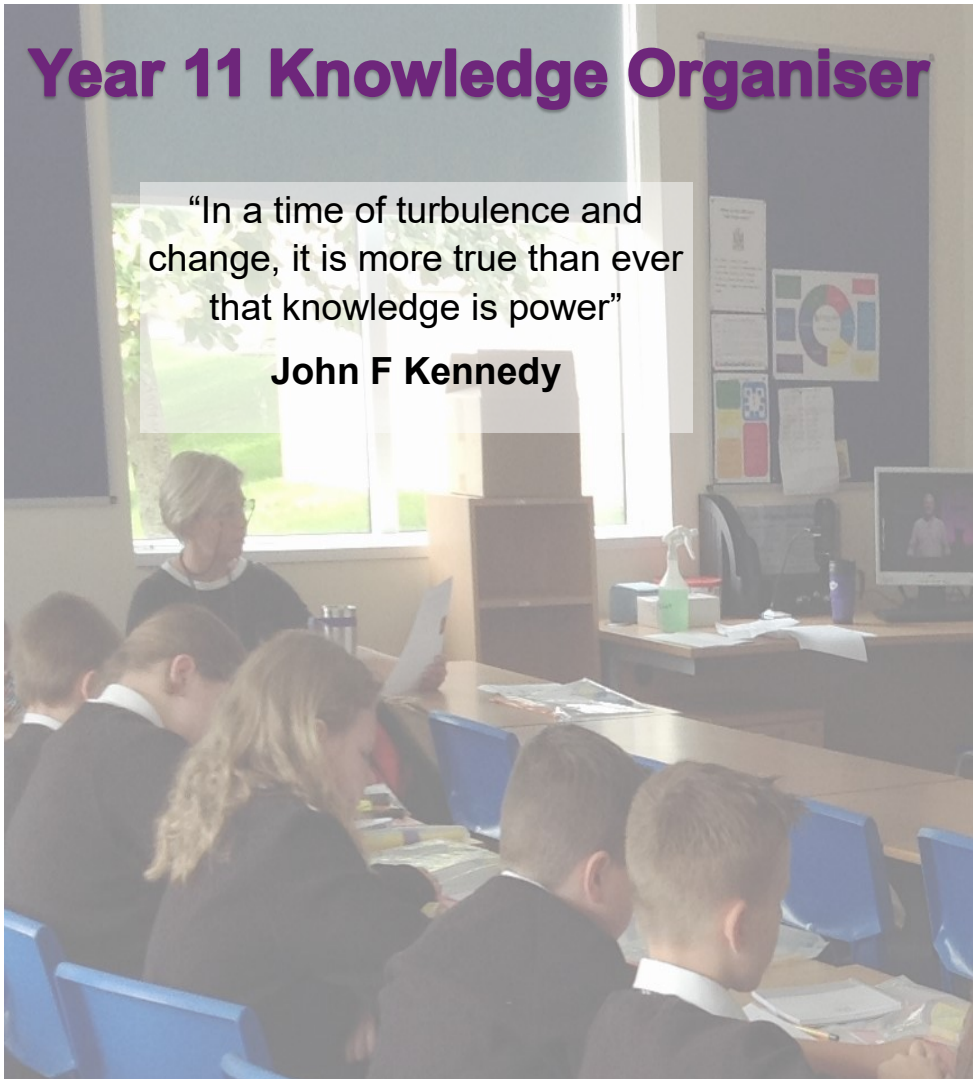


Year 11 Knowledge Organiser

"In a time of turbulence and change, it is more true than ever that knowledge is power"

John F Kennedy



Autumn 2



Inspiring Education for All

**Buckler's Mead
Academy**



Name:

Tutor:

Ready, Responsible, Respect

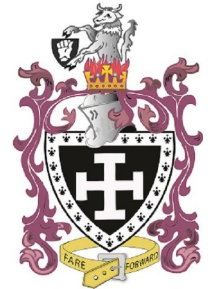
How to use your knowledge Organiser

Self –Quizzing.

Your knowledge organiser contains all of the key information you need to know for each subject area.

Your knowledge organiser will allow you to revise this key information and make sure it is stored and retrieved from your long-term memory

The best way to use this resource is by self-quizzing through the “**look, cover, write and check**”



First look through and read the information on a section of your knowledge organiser

Then Cover the section so you can no longer see the information

Next Try and **write out or mind map** the key definitions or facts that you need to know

Now uncover the section of your Knowledge Organiser and check how correct you were

Finally Correct anything that you wrote down that was incorrect

Look



Cover



Write



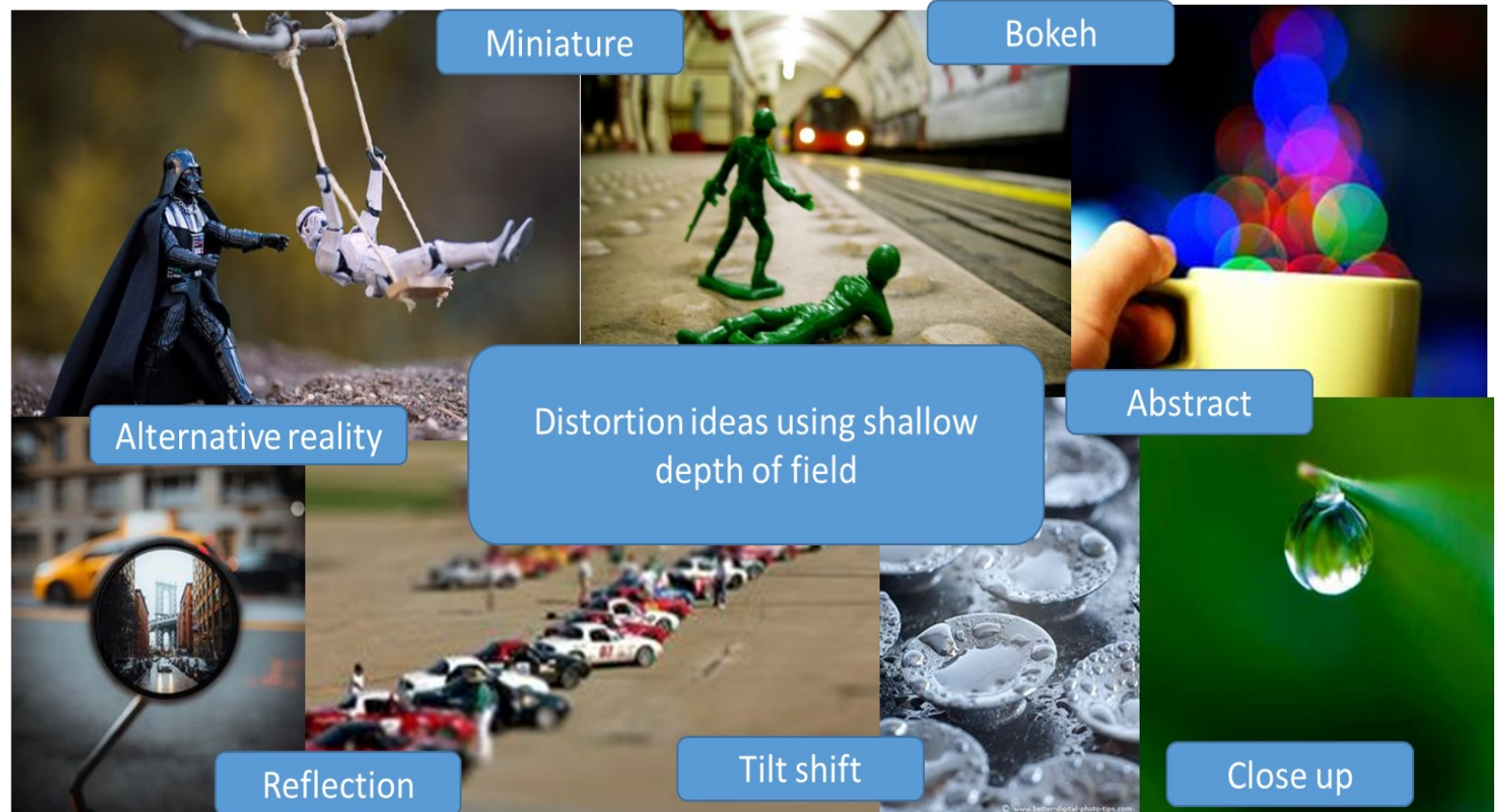
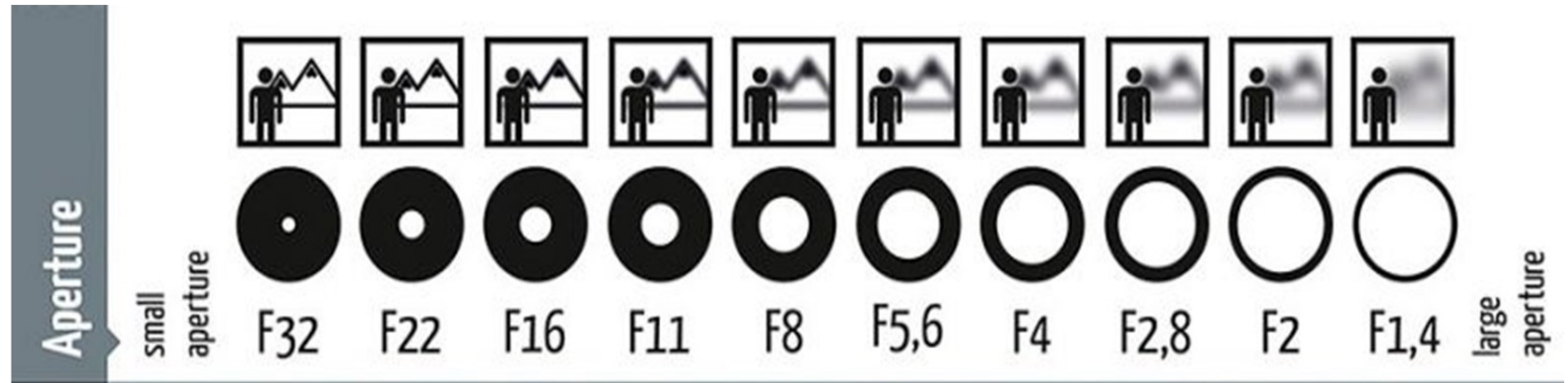
Check



Aperture



The Av setting is most useful in situations when you know that you want a **shallow or deep depth of field**. If you're shooting a portrait, you'll often want a shallow depth of field (to isolate and bring attention to your subject's face) so open up to f/4 or something similar (small f number).



Art & Photography

Urban Art

Marking... Assessment Objectives

A01: RESEARCH - IMAGES & ARTISTS

Develop your ideas through investigations informed by contextual and other sources, demonstrating analytical and cultural understanding.

A02: EXPERIMENTS WITH MEDIA

Refine your ideas through experimenting and selecting appropriate resources, media, materials, techniques and processes.

A03: IDEAS, OBSERVATIONAL DRAWINGS & EXPLANATIONS

Record ideas, observations and insights relevant to your intentions in visual and/or other forms.

A04: FINAL IDEA & FINAL PIECE, LINKS WITH ARTISTS

Present a personal, informed and meaningful response demonstrating analytical and critical understanding, realising intentions and making connections between visual or other elements.

KEY WORDS

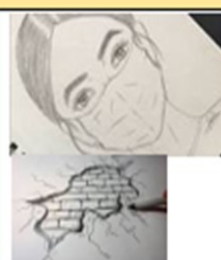
Assessment objectives

Deadlines

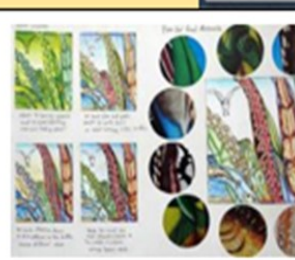
Target

Experiment

Annotate



Primary drawings and photographs of the 'things that you intend to include in your final piece.'



Experimentation is key. The more the better. You should try out different ways of executing your final idea.



Your final piece must be well planned and should link to an artist or process that you have used in this project



You must produce 3 different ideas. Choose your favourite Experiment with composition, colour, media and equipment.

	Wk1	Wk2	Wk3	Wk4	Wk5	Wk6	Wk 7 Hand In Deadline
Task	Observational drawing and photographs	EXPERIMENT with colour, composition, media, materials, techniques			Final Piece		Evaluation
	Continue	Continue	Continue	Independent work on your sketch book pages			



Art & Photography

Community

Opportunity

"Inspiring Education for All"

Enjoyment

Success

Christian Practices

Key Terms

Worship- showing love to God.

Liturgical Worship- worship that follows a set order.

Non Liturgical Worship- worship that doesn't follow a set order.

