- As all particles are taken into account, a bath of water at 30 °C would have more thermal energy than a cup of tea at 90 °C as there are many more particles
- The faster the particles are moving, the more thermal energy they will have
- When particles are heated they begin to move more quickly
- The energy needed to increase the temperature of a substance depends on:
  - the mass of the substance
  - what the substance is made of
  - how much you want to increase the temperature by

Conduction

- **Conduction** is the transfer of thermal energy by the vibration of particles, it cannot happen without particles
- This means that every time particles collide they transfer thermal energy
- Conduction happens effectively in solids as their particles are close together and can collide often as they vibrate around a fixed point
- Metals are also good **thermal conductors** as they contain electrons which are free to move
- In conduction the thermal energy will be transferred from an area which has a high **thermal energy store** (high temperature) to an area where there is a low thermal energy store (low temperature)
- Gases and liquids are poor conductors as their particles are spread out and so do not collide often, we call these **insulators**



Convection

- **Convection** is the transfer of thermal energy in a liquid or a gas, it cannot happen without particles
- As the particles near the heat source are heated they spread out and become less dense, this means that they will rise
- More dense particles will take their place at the bottom nearest the heat source creating a constant flow of particles
- This is known as a **convection current**
- Convection cannot happen in a solid as the particles cannot flow, they can only move around a fixed point

Key terms Make sure you can write definitions for these key terms.

conduction convection convection current force multiplier input force insulator infrared radiation lever output force simple machine temperature thermometer thermal conductor thermal energy store thermal imaging camera work done

C2 Chapter 5: Matter
Knowledge organiser

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Elements and atoms

- An **element** is a substance that only contains one type of atom, it is found on the **Periodic Table**
- Each element has it's own unique chemical symbol which is the same in every language, these are also found on the Periodic Table
- An **atom** is the smallest part of which an element can be broken down into
- As there are around 100 types of elements that can occur naturally, there are around 100 different atoms

Compounds

- **Compounds** are formed when two or more different elements chemically bond together
- The compound will have different **physical properties** to the elements which make up the compound, for example water is a liquid, but it made from oxygen and hydrogen which are both gases
- Compounds are hard to separate and need a chemical reaction to do this

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- When naming a compound, we always mention the metal first and the non metal second
- The name of the metal will not change but the name of the non metal will, for example oxygen can change to oxide
- Chemical formulae tells us how many atoms of each element are in the compound in relation to each other

CH_4 — 1 carbon, 4 hydrogens

CO_2 — 1 carbon, 2 oxygens

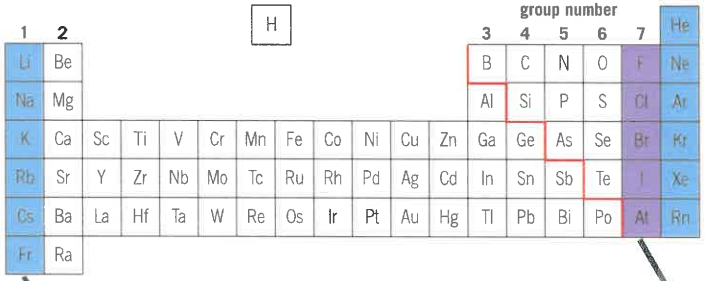
- The small number tells us the number of each element which is in front of the number

Polymers

- **Polymers** are long chains of groups of atoms which are repeated many times
- Natural polymers are not man-made and include wool, cotton, starch and rubber
- Synthetic polymers are man-made and include polythene, polystyrene and nylon

Groups and periods

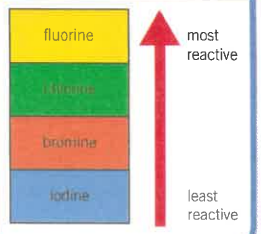
- **Groups** are the columns in the Periodic Table, they go downwards
- **Periods** are the rows in the Periodic Table, they go sideways
- Elements in the same group normally follow the same trends in properties such as melting point, boiling point and reactivity
- By placing these elements into these groups, scientists can make predictions about their properties



Group 0

- **Group 0** elements are known as the **noble gases**
- They are all non metals with low melting and boiling points, meaning all are gases at room temperature
- The boiling point decreases going down the group
- All of the group 0 elements are unreactive
- When electricity is passed through the gas, they emit a brightly coloured light, this can be seen in neon signs

Halogens



Group 1

- **Group 1** elements are also known as the **alkali metals**
- They share similar properties with other metals such as:
  - Being shiny when freshly cut
  - Being good conductors of electricity and heat
- Group 1 metals are much softer than other metals and also have much lower melting and boiling points
- Group 1 elements react with water to form alkali solutions

lithium + water → lithium hydroxide + hydrogen
metal + water → metal hydroxide + hydrogen