Private- worship that is done by a person on their own.

Informal worship- worship that doesn't follow a set order and is spontaneous.

Prayer- communicating with God.

Sacraments- special acts of worship and rituals where Christians experience God and His Love.

Holy Communion- a sacrament using bread and wine to celebrate Jesus' sacrifice.

Infant Baptism- a sacrament where a person is welcomed into the community.

Believer's Baptism- when an adult is baptised.

Liturgy of Word- worship involving prayers, readings and the Bible.

Liturgy of the Faithful- worship involving a group of Christians.

Pilgrimage- a journey with a religious purpose/goal.

Christmas- a festival that celebrates the birth of Jesus

Easter- A festival that celebrates the death and resurrection of Jesus.

Evangelism- spreading the faith of Christianity.

Mission- when a person feels a special call to teach others about Christianity.

Persecution- when a group of people is targeted and treated badly.

Why do people Worship?

- To feel close to God.
- To say sorry.
- To say thank you.
- To pray for others.
- To be part of a community.

The Lord's Prayer

Our father in Heaven, hallowed by you name, your Kingdom come, your will be done, on earth as in Heaven. Forgive us our sins, as we forgive those who sin against us. Lead us not into temptation, but deliver us from evil. For the kingdom, the power and the glory are yours now and forever. Amen

Seven Sacraments

Baptism- welcomes someone into the church.

Confirmation- when a young person makes a commitment to be Christian.

Eucharist/Holy Communion- sharing bread and wine.

Marriage- when two people make promises before God.

Holy Orders- become a minister or priest

Anointing of the sick- when prayers, blessings and holy oil is given to a seriously ill person.

Confession- admitting sins and asking God for forgiveness.

Church Growth

The church is growing rapidly in South America, Africa and Asia.

Over 80,000 people become Christian each day. It is spread by Evangelists.

They spread the faith by using social media, praying for others, teaching people and sharing their faith. They also invite people to meetings, meals and social events.

The Church in the local Community

Christians work in the community to follow Jesus' teachings such as Agape, Love your neighbour and the Parable of the Sheep and Goats.

They work in the community by a) Bible study groups b) Providing meeting places for prayer and worship c) Provide youth clubs and activities for young people d) food banks d) Outreach projects to help those in e.g. crime, drug addiction and poverty e) Homeless shelters and soup kitchens.

Holy Communion

Originates from Jesus' last supper with his disciples when they ate bread and wine.

Bread= Jesus' body

Wine= Jesus' blood

Catholics & Orthodox= Believe that the bread and wine literally becomes the body and blood of Christ (Transubstantiation) after a blessing has been made.

Protestants= Believe that Jesus is present during this ceremony but the bread and wine do not change. (Consubstantiation)

Catholics hold communion every day of the week this is called mass and they must take part in confession before the service.

Other denominations hold this on a Sunday.

Pilgrimage = A journey with a religious purpose and meaning.

Lona- An island off the coast of Scotland where a group of Monks set up the community in 6AD. Small numbers go here. It is a remote island and a place of natural beauty. People visit it to feel close to God and reflect.

Lourdes- A town in France believed to be the site of a miracle and where a girl saw a vision of the Virgin Mary. People go there to drink the water from the well and visit the grotto where Mary was seen. The water is believed to have healing properties. Thousands of people visit this place every year to worship God as a community.

Festivals= a period of celebration or remembrance for Religious reasons.

Christmas- celebrates the birth of Jesus. A) They hang up lights to represent the hope that Jesus brought. B) Create Nativity scenes to remind themselves of the stories of his birth. C) They hold carol services where they sing and read the bible. D) They exchange gifts and donate to charity.

Easter- Remembers Jesus' death and resurrection. This takes place over 7 days called **Holy Week**. A) **Good Friday**- remember Jesus entering Jerusalem. Christians give out palm crosses B) **Maundy Thursday**- remembers the last supper. Some Christians perform Holy Communion. C) **Good Friday**- remembers Jesus' death. Christians often fast, pray and take down flowers and decorations from the church. D) **Easter Vigil**- a special service is held on the Saturday night to celebrate Jesus' resurrection. Candles are lit in the Church. E)

Easter Sunday- celebrates Jesus' resurrection. Church services are held and Easter eggs are given to children.

Mission and Evangelism

Mission- a calling to spread the word of God

Evangelism- spreading faith in Jesus by leading a good life and telling others.

Christians believe that Jesus told his disciples to go and spread his teachings and to tell them about him.

E.G Alpha- started in London, introduces Christianity to people who want to learn about it and holds courses in homes, workplaces and universities.

Responses to Poverty and Persecution

Persecution- picking or singling someone out because of their race, religion etc.

Christians challenge persecution because of Jesus' teachings "do not be overcome by evil, but overcome evil with good." Desmond Tutu challenged racist laws in South Africa and set up the truth and reconciliation commission after Apartheid.

Poverty- lacking the basic essentials a person needs e.g. food, education, health care and money. Christian Aid- provide emergency relief such as food, water, shelter and sanitation. Campaigns for fair trade, social justice and reducing the causes of climate change.

Beliefs & Values

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

LO4: Threats to Computer Systems

Legal Framework

There are a number of laws relevant to computer users including The Computer Misuse Act (Which makes hacking and unauthorised access to computer systems illegal), GDPR (Which protects peoples personal data from misuse), Copyright(which protects peoples intellectual property from being misused) and Freedom of Information which allows people to see the information that public organisations hold.

Threats

There are many different types of Malware and these include

- Adware
- Bot
- Ransomware
- Spyware
- Trojan Horse
- Virus
- Worm

Social Engineering

Takes many forms including– phishing where you are convinced to enter personal details into a fake website, baiting where people hand over personal details in exchange for free goods, tailgating where a scammer follows somebody with access into a secure area, shoulder surfing which is often used to steal pin numbers and login details.

Cyber Attacks

Cyber attacks occur when a cyber criminal attempts to disrupt a computer system. They include Distributed Denial of Service attacks (DDOS) where the attack overwhelms a web server and pharming where the attacker redirects users to a fake website.



Key Terms-

Malware– A combination of the words ‘Malicious and Software’ used to describe any software such as viruses which can damage a computer system

Social Engineering– The process of manipulating people to gain access to personally sensitive information.

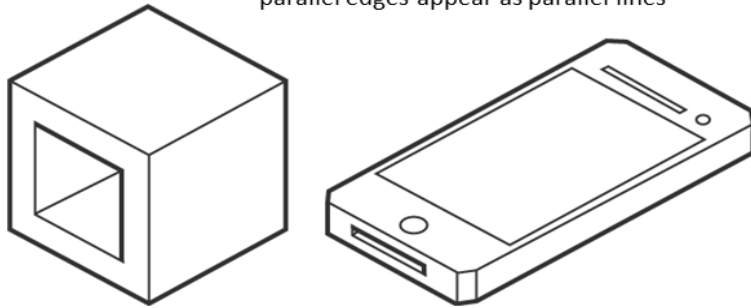
Cyber Attacks– An attack on a computer system in an attempt to steal data or prevent use

Computing

Isometric Drawing

There are 3 main rules to isometric drawing:

- horizontal edges are drawn at 30 degrees
- vertical edges are drawn as vertical lines
- parallel edges appear as parallel lines

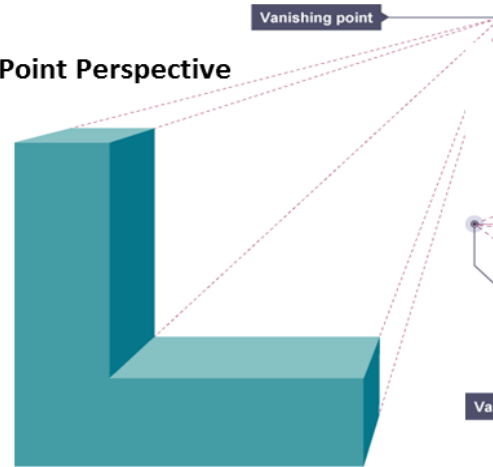


Isometric drawings, sometimes called isometric projections, are a good way of showing measurements and how components fit together. Unlike perspective drawings, they don't get smaller as the lines go into the distance. Isometric drawings are used to show a graphical representation of a 3D object. They are used by architects and engineers to communicate their ideas to the client and manufacturer, showing the product or design to scale.

ACCESS FM

Aesthetics	The look or feel of a product
Customer	Who would buy the product
Cost	How much the product would cost to make and buy
Environment	The impact of your product on the environment
Size	The dimensions of the product and its features
Safety	Ensuring your product is safe when used or made
Function	The purpose of the product
Material	What the product is made of

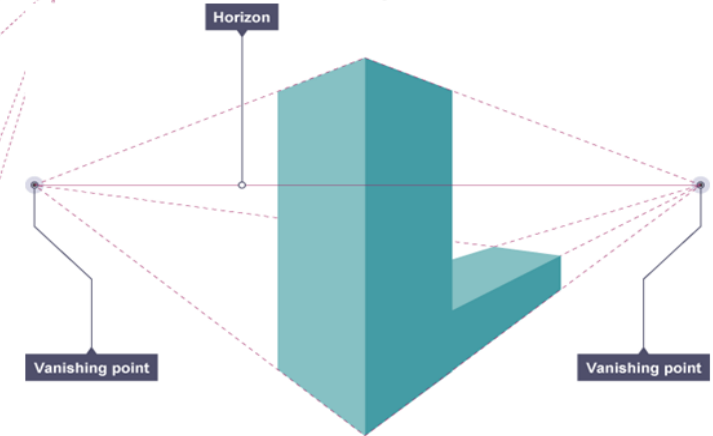
One Point Perspective



Properties of Materials

This shows an object from the front in a realistic way as it gets smaller going into the distance. The front view goes back towards a vanishing point, which is a point on the horizon line where all lines meet.

Two Point Perspective



Two-point perspective - This shows an object from the side with two vanishing points. It gives the most realistic view of a product as it shows the item edge on, as we would see it. It is often used to produce realistic drawings of an object.

Selecting materials

When selecting materials there are many factors to think about:

- Functionality
- Availability
- Aesthetics
- Cost
- Environmental factors
- Social factors
- Ethical factors
- Cultural factors

Strength	The ability to withstand forces without breaking.
Hardness	The ability to withstand scratching, abrasion or denting.
Elasticity	The ability to stretch and bend and return to their original shape.
Malleability	The ability to be bent or shaped.
Toughness	The ability to resist breaking or snapping

Tolerance	The margin of error allowed for a measurement of part of a product. Tolerances are usually given as an upper and lower limit (e.g. 10mm ± 2)
Prototype	A full-size, fully functioning product or system. It is built so that the product and production methods can be evaluated before manufacture of the final product/s.
Manufacturing Specification	A series of written statements, or working drawings and sequence diagrams, that tells the manufacturer exactly how to make the product.

Design & Technology

Community

Opportunity

"Inspiring Education for All"

Enjoyment

Success

Good food hygiene and safety practices

Good food hygiene practices are necessary in order to produce, make and supply food that is safe to eat. This involves more than just being clean. A simple way to remember is the 4Cs:

- cleaning;
- cooking;
- chilling;
- cross-contamination.



Cleaning

Cleaning the kitchen is important to keep food safe and prevent bacteria from spreading. 'Clean as you go' means people make sure that they clean the area and utensils they have been working in or with, as they prepare food. This avoids build-up of mess and leads to better hygienic conditions. Areas which need particular attention are:

- surfaces that come into contact with food, e.g. chopping boards, utensils;
- surfaces that come into contact with hands, e.g. cupboard and fridge doors.

Cleaning – personal hygiene and getting ready to cook

Good personal hygiene is essential to reduce the risk of food poisoning.

- **Hands:** Thoroughly wash and dry hands before and after touching food and regularly throughout cooking.
- **Clothing:** Clean clothing should be worn. Long sleeves should be rolled up and a clean apron or chef's jacket worn over outside clothes. Enclosed, non-slip, shoes should be worn in the kitchen.
- **Jewellery:** All jewellery, including a watch, should be removed (piercings should be covered if they cannot be removed).
- **Skin:** Cuts and wounds should be covered with a coloured, waterproof dressing. The plasters are often blue in colour so they can be easily identified if they fall into food.
- **Face:** Do not cough or spit near or over food, taste food with fingers, bite nails, eat, chew or smoke, touch nose, or remove earrings.

For more information, go to:
<https://bit.ly/3nE9fpE>

Cooking

To reduce the risk of food poisoning, hot food must be served steaming hot, that is above 63°C.

- Bacteria will begin to die when the temperature rises above 60°C.
- Some foods change colour when they are cooked.
- Cooking food thoroughly to a minimum core temperature of 75°C will ensure most bacteria is destroyed.
- When cooking burgers, sausages, portions of pork and chicken, there should be no pink meat they should also be steaming hot inside. The juices should run clear when cooked.
- Steak or other cuts of beef or lamb can be eaten less well done as long as they have been properly sealed. Sealing the meat will kill any bacteria on the outside.
- Leftovers should be cooled as quickly as possible within two hours and then stored in the fridge below 5°C. When leftovers are re-heated, they need to be steaming hot. Leftovers should not be re-heated more than once and should be used within 48 hours from when it was made (24 hours for rice dishes).

Chilling

The temperature between 5°C–63°C is known as the 'danger-zone'. Bacteria will multiply most rapidly within this temperature range. Reducing the temperature below 5°C slows the reproduction of micro – organisms. Cold temperatures do not kill bacteria.

High-risk food, such as meat, fish and dairy products plus opened bottles, jars or tubes, should be stored below 5°C. Eggs should be stored in a cool, dry place. Ideally, eggs should be stored in the fridge.

Cross-contamination

The process by which bacteria are transferred from one area to another is known as **cross-contamination**. The main carriers of bacteria and causes of cross contamination are:

- humans;
- rubbish;
- pets and other animals;
- food, e.g. raw meat or poultry.

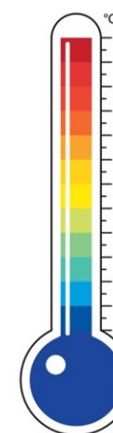
Cross contamination – raw meat

- Keep raw meat separate from ready-to-eat food.
- Do not let raw meat drip onto other food.
- Never use the same chopping board for raw meat and ready-to-eat food without washing the board (and knife) thoroughly in between. Ideally use a red board.
- Do not wash meat before cooking it.

Temperatures to remember

To reduce the risk of food poisoning, good temperature control is vital:

- 5-63°C – the danger zone where bacteria grow most readily.
- 37°C – body temperature, optimum temperature for bacterial growth.
- 8°C – maximum legal temperature for cold food, i.e. your fridge.
- 5°C (or below) – the ideal temperature your fridge should be.
- 75°C – if cooking food, the core temperature, middle or thickest part should reach at least this temperature.
- 75°C – if reheating food, it should reach at least this temperature. In Scotland food should reach at least 82°C.



Key terms

Best-before-date: Relates to the quality of the food. Food may still be eaten beyond this date.

Cross-contamination: The transfer of bacteria from one source to another. Usually raw food to ready to eat food but can also be the transfer of bacteria from unclean hands, equipment, cloths or pests. Can also relate to allergens.

Danger zone: Bacteria will multiply most rapidly between 5-63°C.

Optimum temperature: Bacteria that cause food poisoning reproduce around body temperature (37°C).

The 4Cs: Cleaning, cooking, chilling and cross-contamination.

Use-by-date: Relates to the safety of the food. Food must be eaten by this date.

Safe use of a food probe

Digital probes can be used to check the temperature of food. To use a food probe:

- clean with a disinfectant wipe before and after use;
- insert the probe into the core (centre) or the thickest part of the food;
- do not touch the bottom of the pan or cooking dish.

Food labelling

Food labels help consumers make healthier choices. Some information also helps to reduce the risk of food poisoning or other adverse reactions to food:

- date marks;
- list of ingredients with allergens in **bold**, **highlighted**, underlined or in *italics*;
- storage and preparation conditions.

Tasks

- Write a detailed explanation of the 4Cs, demonstrating how they can help to reduce the risk of food poisoning.
- Explain, giving detailed reasons, the food hygiene controls when buying, preparing, cooking and serving fresh poultry.

Use by date

You have until the end of this date to use or freeze the food before it comes too risky to eat.

USE BY:
25/08/20

KEEP REFRIGERATED

Best before date






You can eat food past this date but it might not be at its best quality.

BEST BEFORE:
25/08/21

STORE IN A COOL DRY PLACE

Food Preparation & Nutrition

"Inspiring Education for All"

Engineering Component 2 You will investigate the selection of materials, proprietary components, making processes and disassembly of a given engineered product. You will plan, reproduce, inspect and test a single component					
Engineering	Engineering Component 2A Task; Understand materials, components and processes for a given engineered project		Engineering Component 2B Task; to produce a design proposal for an engineered product to meet the requirements of a customer		Engineering Component 2C Task; to plan the manufacture and safely reproduce/inspect/test a given engineered product
	Evidence <ul style="list-style-type: none"> ✓ Annotated assembly and detailed drawings ✓ A list of components, materials and processes used ✓ Research notes ✓ Notes to evaluate the materials, components and processes you have researched ✓ Images in support of your work 		Evidence <ul style="list-style-type: none"> ✓ An observation record ✓ Annotated photographs of your labelled components ✓ Inspection/dimensional data sheets ✓ Written commentary showing a description of each component, their purpose and how they link/work/fit together ✓ A PDS with justification 		Evidence <ul style="list-style-type: none"> ✓ Your original production plan ✓ A copy of your production plan showing your further notes after discussion with your assessor ✓ Observation records ✓ Annotated photographs of you making your component ✓ Inspection/dimensional data-a record of the measurements and other observations on quality, plus comments about any errors and how to resolve them ✓ Written commentary showing your evaluation of the success of your production plan and production of the component and any improvements ✓ Your finished component
Key words	Components = A part of something		Annotation= to make notes on a drawing		Proprietary/product specific components= Components that you can find anywhere they are universal/components that are specific to the product only
	Properties= the characteristics of a material		PDS- Product Design Specification= a list of criteria to product must have		Disassembly= taking a product a part for analysis
Tools	 1	 2	 3	4 	5 
	Engineers square	Metal working vice	Pillar drill	Centre punch	Vernier caliper

Engineering

Language Paper One Knowledge Organiser

Key Terminology & Definitions

Abstract Noun	An abstract noun is a concept, idea, belief or emotion. It is not tangible. (You cannot experience it with your five senses.)
Concrete Noun	A noun is a person, place or thing. A concrete noun is something tangible that you can experience with one of your five senses.
Proper Noun	A name or place. All proper nouns must begin with a capital letter.
Adjective	A describing word
Verb	An action or doing word
Nomenclature	The deliberate allocation of a name to a person or thing.
Simile	When something is described by saying it is similar to something else.
Metaphor	When something is described as being something else to highlight the similarities
Personification	When a human quality is given to an inanimate object
Semantic Field	A set of words grouped together that relate to a specific subject
Pronoun	Words that refer to the participants in a discourse (ex, I, you, he, she, they)
Adverb	A word that describes how a verb is being performed
Narrative	An account of events, a story
Description	An account of a person, object or event
Method	A procedure used to achieve something. We refer to writers' methods and their achievements.
Genre	A style/category of art (including literature)
Reader Response	How the reader feels, what they understand or have learned after reading a text
Archetype	A stereotypical example of something
Dialogue	Written speech by characters
Mood/Tone/ Atmosphere	The feeling that a text carries or creates in a reader
Symbol	Something that stands for or represents an abstract concept
Flashback/ flashforward	A jump back or forward in time
Cyclical structure	When a story ends where it began, usually to emphasise whether anything has changed or not
Shift	When the writer changes your attention and focusses it on something else
Linear	The story starts at a certain time and moves forwards logically.
Non linear	The story jumps through time regularly, or there is no concept of time

Language Paper Two Knowledge Organiser

Key Terminology & Definitions

Imperative	An imperative verb can be used to give instructions. It can work on its own, for example: Stop! Go! It comes from the infinite form of the verb. They can be in first person or third person.
Active voice	This is where the <u>subject of the sentence</u> is also the <u>agent</u> (the thing doing the verb) ex: John's dad fixed the car.
Passive voice	This is where the <u>agent</u> (the thing doing the verb) appears after the verb. For example: My car is being repaired by John's dad.
Main clause	A group of words with a subject, object and verb. All sentences must contain a main clause
Simple sentence	A sentence made up of a main clause and nothing else
Subject	The part of a sentence that contains the person/thing doing the verb
Object	The thing or person involved in the verb
Verb	A doing word
Noun	A person, place or thing. Nouns are either concrete or abstract.
Adjective	A describing word
Comparative discourse markers	Words that introduce a comparison: however, whilst, similarly, whereas etc.
Symbols	Something that stands for or represents an abstract concept
Emotive vocabulary	Words that cause a strong emotional reaction in a reader
Repetition	Repeated words, phrases or sentence structures
Anecdote	A short personal story
Metaphor	A description of something by saying it is something else
Semantic field	A set of words grouped together that relate to a specific subject
Overview	A statement that explains an opinion without using the word agree/disagree
Topic sentence	A sentence at the start of a paragraph that indicates what the paragraph will be about
Compound sentence	Two simple sentences joined with a conjunction
Subordinate clauses	Extra information contained within two commas that need the rest of a main clause to make sense
Anaphora	is the repetition of a word or a phrase at the beginning of successive clauses or sentences.
Conjunction	Words used to connect clauses: and, but, yet, though, if etc.
Pronouns	A word that refers to the participants in the discourse
Statistics	Numerical data

Spellings (the most commonly misspelt words on language P2)

Disgust, beginning, specific, precise, apprehensive, definitely, necessary, disappear, disappoint, appearance, completely, a lot, happened, received, really, tomorrow, weird, tired, normal, interrupt, exaggerate, braking, satisfied, decided, probably, interested, relief, possibly, his/he's, says

Resource Challenges			Food in the UK		Water in the UK			
Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.			<div><div></div><div>Growing Demand</div></div> <ul style="list-style-type: none">The UK imports about 40% of its food. This increases people's carbon footprint.There is growing demand for greater choice of exotic foods needed all year round.Foods from abroad are more affordable.Many food types are unsuitable to be grown in the UK.		<div><div></div><div>Growing Demand</div></div> <p>The average water used per household has risen by 70%. This growing demand is predicted to increase by 5% by 2020. This is due to:</p> <ul style="list-style-type: none">A growing UK population.Water-intensive appliances.Showers and baths taken.Industrial and leisure use.Watering greenhouses.			
Significance of Water			<div><div></div><div>Agribusiness</div></div> <p>Farming is being treated like a large industrial business. This is increasing food production.</p> <ul style="list-style-type: none">+ Intensive faming maximises the amount of food produced.+ Using machinery which increases the farms efficiency.- Only employs a small number of workers.- Chemicals used on farms damages the habitats and wildlife.		<div><div></div><div>Sustainable Foods</div></div> <p>Organic foods that have little impact on the environment and are healthier have been rising. Local food sourcing is also rising in popularity.</p> <ul style="list-style-type: none">• Reduces emissions by only eating food from the UK.• Buying locally sourced food supports local shops and farms.• A third of people grow their own food.			
Resources such as food, energy and water are what is needed for basic human development.			<div><div></div><div>FOOD</div></div> <p>Without enough nutritious food, people can become malnourished. This can make them ill . This can prevent people working or receiving education.</p>		<div><div></div><div>WATER</div></div> <p>People need a supply of clean and safe water for drinking, cooking and washing. Water is also needed for food, clothes and other products.</p>		<div><div></div><div>ENERGY</div></div> <p>A good supply of energy is needed for a basic standard of living. People need light and heat for cooking or to stay warm. It is also needed for industry.</p>	
Demand outstripping supply					<div><div></div><div>Pollution and Quality</div></div> <p>Cause and effects include:</p> <ul style="list-style-type: none">Chemical run-off from farmland can destroy habitats and kills animals.Oil from boats and ships poisons wildlife.Untreated waste from industries creates unsafe drinking water.Sewage containing bacteria spreads infectious diseases.			
The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations					<div><div></div><div>Water stress in the UK</div></div>			
1. Population Growth			2. Economic Development		Management			
<ul style="list-style-type: none">Currently the global population is 7.3 billion.Global population has risen exponentially this century.Global population is expected to reach 9 billion by 2050.With more people, the demand for food, water, energy, jobs and space will increase.			<ul style="list-style-type: none">As LIDs and NEEs develop further, they require more energy for industry.LIDs and NEEs want similar lifestyles to HICs, therefore they will need to consume more resources.Development means more water is required for food production as diets improve.		UK has strict laws that limits the amount of discharge from factories and farms. Education campaigns to inform what can be disposed of safely. Waste water treatment plants remove dangerous elements to then be used for safe drinking. Pollution traps catch and filter pollutants.			
<p>The graph shows Earth's carrying capacity (green line) and population (blue line) over time. Population is projected to exceed carrying capacity, leading to resource consumption exceeding Earth's ability to provide.</p>			<div><div></div><div>Energy in the UK</div></div> <div><div></div><div>Growing Demand</div></div> <p>The UK consumes less energy than compared to the 1970s despite a smaller population. This is due to the decline of industry.</p>		<div><div></div><div>Energy Mix</div></div> <p>The majority of UK's energy mix comes from fossil fuels. By 2020, the UK aims for 15% of its energy to come from renewable sources. These renewable sources do not contribute to climate change.</p>			
3. Changing Technology and Employment			<div><div></div><div>Energy in the UK</div></div> <div><div></div><div>Changes in Energy Mix</div></div> <ul style="list-style-type: none">75% of the UK's oil and gas has been used up.Coal consumption has declined.UK has become too dependent on imported energy.		<div><div></div><div>Energy in the UK</div></div> <div><div></div><div>Energy Mix</div></div> <p>The majority of UK's energy mix comes from fossil fuels. By 2020, the UK aims for 15% of its energy to come from renewable sources. These renewable sources do not contribute to climate change.</p>			
			<div><div></div><div>Energy in the UK</div></div> <div><div></div><div>Significance of Renewables</div></div> <ul style="list-style-type: none">+ The UK government is investing more into low carbon alternatives.+ UK government aims to meet targets for reducing emissions.+ Renewable sources include wind, solar and tidal energy.- Although infinite, renewables are still expensive to install.- Shale gas deposits may be exploited in the near future		<div><div></div><div>Energy in the UK</div></div> <div><div></div><div>Exploitation</div></div> <div><div></div><div>Nuclear</div></div> <p>New plants provide job opportunities. Problems with safety and possible harm to wildlife. Nuclear plants are expensive.</p>			
					<div><div></div><div>Wind Farm</div></div> <p>Locals have low energy bills. Reduces carbon footprint. Construction cost is high. Visual impacts on landscape. Noise from wind turbines.</p>			