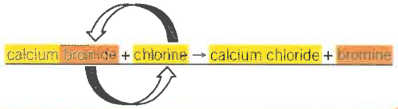
- The further down the group that the metal is, the more vigorous the reaction will be. This is called a **trend**
- Another trend seen in Group 1 is with the boiling and melting points: the further down the group, the lower the boiling and melting points are

Group 7

- **Group 7** elements are also known as the **halogens**
- They share similar properties with other non metals such as:
  - Having low melting and boiling points
  - Not conducting electricity
  - Moving down the groups the elements have an increased melting and boiling point
- The halogens also react in a similar way to one another, for example with iron:

iron + chlorine → iron chloride
iron + bromine → iron bromide

- Halogens can undergo **displacement reactions**, this is where a more reactive halogen will take the place of a less reactive halogen
- The most reactive halogens are at the top of the group, and the least reactive halogens are at the bottom of the group
- If the most reactive halogen is on its own, it will take the place of the less reactive halogen in a compound



Key terms Make sure you can write definitions for these key terms.

atom, alkali metals, compound, displacement reaction, element, group, Group 1, Group 7, Group 0, halogen, noble gas, period, Periodic Table, physical properties, polymer, trend

B2 Chapter 8: Organisms
Knowledge organiser

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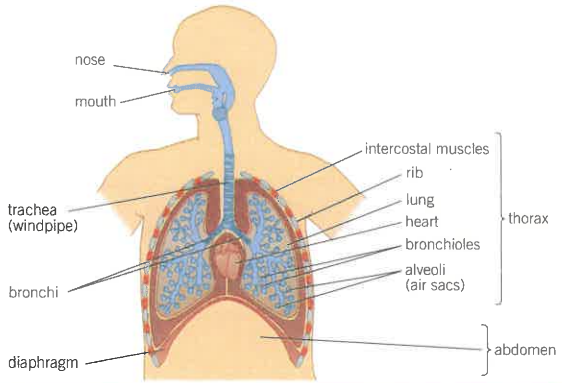
Gas exchange and breathing

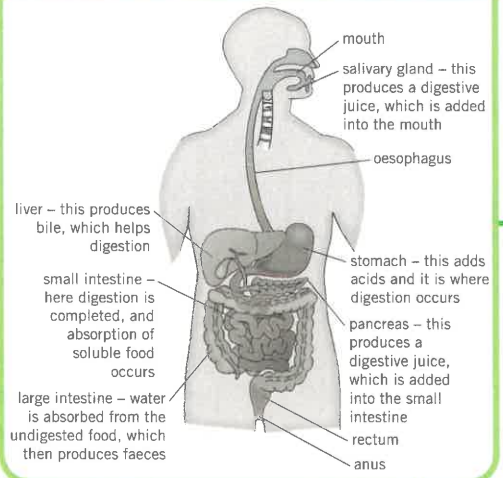
- **Gas exchange** is the process of taking in oxygen and giving out carbon dioxide
- This occurs in the **respiratory system**
- The proportions of gases in the air we **inhale** and **exhale** changes due to using oxygen in **respiration** and producing carbon dioxide



What happens when you breathe in and out

when you breathe in (inhale)	• muscles between the rubs contract • ribs are pulled up and out • diaphragm contracts and flattens • volume of the chest increases • pressure inside the chest decreases • air rushes into the lungs
when you breathe out (exhale)	• muscles between ribs relax • ribs are pulledin and down • diaphragm relaxes and moves up • volume in the chest decrease • pressure inside the chest increases • air is forced out of the lungs

The digestive system



Enzymes

- **Enzymes** are biological **catalysts**, they speed up the digestion of **nutrients**
- Each enzyme is specific to each nutrient
- The way the enzyme and nutrient bind with each other is called a lock and key model

- **Carbohydrases** break **carbohydrates** down into simple sugars
- **Proteases** break **proteins** down into amino acids
- **Lipase** breaks **lipids** (fats) down into fatty acids and glycerol

Drugs

- **Drugs** are chemicals that affect the way that our body works
- **Medicinal drugs** are used in medicine, they benefit health
- If medicinal drugs are not taken in the correct way they can harm health
- Examples include antibiotics and pain killers

- **Recreational drugs** are taken by people for enjoyment
- Recreational drugs normally have no health benefits and can be harmful for health
- Examples include alcohol and tobacco

- Drug **addiction** is when your body gets so used to a drug, it feels it cannot cope without it
- If someone who has an addiction stops taking the drug, they will experience **withdrawal symptoms**

Nutrients

- A **balanced diet** involves eating the right amount of nutrients for your body to function
- Not eating enough of a nutrient means you have an unbalanced diet, and this can lead to a **deficiency**

Nutrient	Role in your body
carbohydrates	main source of energy
lipids	fats and oils provide energy
proteins	growth and repair of cells and tissues
vitamins and minerals	essential in small amounts to keep you healthy
water	needed in all cells and body fluids
fibre	provides bulk to food to keep it moving through the gut

Key terms Make sure you can write definitions for these key terms.