Option 1: FOOD

Food Security is when people at all times need to have physical & economic access to food to meet their dietary needs for an active & healthy life. This is the opposite to Food Insecurity which is when someone is unsure when they might next eat.

Human Causes

- **Poverty** prevents people affording food and buying equipment.
- **Conflict** disrupts farming and prevents supplies.
- **Food waste** due to poor transport and storage.
- **Climate Change** is affecting rainfall patterns making food production difficult.



Physical Causes

- The **quality of soil** is important to ensure crops have key nutrients.
- **Water supply** needs to be reliable to allow food to grow.
- **Pest, diseases and parasites** can destroy vast amounts of crops that are necessary to populations.
- **Extreme weather** events can damage crops (i.e. floods).

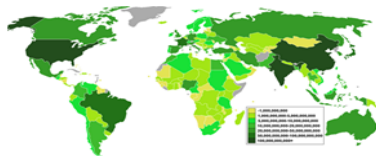


Daily Calorie Intake



This map shows how many **calories per person** that are consumed on average for each country. This can indicate the global distribution of **available food** and **food inequality**.

Food Supply



This map shows the amount of **food produced** in different countries. Whilst **Asia and North America** have **high** production outputs, **Africa** and **Central America** have **low** production outputs.

Sustainable Food Supply

This ensures that fertile soil, water and environmental resources are available for future generations.

- Organic Farming** - The banned use of chemicals and ensuring animals are raised naturally.
- Permaculture** - People growing their own food and changing eating habits. Fewer resources are required.
- Urban Farming** - Planting crops in urban areas. i.e. roundabouts.
- Managed Fishing** - Includes setting catch limits, banning trawling and promoting pole and line methods.

C.S. LIC - Indus Basin Irrigation System (Large Scale Scheme)



Largest irrigation scheme in the world. Involves large and small dams. Thousands of channels provides water to supports Pakistan's rich farmlands.

Advantages

- Improves food security by adding 40% more land for farming.
- Increased yield & range of foods.
- Irrigation increased so did crop yield
- Diets have improved as a greater range of food products available
- HEP is generated by the large dams

Disadvantages

- Some famers take an unfair share of water.
- Poor irrigation techniques mean water is waster.
- Salinisation (increased saltiness) can damage the soil
- Population growth will increase the demand for water
- High cost to maintain reservoirs.

Impacts of Food Insecurity

Famine- is widespread shortage of food often causing malnutrition, starvation and death. Example Somalia (201-2012) over 250000 people died due to famine- main cause lack of rain and militant group blocked aid.

Rising Prices- Food prices are rising, mainly due to increased cost of fertilisers, food shortage and transportation.

Soil Erosion- involves the removal of fertile top soil layers by wind and rain as no crops to protect due to either overgrazing/ over cultivating, deforestation.

Undernutrition- is the lack of a balanced diet and a defiancy in minerals and vitamins- can cause death.

Social Unrest- food riots happen die to prices of food rising. E.g. Algeria 2011 cooking oil price rose and lead to five days of riots and 4 deaths.



Increasing Food Supply

Hydroponics - A method of growing plants without soil. Instead they use nutrient solution.

New Green Revolution - Aims to improve yields in a more sustainable way. Involves using both GM varieties and traditional and organic farming.

Biotechnology - Genetically modified (GM) crops changes the DNA of foods to enhance productivity and properties.

Irrigation - Artificially watering the land so crops can grow. Useful in dry areas to make crops more productive.

Appropriate Technology - means using skills or materials that are cheap and easily available to increase the output without outing people out of work.



C.S. The Makueni Food and Water Security Programmes, Kenya (Small Scale Scheme)

The programme provided direct help to two small villages and a primary school in the Makueni County in Kenya.



Programme included:

- Improving water supply by building sand dams for each village
- Providing reliable source of water for crops and livestock
- A training programme to support local farmers
- Growing trees to reduce soil erosion

Was it successful?

- Crop yields and food security have increased
- Water borne diseases have been reduced
- Less time waster fetching water.

Geography

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

USA 1930s: The Depression

1) How did the Wall St Crash lead to the Great Depression? - From 1929 to 1932, 5,000 banks went out of business

- Businesses couldn't borrow money from banks so they cut production and laid off workers
- By 1933 **24.9% of people were unemployed**. These people couldn't pay their rent/mortgage so it led to homelessness and poverty
- Homeless people set up **Hoovervilles**, shanty towns named after the president to mock the lack of help he was providing
- The Republican government was slow to act and believed in "**rugged individualism**" - people working their own way out of poverty



2) The **Dust Bowl** was happening at the same time as the Depression and made life even harder for farmers. They had to abandon their farms and many became **migrant workers**.



3) How did President Hoover try to help?

In 1932 Hoover gave \$4 million to the states to open soup kitchens.

He created jobs by building the **Hoover Dam**.

He gave \$300 million to the states to provide support for the unemployed, but only \$30 million was used by the Republican states because they believed more strongly than Hoover in rugged individualism.

Many people believed that Hoover's efforts were too weak and had come too late.

"In Hoover we trusted now we are busted"



KEY WORDS:

Crash - a suddenly failing economy or stock market. Tend to follow a 'boom'

Depression - where a country experiences negative growth; a reduction in the wealth of a country

Democratic Party - One of the two main political parties: seen as more left-wing and liberal

Dust Bowl - huge area of farmland where soil was too dry and poor to support good quality crops

GDP - Gross Domestic Product: the measure of a country's wealth in dollars

Hooverville - a camp built from boxes, scrap metal, old cloth and pallets with no sanitation/toilets

Republican Party - one of the two political parties in the USA: considered as more conservative

Rugged Individualism - idea that people should work hard and not rely on Government handouts



4) The 1932 election Roosevelt Vs Hoover

Democrats: FDR's campaign: Upbeat and positive, he travelled all over the USA meeting people and making them feel like he was listening and cared about them.

He promised a "New Deal" - he didn't say what this involved apart from *relief, recovery and reform*

Republicans: Hoover's campaign: Not a great public speaker and unpopular.

Hoped America would just

"*turn the corner*": people were fed up with his lack of action.

Result: Roosevelt won 42 states out of [then] 48 states



5) FDR's first 100 days: Action he took

- 1) Closed the **banks** and only opened responsible ones
- 2) **Fireside chats** - FDR spoke on the radio to build confidence
- 3) Established the **Alphabet Agencies** to tackle some of the problems:

AAA: paid farmers to produce less. Overproduction solved. Farmers' money doubled between 1932-39.

TVA: Dams to create electricity and sort the Dust Bowl out. This improved the lives of 7 million people.

CCC: created work for 2.5 million people aged 18-25 giving them \$1 a day to plant trees or other jobs

PWA and the WPA: created work for 4 million people creating projects of lasting value e.g. building bridges and schools

NRA: blue eagle symbol products = better working conditions for workers and introduced trade unions

6) Opposition to the New Deal

- Too much interference in **businesses**. - **The Supreme Court** announced that the AAA and NRA were unconstitutional. - **Republicans** said it cost too much and went against "**rugged individualism**" - **Francis Townsend and Huey Long** felt that the New Deal did not help enough. Criticised for being short-term solutions and wasting money.
- FDR tried to put more Democrats into the Supreme Court to support him but this failed and he was accused of being a dictator

7) Which was better in solving the problems of the depression?

The New Deal

- Provided relief for those in need
- Gave the US people confidence in the government again
- Built projects of lasting value
- Got the economy going again
- Got many people back to work
- Didn't help African Americans or women
- When funding was reduced in 1937, unemployment rose again = it was a temporary fix
- Cost

WW2

- US joined the war after Pearl Harbour.
- Factories and farms focussed on helping America in the war.
- Lend Lease got the economy back on track
- Conscription and work in the factories - unemployment fell to 0%
- GNP doubled
- Permanent fix to the depression



History

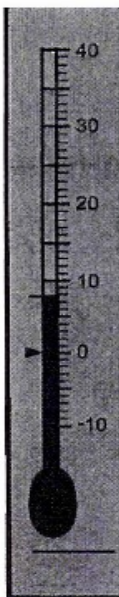
"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success



Negative Numbers

Adding & Subtracting

$+$ \rightarrow

$-$ \leftarrow

Multiplying & Dividing

Ignore the signs and multiply or divide normally, then add in the minus signs after.

1 minus = minus 2 minuses = plus 3 minuses = minus ...

Eg. $-7 \times -3 = --21 = 21$

Decimals

6.3×4.2 Ignore decimal points - insert afterwards.

	60	3
40	2400	120
2	120	6

= 2646 Put decimal back in 26.46

$\frac{6.3}{0.9}$ Find an equivalent Fraction by \times top and bottom by 10 $\frac{63}{9} = 7$

DECIMALS

Powers and Indices

Learn these:

$$2^2=4 \quad 2^3=8$$

$$3^2=9 \quad 3^3=27$$

$$4^2=16 \quad 4^3=64$$

$$5^2=25 \quad 5^3=125$$

And the rest...

$$3b^2 + 4c^3$$

$b = -1$
 $c = -2$

$$(3 \times 1) + (4 \times -8)$$

$$3 + -32$$

$$3 - 32$$

$$-29$$

$$-^2 = + \quad -^3 = - \quad -^4 = + \quad -^5 = - \quad \dots$$

POWERS

Estimation

When estimating or approximating round everything off to nice numbers.

Eg

$$\frac{\sqrt{26} \times 32}{0.48}$$

Round to 25 because you can $\sqrt{\quad}$ it \rightarrow Round to 30

\uparrow
Round to 0.5

$$\frac{\sqrt{25} \times 30}{0.5} = \frac{5 \times 30}{0.5} = \frac{150}{0.5} = 300$$

\uparrow
same as doubling

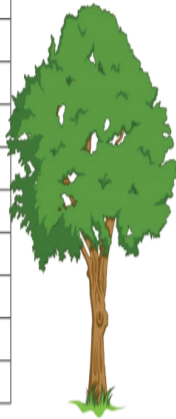
Estimation

Maths

GCSE French Foundation Tier Knowledge Organiser: My Studies

Vocabulaire : les noms

l'ambiance (f)	the atmosphere
l'anglais (m)	English
la chimie	chemistry
le bulletin scolaire	school report
le cahier	exercise book
la cantine	canteen
le cours	lesson
les devoirs (m)	homework
le directeur/la directrice	headteacher
l'EPS (f)	sport
l'informatique (f)	ICT
l'instituteur (m)/l'institutrice (f)	primary school teacher
la langue	language
la matière	school subject
la pause-déjeuner	lunch break
la récré(ation)	break
le trimestre	term



Vocabulaire : les adjectifs

amusant(e)	fun/enjoyable
ennuyeux/ennuyeuse	boring
facile	easy
fatigant(e)	tiring
gentil(le)	nice/kind
serviable	helpful
intéressant(e)	interesting
utile	useful
vieux/vieil/vieille	old

Vocabulaire : les verbes

apprendre	to learn
comprendre	to understand
enseigner	to teach
réussir	succeed
passer un examen	to take an exam



Key Ideas

- Opinions positives/négatives des matières
- Points forts et points faibles
- Opinions des professeurs
- Les devoirs - combien d'heures ?
- Activités pendant la pause-déjeuner/la récré
- Mon emploi du temps
- Sorties et voyages scolaires

False Friends

passer un examen	to take an exam
réussir un examen	to pass an exam
le voyage	journey
la journée scolaire	school day
travailler	to work
le travail	work
durer	to last



GCSE French Foundation Tier Knowledge Organiser: My Studies

Expressions clés

faire attention	to pay attention
faire un effort	to make an effort
je suis fort(e) en...	I am good at...
je suis faible en...	I am weak at...
ma matière préférée, c'est...	my favourite subject is...
ça m'ennuie/ça m'intéresse	it bores me/it interests me
j'ai de bonnes notes/de mauvaises notes en français	I have good/bad marks in French
mes profs sont...	my teachers are...
j'ai oublié mes devoirs	I've forgotten my homework
les cours commencent/finissent à...	lessons start/finish at...
la récré dure/la pause-déjeuner dure...	break lasts/lunch-time lasts...
il y a...	there is/there are...
je suis membre du club de musique	I am a member of the music club
c'était...	it was...

Key Questions

- Ton collège s'appelle comment ? What is your school called?
- Il y a combien d'élèves/de professeurs ? How many pupils/teachers are there?
- Ton collège est comment ? What is your school like?
- Tu étudies quelles matières ? Which subjects do you do?
- Il y a combien de cours par jour ? How many lessons are there per day?
- Quelle est ta matière préférée ? What is your favourite subject?
- Comment sont tes profs ? What are your teachers like?
- Tu as beaucoup de devoirs ? Do you have a lot of homework?
- Que fais-tu pendant la pause-déjeuner ? What do you do during the lunch break?
- Tu as fait une sortie ou un voyage scolaire ? Have you been on a school trip?



Tricky Spellings

la cour (playground)	Check: feminine, no "s"
le cours (lesson)	Check: masculine, with "s"
je préfère (I prefer)	Check the accents
préfér(e) (favourite)	Check the accents
vieux/vieil/vieille (old)	Check the vowel combination

MFL—French

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

My Studies GCSE Foundation Tier German Knowledge Organiser

Infinitiv	Präsens	Vergangenheit	Futur	Key Vocabulary		Key Vocabulary	
machen – to do	ich mache; er/sie macht wir machen	ich habe gemacht; er/sie hat gemacht wir haben gemacht	ich werde machen; er/sie wird machen wir werden machen	Adjektive		Substantive	
				alt	old	das Abitur	leaving school exams take at 18
sein – to be	ich bin; er/sie ist wir sind	ich bin gewesen; er/sie ist gewesen wir sind gewesen	ich werde sein; er/sie wird sein wir werden sein	neu	new	die Atmosphäre	the atmosphere
				anstrengend	tiring	die Bibliothek	library
haben – to have	ich habe; er/sie hat wir haben	ich habe gehabt; er/sie hat gehabt wir haben gehabt	ich werde haben; er/sie wird haben wir werden haben	einfach	easy	Chemie (f)	chemistry
				hilfreich	helpful	Erkunde	geography
gehen – to go	ich gehe; er/sie geht wir gehen	ich bin gegangen; er/sie ist gegangen wir sind gegangen	ich werde gehen; er/sie wird gehen wir werden gehen	interessant	interesting	Fremdsprachen	foreign languages
				langweilig	boring	die Gesamtschule	comprehensive school
				nett	nice/kind	Geschichte (f)	history
				praktisch	useful	Hausaufgaben (npl)	homework
				toll	great	das Heft	exercise book

Key Ideas	Key Phrases	
<ul style="list-style-type: none"> Die Schulfächer – Pro und Kontra meine Meinungen zu den Lehrern und Lehrerinnen Hausaufgaben die Pause/die Mittagspause mein Stundenplan Schulreisen ein typischer Schultag Aktivitäten außerhalb des Stundenplans 	in der Schule lerne ich normalerweise gehe ich zu Fuß in die Schule ich habe Mathe gewählt ich habe gute/schlechte Noten in mein Lieblingsfach ist Deutsch gefällt mir nicht meine Lehrer/Lehrerinnen sind ich habe meine Hausaufgaben vergessen die erste Stunde beginnt um die Pause/die Mittagspause dauert nach der Pause haben wir ich bin Mitglied der Theatergruppe es war es gibt	at school I learn normally I go by foot to school I've chosen Maths I have good/bad marks in my favourite subject is I don't like German my teachers are I've forgotten my homework the first lesson starts at break lasts/lunch-time lasts after lunch we have I am a member of the theatre group it was there is/there are
Key Vocabulary		
Die Verben		
benutzen	to use	
lernen	to learn	
verstehen	to understand	
unterrichten	to teach	
zeichnen	to draw	

Key Questions		
1. Wie heißt deine Schule?	What is your school called?	
2. Wie kommst du in die Schule?	How do you get to school?	
3. Wie findest du deine Schule?	What is your school like?	
4. Was lernst du in der Schule?	What do you learn at school?	
5. Wie viele Stunden gibt es pro Tag?	How many lessons are there per day?	
6. Was ist dein Lieblingsfach?	What is your favourite subject?	
7. Wie findest du deine Lehrer/Lehrerinnen?	What are your teachers like?	
8. Bekommst du viele Hausaufgaben?	Do you have a lot of homework?	
9. Was machst du in der Pause/der Mittagspause?	What do you do during break/the lunch-hour?	
10. Hast du einen Schüleraustausch gemacht?	Have you been on an exchange?	
Tricky spellings		
Deutsch gefällt mir nicht	I don't like German	check the umlaut, tsch
sein/mein/meine	to be or his /my	check the ei



Useful Grammatical Structures
<ul style="list-style-type: none"> Use modifiers to modify an adjective. Examples include: ziemlich (quite); ein bisschen/etwas (a bit/rather). Use intensifiers to intensify an adjective. Examples include: wirklich (really); sehr (very); besonders (particularly); total (totally); völlig (completely); so (so). Use connectives and conjunctions to make longer sentences. Examples include: because (weil); aber (but); jedoch (however). Use wenn to mean when if you are referring to the future, present or a habitual action in the past; use als to refer to a specific event in the past; use wann when you ask a question. Use the perfect tense with haben or sein to describe past events. Examples include: ich bin gegangen (I went); ich bin gekommen (I came); ich bin gefahren (I travelled); ich habe gesehen (I saw); ich habe gegessen (I ate); ich habe getrunken (I drank).

False Friends	
das Gymnasium	grammar school
das Internat	boarding school
das Labor	laboratory
die Note	mark
die Realschule	secondary modern

Tricky Pronunciation	
Practise these with your teacher!	
Mathe (f)	maths
schlecht	bad
Fächer	subjects

MFL - German

“Inspiring Education for All”

Community

Opportunity

Enjoyment

Success

KS3 Spanish - Knowledge Organiser - Autumn 1

1: Alphabet and Phonics		3: Asking somebody their age		4: When is your birthday?		5: Do you have siblings?	
Key sounds	Pronunciation	English	Spanish	English	Spanish	Spanish	English
a, b, c, d	ah, beh, theh, deh	1	uno	16	dieciséis	Tengo un hermano	I have a brother
ll	y	2	dos	17	diecisiete	Tengo una hermana	I have a sister
ñ	ny	3	tres	18	dieciocho	Tengo dos hermanos	I have two brothers
ci (i)	thee (ee)	4	cuatro	19	diecinueve	Tengo tres hermanas	I have three sisters
ce (e)	theh (eh)	5	cinco	20	veinte	No tengo hermanos	I don't have siblings
co	koh	6	seis	21	veintiuno	TASK 6: translate the following: 1. Tengo tres hermanos y una hermana (y= and) 2. I have five sisters and a brother. 3. I have seven siblings.	
ca	kah	7	siete	22	veintidós		
cu	koo	8	ocho	23	veintitres		
que	keh	9	nueve	24	veinticuatro	TASK 7: Explain the two possible translations for 'hermanos' 6: Personality and adjective agreement	
qui	key	10	diez	25	veinticinco		
rr	rrr	11	once	26	veintiséis	Spanish	
j	a bit like 'h' or at the back	12	doce	27	veintisiete		
	of your throat 'jhuh'	13	trece	28	veintiocho	English	
Rules: most Spanish letters are phonetic. They sound		14	catorce	29	veintinueve	soy	I am
how they are spelt. Remember the rules above to sound		15	quince	30	treinta	eres	you are
like a native Spanish speaker!		¿Cuántos años tienes?	How many years do you have?	31	treinta y uno	es	he/she/it is
TASK 1: Read the following words out loud in Spanish:				¿Cuándo es tu	When is your	generoso/a	generous
equitación, césped, cinco, cuatro, catorce, educación		tengo tres años	I have three years	cumpleaños?	birthday?	simpático/a	nice

MFL

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

Nutrition for Sport and Activity

Hydration = the amount of fluid the body needs to proper functioning

1 x hour of exercise = 1 litre of water required

Adults should drink at least 2 litres of water per day





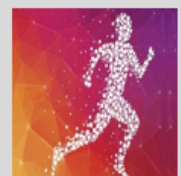
Good hydration =

- maintains body temperature, produces sweat
- prevents overheating
- keeps the joints lubricated ensures blood plasma thinner to transport nutrients



Dehydration is a harmful reduction in the amount of fluid in the body
= plasma volume thickens
= inability to sweat
= risk of overheating

Vitamins and minerals are known as micronutrients

Vitamins	Type & Purpose	Function	Source	Using as legal supplements
Vitamin A	Retinol – inactive form of vitamin a found in plant food Beta carotene – found in animal origin foods	Maintain normal eyesight, hand eye co-ordination and positional awareness	Maceral, Liver and milk products 	
Vitamin B1	Thiamine prevents complications	Maintain effective immune system and prevents disease	Rice, Bran, Pork Beef, Beans, Soya beans and peas	Breaks down food to use of energy Maintains a healthy nervous system
Vitamin C	Ascorbic Acid protects cells keeps blood vessels bones and cartilage healthy aids healing wounds	Maintains effective immune system, able to prevent illness, fight bacteria and train regularly	Fruits Vegetables 	
Vitamin D	Cholecalciferol vitamin D deficiency in the UK is common. Doctor can prescribe a supplement	Maintains healthy bones, teeth and muscles	Oily fish Red meat Liver eggs Fortified foods -cereal	Maintains healthy bones and muscles
Minerals	Key facts	Function	Source	
Potassium (Recommended daily intake 160-1800g)	Difficult to become deficient and no recommendation for this	Regulates fluid and electrolyte levels Ensures participate remains hydrated during exercise and maintains temperature	Dairy products Whole grains Green vegetables	Enhancing physical performance through. 1. Altering the timing of food pre, during and post exercise 2. Alter the type of food athletes eat 3. Bowl emptying prior to performance 
Iron (Recommended daily intake 18.7mg men 14.8mg women)	Lack of iron leads to deficiency and anaemia leading to increased fatigue	Increases oxygen carrying capacity Increases aerobic capacity through promotion and delivery of oxygen and nutrients to the working muscles	Bananas Yogurts Sunflower seeds Potatoes	
Calcium (Recommended daily intake 700mg)	Increases bone strength Reduces risk of injury - especially in contact sports	Plays a role in a number of contractions Ensures blood clotting	Liver Lean meat Eggs Kidney Beans Spinach	

Fruit and Vegetables –
The source of vitamins and minerals

THE EAT WELL PLATE



Starchy foods – Carbohydrates are the main source of energy for exercise.

They fuel aerobic and anaerobic exercise

There are two different types.

- 1 - Simple carbohydrates release energy quickly and cannot sustain endurance for long periods of time
- 2 - Complex carbohydrates release energy slowly sustaining endurance activities

Protein – a minor source of energy.
Role in tissue repair and muscle protein synthesis and recovery

Should be consumed immediately after a training session

Fats – come from fats and **dairy** main source of energy for low intensity exercise

Legal Food supplements

- Vitamin supplements
- Pre work out supplements
- Protein supplements
- Glucose based drinks



Advantages

- ✓ Increased performance
- ✓ Increased training time and intensity
- ✓ Increased energy
- ✓ Decreased recovery time

disadvantages

- ✗ Increase bowel movements
- ✗ Weight gain
- ✗ energy levels fluctuate

PE

Community

Opportunity

“Inspiring Education for All”

Enjoyment

Success

AQA GCSE Chemistry (Combined Science) Unit 9: Chemistry of the Atmosphere

The Early Atmosphere

Approximately 4.6 billion years ago the Earth was formed. Scientists have lots of ideas and theories about how the atmosphere was produced and the gases within it, but due to the lack of evidence, they cannot be sure.