addiction, balanced diet, carbohydrate, carbohydrases, catalyst, deficiency, drug, enzyme, exhale, fibre, gas exchange, inhale, lipid, medicinal drug, mineral, nutrient, protease, protein, recreational drug, respiration, respiratory system, vitamin, withdrawal symptoms

P2 Chapter 4: Waves
Knowledge organiser

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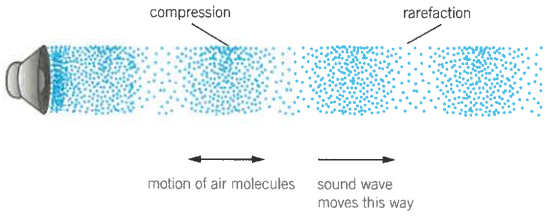
Sound waves

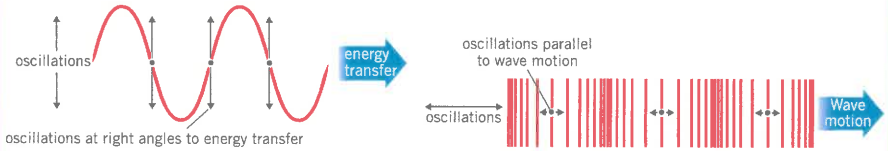
- Any **wave** transfers energy from one place to another
- Sound waves cause particles to vibrate backwards and forwards in the direction of the wave, this produces areas of high pressure (**compression**) and low pressure (**rarefaction**)
- As there are areas where the air pressure is different in a sound wave, we can call sound waves a type of **pressure wave**



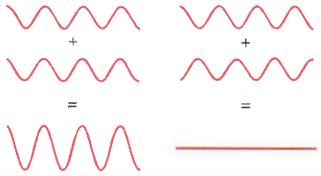
- Sound can be detected with a **microphone**, the microphone will change air pressure into a changing potential difference
- Sound can be produced with a **loudspeaker**, the changing potential difference causes changes in air pressure
- Changes in air pressure will be caused by the diaphragm of the loudspeaker vibrating and causing the movement of the air particles

Types of waves

- **Transverse waves** vibrate at 90° to the direction at which they are travelling, they move up and down as well as forward
- **Longitudinal waves** vibrate in the direction in which they are travelling



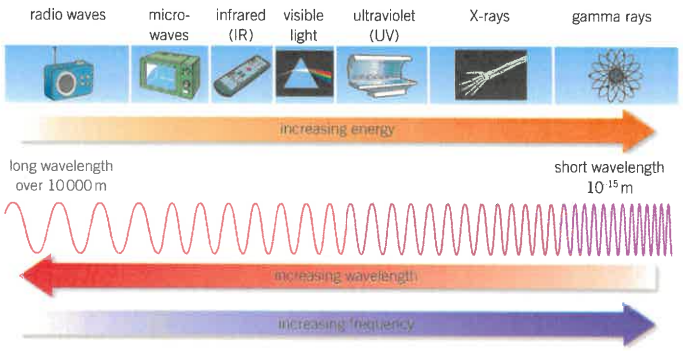
- When waves are put together they **superpose**, this means they will either add together or cancel each other out
- When the waves are in line with one another they add together, increasing the amplitude of the wave
- When the waves are not in line, they will cancel each other out, decreasing the amplitude of the wave



Ultrasound

- Humans can hear sounds with a frequency between 20–20000 Hz.
- **ultrasound** is any sound with a frequency of higher than 20000 Hz
- As ultrasound has a high frequency it causes the particles it interacts with to vibrate more quickly, this means that it can be used in:
  - Ultrasonic cleaning – dirt particles are 'shaken' off of objects
  - Physiotherapy – the ultrasound waves causes liquid particles in the body to move more quickly and hence get warmer

Electromagnetic spectrum

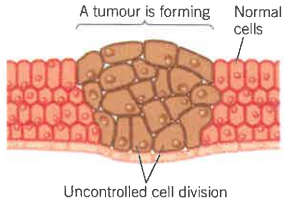


Uses of the electromagnetic spectrum

Radio waves	TV signals
Microwaves	Mobile phones
Infrared	Heating and cooking
Visible light	Photography
Ultraviolet waves	Detecting forgeries,sunbeds
X-rays	Imaging broken bones
Gamma rays	Killing cancer cells

Ionisation

- The higher the frequency of the wave, the higher the energy
- High energy waves can lead to **ionisation**, where electrons are knocked off of atoms in cells
- This can cause mutations in cells if the DNA is affected and this can lead to cancerous tumours forming
- The ionising waves in the electromagnetic spectrum are gamma, X-rays and ultraviolet rays



Key terms Make sure you can write definitions for these key terms.

compression electromagnetic spectrum gamma rays infrared ionisation longitudinal wave loudspeaker microphone microwaves pressure wave radio waves rarefaction superpose transverse wave ultrasound ultraviolet visible light wave X-rays