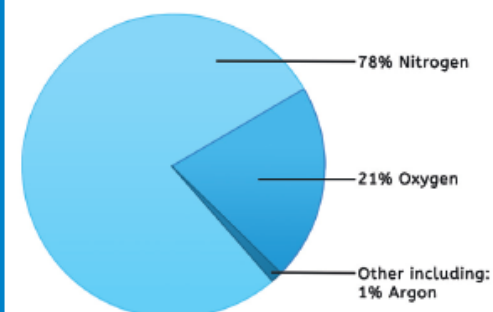
One theory suggested that intense volcanic activity released gases that made Earth's early atmosphere very similar to that of Mars and Venus. These planet's atmospheres mainly consist of carbon dioxide with little oxygen.

Nitrogen gas would have also been released from volcanoes and would have built up in the atmosphere.

Water vapour in Earth's early atmosphere would have condensed to create the seas and oceans. Carbon dioxide would have dissolved into the water, decreasing the level in the atmosphere.

Percentage of Gases in the Atmosphere

The pie chart below shows the abundance of each gas in our atmosphere.



How Did the Levels of Oxygen Increase?

2.7 billion years ago, algae first produced oxygen. Gradually over time, the levels of oxygen in our atmosphere increased as plants evolved. This was followed by animals as the levels of oxygen increased to a level that would sustain more complex life.

Oxygen is produced by plants in the process of photosynthesis.



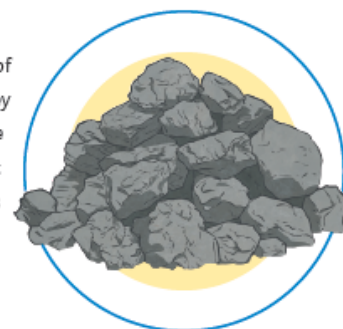
How Did the Levels of Carbon Dioxide Decrease?

Carbon dioxide dissolves in water. As water vapour condensed and the oceans and seas formed, the carbon dioxide gas dissolved producing carbonate compounds. This process reduced the amount of carbon dioxide in the atmosphere. Carbonate compounds were then precipitated: limestone is an example of a sedimentary rock; it has the chemical name calcium carbonate.

Plants in the oceans absorbed carbon dioxide gas for photosynthesis. The organisms from the food chains that the plants supported were turned into fossil fuels. Fossil fuels are non-renewable and consist of coal, crude oil, and gas, all of which contain carbon.

Crude oil was formed millions of years ago. When aquatic plants and animals died, they fell to the bottom of the sea and got trapped under layers of sand and mud. Over time, the organisms got buried deeper below the surface. The heat and pressure rose, turning the remains of the organisms into crude oil or natural gas. Oxidation did not occur due to the lack of oxygen.

Coal is a fossil fuel formed from giant plants that lived hundreds of millions of years ago in swamp-like forests. When these plants died, they sank to the bottom of the swamp where dirt and water began to pile on top of them. Over time, pressure and heat increased and the plant remains underwent chemical and physical changes. The oxygen was pushed out and all that remained was coal.



The Human Impact and the Greenhouse Effect

Scientists believe that human activities have resulted in the increased amount of greenhouse gases in the atmosphere. Activities such as farming cattle and farming rice release huge amounts of methane into the atmosphere.

Burning fossil fuels in cars and power stations releases large amounts of carbon dioxide. With large areas of the rainforest being cut down through deforestation, the excess carbon dioxide is not being absorbed by photosynthesis.

However, not everyone believes that humans are causing the rise in greenhouse gases. Some believe that the rise in global temperatures is associated with cycles of climate change and natural factors.

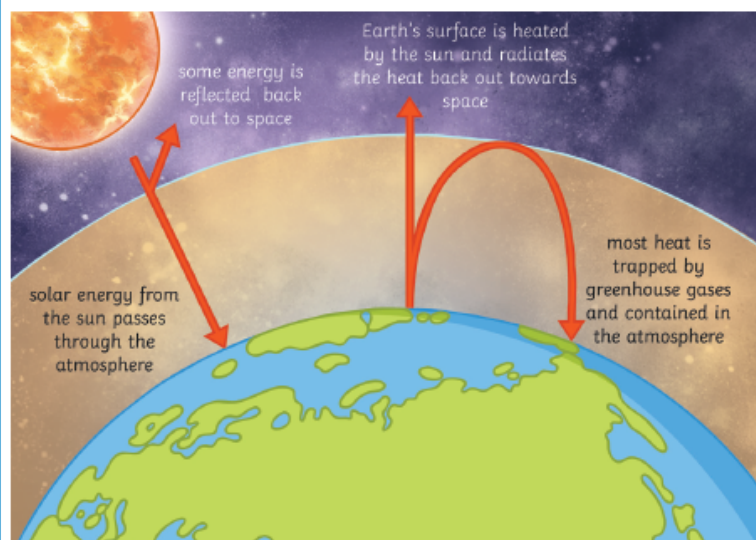
Climate science is often complicated as there are difficulties associated with predicting future global temperatures. The media present information that can be biased, inaccurate or lacks substantial evidence.

After reading an article on global warming, consider the trustworthiness of the source by considering these factors:

- Is the research done by an expert in that field and do they have the right skills and qualifications to report on the issue?
- Which organisation is reporting the evidence? If it is a newspaper, some stories are sensationalised in order to sell papers.
- Was the research funded by a legitimate organisation and was it conducted in a non-biased way? Think about the methods that were used to obtain the data and the impact the collection and analysis of this data had on the overall result.

Science

The Greenhouse Effect



A greenhouse is a house made of glass and is commonly used by gardeners to help grow plants and keep them warm. As the sun shines through the greenhouse, the air is heated up and becomes trapped by the glass and is prevented from escaping. During daylight, a greenhouse stays quite warm and this lasts into the night.

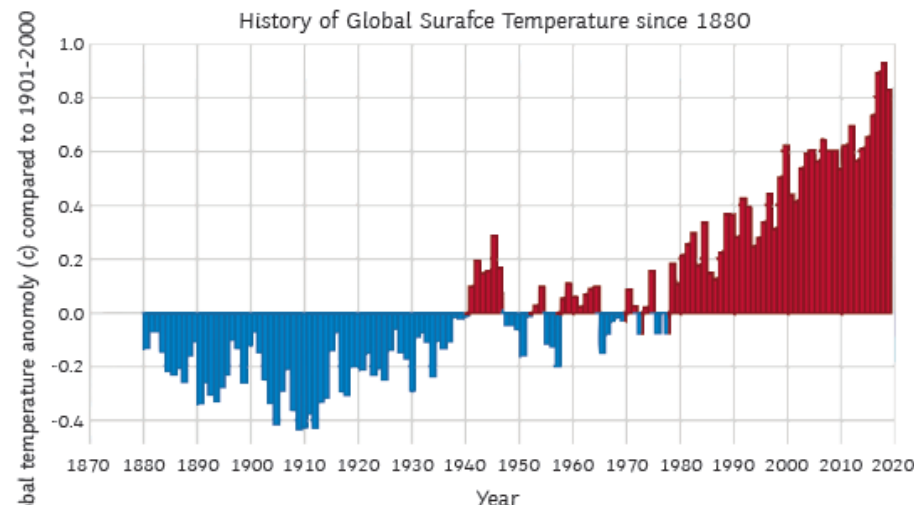
The earth and its atmosphere are very similar to that of a greenhouse. The greenhouse gases in the atmosphere trap the heat and keep the earth warm. The main greenhouse gases are carbon dioxide, water vapour and methane. During the daylight, the sun warms up the earth's surface. During the night, as the earth begins to cool and release the heat back into the atmosphere, some of the heat is trapped by the greenhouse gases in the atmosphere.

If the greenhouse effect becomes too strong, the earth will get too warm and melt the Arctic ice. As we burn more fossil fuels, the levels of carbon dioxide and the other greenhouse gases increase in our atmosphere which makes the greenhouse effect stronger.

What is the Difference Between Climate Change and Global Warming?

Since the Earth was formed over 4.6 billion years ago, its climate has constantly been changing with several ice ages followed by warmer temperatures. Changes in the Sun's energy reaching the Earth and volcanic eruptions were responsible for the changes until about 200 years ago.

Global warming is different to climate change and is used to explain how the earth's climate has warmed up over the past 200 years. Scientists believe that the warming of the climate is due to the activities of humans.



Carbon Footprint

The carbon footprint is the total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product, service or event.

An individual's carbon footprint is a calculation of all the activities that that person has taken part in throughout the year.

These activities might involve flying abroad or travelling by bus or rail. Each of which might be powered by petrol or diesel. Heating a home in winter by using a gas-powered boiler and using electricity to power lights and electronic devices. Food also has a carbon footprint, for example, beef and rice produces huge amounts of methane when farmed.



Nitrogen

Nitrogen and oxygen react together to make oxides of nitrogen. This occurs inside a car engine where there is a high temperature and pressure. Many compounds can be formed when nitrogen reacts with oxygen. The two that are formed inside a car engine are NO and NO₂.

Nitrogen compounds are grouped together with the general formula NO_x. Nitrogen compounds, along with sulfur dioxide, are also responsible for acid rain.

Compounds of nitrogen oxides react in the atmosphere with ultraviolet light from the sun to produce photochemical smog. The smog is most noticeable during the morning and afternoon and occurs mainly in densely populated cities.

The presence of smog can have a major impact on human health, particularly to those who suffer with asthma.

AQA GCSE Chemistry (Combined Science) Unit 9: Chemistry of the Atmosphere

Combustion

Complete combustion occurs when there is enough oxygen for a fuel to burn. A hydrocarbon will react with oxygen to produce carbon dioxide and water.

propane + oxygen \rightarrow carbon dioxide + water



Incomplete combustion occurs when there isn't enough oxygen for a fuel to burn. The products in this reaction are water and poisonous carbon monoxide. Carbon particles (soot) may also be seen.

ethane + oxygen \rightarrow carbon monoxide + water



Carbon monoxide is a poisonous gas. It is often called the **silent killer** due to it being colourless and odourless. Carbon monoxide works by binding to the **haemoglobin** in your red blood cells. This prevents them from carrying oxygen to the cells around your body. Carbon monoxide detectors are used to detect levels of the gas in the surrounding air and are often placed near gas-powered boilers to detect gas leaks.

Particulate carbon irritates the lining of the lungs making asthma worse and could cause cancer. **Global dimming** is caused by particulates of carbon blocking out the Sun's rays and may reduce rainfall.

Sulfur Dioxide

Sulfur dioxide is an **atmospheric pollutant**. It is a gas that is produced from the burning of **fossil fuels**. Sulfur dioxide is able to dissolve in rainwater and produces **acid rain**. Acid rain causes damage to forests, kills plants and animals that live in aquatic environments, and damages buildings and statues as the acid rain erodes the stone that they are made from.

sulfur + oxygen \rightarrow sulfur dioxide

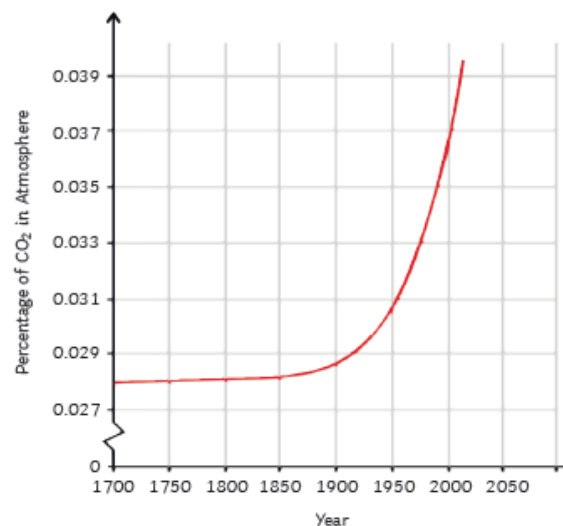


Sulfur dioxide can be further oxidised to form sulfur trioxide.

What is the Link Between Carbon Dioxide and Global Warming?

There is a strong correlation between the percentage concentration of carbon dioxide in the atmosphere and increased global temperatures.

The impact of this is that the polar ice caps are melting, sea levels are rising and habitats and rainfall patterns are changing. The impact of which is already being felt around the globe. The consequences of human activity will affect us all.



Science

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

AQA GCSE Chemistry (Combined Science) Unit 10: Using Resources

Sustaining Human Life on Earth

The human population is increasing rapidly and our use of earth's finite resources has increased. If humans continue to use these resources at the rate at which we are, then we will reach a point where the human population cannot be sustained on earth.

Humans use the earth's natural resources for warmth, shelter, food, clothing and transport. Scientists are making technological advances in agricultural and industrial processes to provide food and other products that meet the growing needs of the human population but it is of major importance that this is done in a sustainable way so that our finite resources are not used up.



Earth's Resources

Finite resources are those of which there is a limited supply, for example coal, oil and gas. These resources can be used to provide energy but, one day, their supply will run out.

Crude oil is processed through fractional distillation and cracking to produce many useful materials such as petrol, diesel and kerosene.

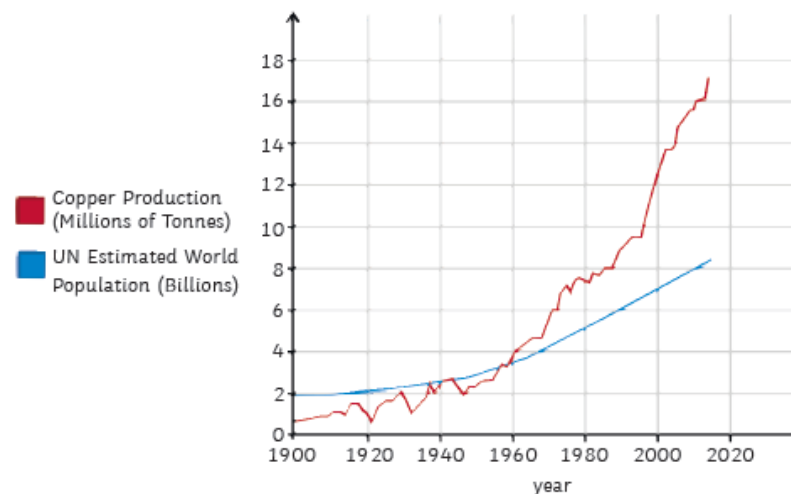
Renewable resources will not run out in the near future because the reserves of these resources are high. Examples of renewable resources include solar energy, wind power, hydropower and geothermal energy.

Haber Process and Copper

Scientists often discover new ways to produce a product; synthetic methods of production replace natural methods. For example, fertilisers were obtained from manure (a natural resource).

The Haber process allowed the synthetic production of fertilisers and this enabled intensive farming methods to spread across the globe. In turn, this supported the growing human population.

Copper is another resource that has been exploited over time. As the human population has increased since 1900, the demand for copper has also increased. Copper is a finite resource which means that there is a limited supply.



Water

Potable water is water that is safe to drink. Potable water is not pure; dissolved impurities still remain in the water. Pure water is odourless, tasteless and colourless compared to rainfall or water from streams and wells as these harbour chemicals such as acid.

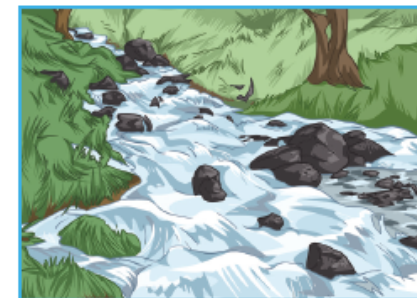
Pure – the definition of a pure substance is one that contains only a single type of material that has not been contaminated by another substance.

Potable water must contain low levels of microbes and salts for it to be deemed safe to consume. This is because high levels of microbes and salts can be harmful to human health.

The methods of making water safe vary depending on where you live. Starting with sea water is harder than starting with fresh water. This is because the energy cost of removing large amounts of sodium chloride from seawater is greater.

In the UK, our populations' water needs are met through rainfall. During the summer, water levels in reservoirs decrease and local areas are encouraged to reduce their water usage by swapping baths for showers and they are asked to avoid using hosepipes.

In the UK, insoluble particles are removed from naturally occurring fresh water by passing it through filter beds. Microbes are killed by sterilising the water. Several different sterilising agents are used for potable water. These are chlorine, ozone or ultraviolet light. The right amount of chlorine and ozone gas (O_3) must be used as both are harmful to human health.



Science

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

AQA GCSE Chemistry (Combined Science) Unit 10: Using Resources

Desalination of Sea Water	Water Treatment	Required Practical 8 – Analysis and Purification of Water Samples from Different Sources
<p>If fresh water supplies are limited, sea water can undergo a process called desalination. This process requires large amounts of energy, but can be done by distillation or the use of membranes such as reverse osmosis.</p> <p>Distillation involves heating the sea water until it reaches boiling point. Once the water is boiling, it will begin to evaporate. The steam then rises up where it cools and condenses in a condensing tube. The salt is left behind. The downside to this process is the energy cost of boiling the water and cooling down the steam sufficiently in the condensing tube. Not all of the water evaporates which leaves behind a salty wastewater that can be difficult to sustainably dispose of without harming aquatic organisms.</p> <p>Reverse Osmosis of Salt Water</p> <p>Osmosis, as you will have learnt in biology, is the movement of particles from an area of high concentration to an area of low concentration through a semi-permeable membrane.</p> <p>Reverse osmosis involves forcing water through a membrane at high pressure. Each membrane has tiny holes within it that only allow water molecules to pass through. Ions and other molecules are prevented from passing through the membrane as they are too large to fit through the holes.</p> <p>The disadvantage of this method is that it produces large amounts of wastewater and requires the use of expensive membranes. Due to a large amount of wastewater produced, the efficiency of this method is very small.</p>	<p>Before the wastewater from industry, agriculture and peoples' homes can be released back into the environment, it must be treated.</p> <p>Pollutants such as human waste contain high levels of harmful bacteria and nitrogen compounds which can be a danger to aquatic organisms.</p> <p>Industrial and agricultural waste may contain high levels of toxic metal compounds and fertilisers and pesticides which may also damage the ecosystem.</p> <p>Cleaning sewage requires several steps:</p> <p>Step 1 – The water must be screened. This is where material such as branches, twigs and grit is removed.</p> <p>Step 2 – The water undergoes sedimentation; wastewater is placed in a settlement tank. The heavier solids sink to the bottom and form a sludge whilst the lighter effluent floats on the surface above the sludge.</p> <p>Step 3 – The effluent is then transferred to another tank where the organic matter undergoes aerobic digestion. Although not pure, this water can be safely released back into the environment. The sludge is placed in another tank where the organic matter undergoes anaerobic digestion. It is broken down to produce fertiliser and methane gas which can be used as an energy resource (fuel).</p>	<p>Analysing the pH of Water Samples</p> <p>Test the pH of each water sample using a pH meter or universal indicator. If using universal indicator, use a pH colour chart so that you are able to identify the pH of the sample against the colour produced by the indicator.</p> <p>Analysing the Mass of Dissolved Solids</p> <p>To measure the mass of dissolved solids in a water sample, measure out 50cm³ of the sample using a measuring cylinder. Take the mass of an evaporating basin before heating and record the mass in a table. Place the measured amount of water into an evaporating basin and gently heat over a Bunsen burner until all the liquid has evaporated. Once the evaporating basin has cooled, place it on a top pan balance and record its mass. Calculate the mass of the solid left behind.</p> <p>Distillation of the Water Sample</p> <p>To distil a water sample, set up your equipment as per the diagram.</p> <p>Heat the water sample gently using a Bunsen burner. After a short period of time, distilled water should be produced.</p> <div data-bbox="1881 395 2150 657" data-label="Image"> </div> <div data-bbox="1881 683 2150 944" data-label="Image"> </div>
<p>Life-Cycle Assessment (LCA)</p> <p>Life-Cycle Assessments follow the four main stages of the life cycle of a product.</p> <p>Stage 1 – Extracting the raw materials needed to make the products and then processing them.</p> <p>At this stage, the energy and environmental costs need to be considered. For example, if the raw material being used is a finite or renewable resource, the energy to extract and transport the raw material should be considered. Environmental factors also play a large part in stage 1 as the extraction of the raw material can leave scars on the landscape and waste products may be produced that could damage local ecosystems.</p>		

Science

“Inspiring Education for All”

Community

Opportunity

Enjoyment

Success

Life-Cycle Assessment (LCA) (continued)

Stage 2 – Manufacturing and packaging of the product.

The main consideration is how much energy and resources are needed to manufacture the product. Energy may be used in the form of fuel, electricity or chemicals used in the production of the product. In the manufacturing process, there may be pollution and waste products that need to be considered. Transportation of the goods from the factory to the user will have an environmental impact.

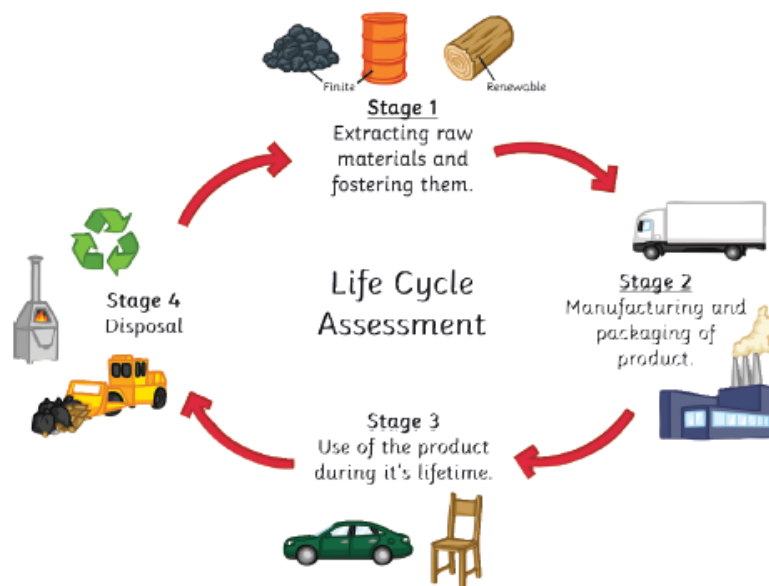
Stage 3 – Use of the product during its lifetime.

The environmental impact of a product during its life depends on the type of product. For example, a car will have a significant impact i.e. it needs to be filled with petrol or diesel, a finite resource, to get to where you are going. A car's engine releases harmful emissions into the atmosphere. On the other hand, a wooden chair may only need minor repairs and is made from a renewable resource.

Stage 4 – Disposal at the end of a product's life.

There are different methods of disposal:

1. Landfill – the product is put in a hole in the ground – high environmental impact.
2. Incineration (organic matter) – burning of the product – low environmental impact.
3. Recycling – for example, batteries contain metal compounds that are not good for the environment. By recycling, it means that no new compounds have to be taken out of the ground.



Comparative LCAs

Comparative LCAs are used to evaluate products and to find which one will have a lower environmental impact.

Stage of Life Cycle	Plastic Bag	Paper Bag
Stage 1 – raw material	Uses a finite resource (crude oil). The processes of fractional distillation, cracking and polymerisation all require energy to make crude oil useful.	Made from trees/recycled paper. Making paper from trees requires more energy than recycled paper because trees have to be chopped down. Still uses less energy than making plastics from crude oil.
Stage 2 – manufacture	Cheap to make.	More expensive to make.
Stage 3 – use	Plastic bags have a low environmental impact as they can be used a number of times. In comparison to paper bags, they are much stronger.	Paper bags can only be reused a limited number of times and so have a short lifetime.
Stage 4 – disposal	The downside to plastic bags is that they do not biodegrade easily in landfill. Recycling options are available. If they are not disposed of correctly, plastic bags can have a detrimental impact on the environment and animal habitats.	Paper bags biodegrade easily in landfill sites.

AQA GCSE Chemistry (Combined Science) Unit 10: Using Resources

Disadvantages of Comparative LCAs

The disadvantage of comparative LCAs is that some parts of it require certain judgements to be made.

Different people have different opinions and this is dependent on who completes the LCA and whether a certain level of bias is added. For example, if the LCA is completed by a company that is manufacturing a specific product, they may only discuss some of the environmental impact of their product in the LCA. Accurate numerical values, for example, show a company how much energy has been used in the manufacturing process or how much carbon dioxide was produced when the goods were transported.

Recycling



Many materials are made from natural resources that have limited supplies. Reusing items such as glass bottles that only need washing and sterilising saves energy and reduces the environmental impact. Not all products can be reused, some need to be recycled before reuse.

There are both advantages and disadvantages to recycling materials.

Advantages

- Fewer resources such as mines and quarries are needed to remove raw, finite materials from the ground. For example, copper.
- Crude oil, the raw material used in the production of plastics, does not need to be extracted. This, in turn, avoids high energy cost processes such as fractional distillation and cracking. If more items are recycled, less would end up in landfill sites.
- The amount of greenhouse gases would reduce as the energy cost of recycling is a lot less than making a new product.

Disadvantages

- Recycling items require collection and transport of the goods to the organisation. This involves using staff, vehicles and the use of fuel.
- Some materials, such as metals, can be difficult to sort; the amount of sorting is dependent on the purity of the materials or metals and the level of purity required for the final product. For example, copper used in electrical appliances must have a high purity. To achieve this, the copper needs to be processed and then melted down again to make copper wiring.
- Steel that is used in the construction industry does not require such high purity. Often scrap iron is added to the furnace when steel is made. This reduces the need for as much iron ore and reduces the cost of making steel.

Biological Extraction Methods (Higher Tier Only)

Biological methods of extraction are needed as the resources of metal ores on earth are in short supply. Large scale copper mining leaves scars on the landscape and produces significant amounts of waste rock that must be disposed of. Biological methods have a lower impact on the environment and make use of waste containing small amounts of copper. The disadvantages of biological extraction methods are that they are slow, but they do reduce the need to obtain new ore through mining and conserve limited supplies of high-grade ore.

Phytomining

Phytomining involves the use of plants. Plants absorb the metal compounds found in the soil. The plants cannot get rid of the copper ions and it builds up in the leaves. The plants are then harvested, dried and then placed in a furnace. The ash that is produced from the burning process contains soluble metal compounds that can be extracted. The ash is dissolved in an acid such as hydrochloric or sulfuric and the copper is then extracted by electrolysis or through a displacement reaction with iron.

Bioleaching

Bioleaching uses bacteria to produce an acidic solution called leachate which contains copper ions. The disadvantage of bioleaching is that it produces toxic substances that are harmful to the environment. To process the copper, the copper undergoes a displacement reaction with iron. Iron is cheaper and a more cost-effective way of producing copper from the leachate.

Science

"Inspiring Education for All"

Community

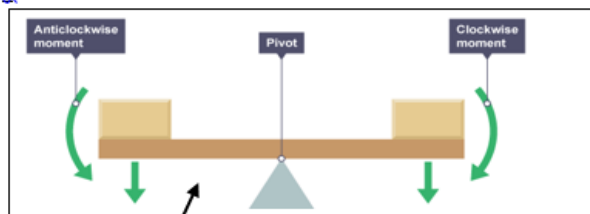
Opportunity

Enjoyment

Success

KS4 Forces

Forces are either Pushes or pulls



Moments.

30N left of pivot and 25N right =
Anticlockwise moment

Scalar quantities

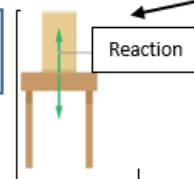
A physical quantity is something that can be measured. Scalar quantities only have a magnitude or size.
Example - distance 21 Km.

Vector quantities

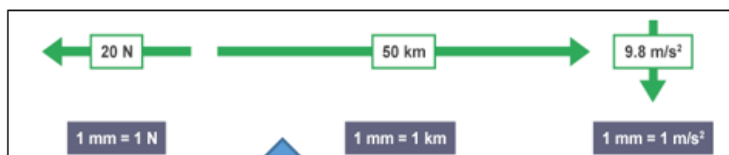
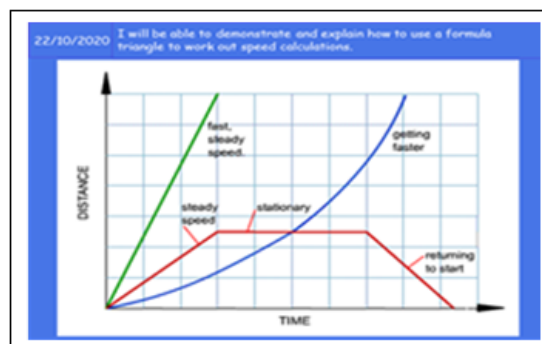
Vector quantities have both magnitude and an associated direction.
Example - velocity, 8 metres per second (m/s) upwards.



Magnets: Non-contact force



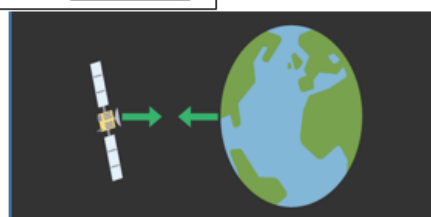
Displacement includes both the **distance** an object moves, measured in a straight line from the start point to the finish point and the **direction** of that straight line.



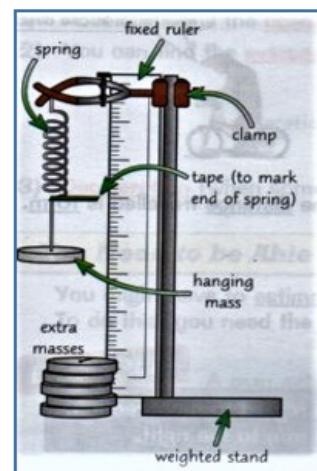
The length of an arrow represents the magnitude of the quantity. The diagrams show three examples of vectors, drawn to different scales.



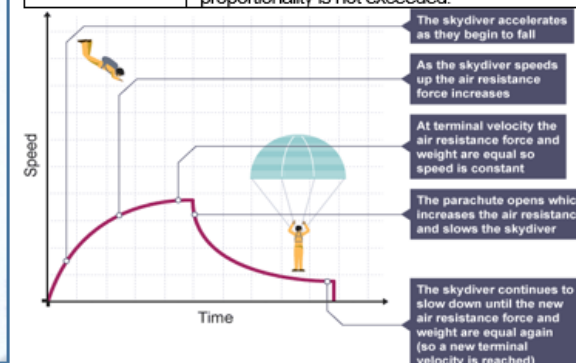
Electrostatic force. Opposite charges attract



A gravitational force is experienced by any mass in a gravitational field. Masses are attracted towards each other by gravitational force



KEYWORD	DEFINITION
Resultant force	is a single force that has the same effect as two or more forces acting together
Contact forces	Are forces that act between two objects that are physically touching each other. Examples: Friction, tension air resistance.
Non- contact forces	Are forces that act between two objects that are not physically touching each other. E.g. Magnetic force
Electrostatic force	is experienced by any charged particle in an electric field.
Gravitational force	A gravitational force is experienced by any mass in a gravitational field.
Friction	Friction is a force between two surfaces that are sliding, or trying to slide, across each other.
Terminal velocity	At terminal velocity, the object moves at a steady speed in a constant direction because the resultant force acting on it is zero.
The Kinetic energy	Of a moving object can be calculated using the equation: kinetic energy = $0.5 \times \text{mass} \times \text{speed}^2$ $E_k = 1/2mv^2$
Gravitational potential energy	Gained by an object raised above ground level can be calculated using the equation: $\text{g.p.e.} = \text{mass} \times \text{gravitational field strength} \times \text{height}$
Weight	is the force acting on an object due to gravity
Weight and Mass	The weight of an object and the mass of an object are directly proportional.
Work done	work done = force \times distance moved along the line of action of the force ($W = F s$)
Joule	One joule of work is done when a force of one newton causes a displacement of one metre.
Hooke's law	The extension of a spring is directly proportional to the force applied, provided that the limit of proportionality is not exceeded.



Science

"Inspiring Education for All"

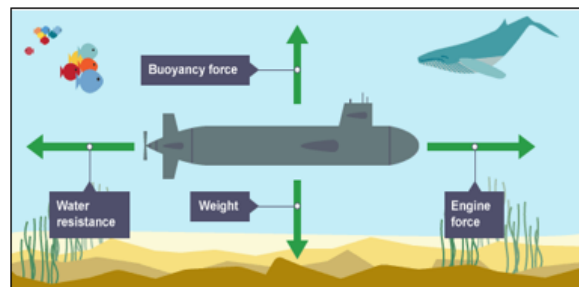
Community

Opportunity

Enjoyment

Success

KS4 Forces



- 1) Acceleration is the **change in velocity** in a certain amount of **time**.
- 2) You can find the **average acceleration** of an object using:

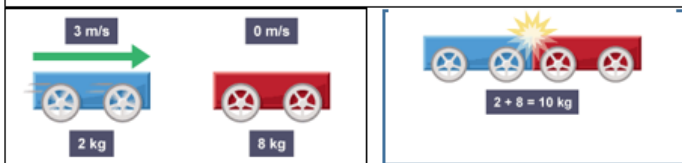
$$a = \frac{\Delta v}{t}$$

Acceleration (m/s²) Change in velocity (m/s) Time taken (s)
- 3) **Deceleration** (when something **slows down**) is just **negative** acceleration.

Newton's 2nd Law. **$F = m a$** . The equation shows that the acceleration of an object is:

- proportional to the resultant force on the object
- inversely proportional to the mass of the object

In other words, the acceleration of an object increases if the resultant force on it increases, and decreases if the mass of the object increases.



Calculation involving collisions.

Collisions are often investigated using small trolleys. The diagrams show an example.

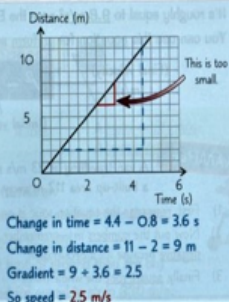
The submarine has both vertical forces and horizontal forces acting on it. The horizontal forces will not affect its vertical movement and the vertical forces will not affect its horizontal movement.

You might also have to **calculate** an object's **speed** from the graph:

EXAMPLE:

Using the distance-time graph on the right, calculate the speed of the car.

- 1) The **gradient** of the graph is the **speed** of the car.
- 2) Gradient = $\frac{\text{change in vertical axis}}{\text{change in horizontal axis}}$
- 3) Draw a **large triangle** that takes up most of the straight line.
- 4) Use the **horizontal** side of the triangle to find the change in time.
- 5) Use the **vertical** side of the triangle to find the change in distance.
- 6) Put the values for vertical and horizontal into the **equation**.



HIGHER: Two forces act on an object, a 25 N force in the North direction, and 20 N force at 90° to the East. In this case, using a scale of 2 mm = 1 N, you draw vertical line 50 mm long and connect to it a horizontal line of 40 mm.

The two lines form half a rectangle, so, to get the resultant line, imagine the other half of the rectangle (or draw it in faintly) and draw the resultant line diagonally across the rectangle.

2 kg trolley = 2 × 3 = 6 kg m/s 4 kg trolley = 8 × 0 = 0 kg m/s

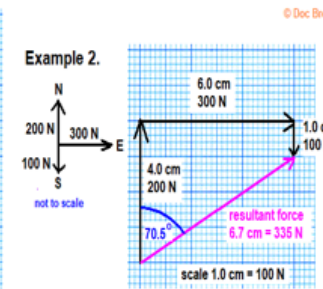
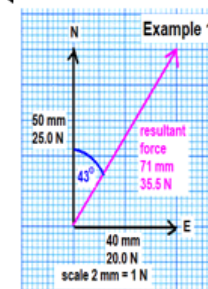
Total momentum before collision = 6 + 0 = 6 kg m/s

Total momentum (p) after collision = 6 kg m/s (because momentum is conserved) Mass (m) after collision = 10 kg

Next, rearrange $p = m v$ to find v : $v = \frac{p}{m}$

2. $v = 6$ 3. $v = 0.6 \text{ m/s}$ m

KEYWORD	DEFINITION
Newton's 1 st Law	According to Newton's First Law of motion, an object remains in the same state of motion unless a resultant force acts on it.
Inertial mass	The ratio of force over acceleration is called inertial mass. Inertial mass is a measure of how difficult it is to change the velocity of an object.
Newton's 3 rd law	Whenever two objects interact, they exert equal and opposite forces on each other.
Momentum	Momentum is the product of mass and velocity. Momentum is also a vector quantity - this means it has both a magnitude and an associated direction.
Displacement	Displacement includes both the distance an object moves, measured in a straight line from the start point to the finish point and the direction of that straight line. It is a Vector quantity.
Speed	Speed does not involve direction. Speed is a scalar quantity.
Acceleration	If an object is accelerating, its speed at any particular time can be determined by drawing a tangent and measuring the gradient of the distance-time graph at that time.
Conservation of momentum	In a closed system, the total momentum before an event is equal to the total momentum after the event. This is called conservation of momentum.
Thrust	Increases the velocity of an object
Air resistance	Decreases the velocity of an object
Torque	Changes the rotation of an object. Example might be increasing the size/mass of a flywheel increases torque on a crank shaft
Friction	When two surfaces slide past each other, the interaction between them produces a force of friction. Friction is a force that opposes motion.



Science

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

PERFORMANCE THEME : underlying message, or 'big idea.

ACTING STYLES:

Verbatim: word for word; every single word from an audio file in text.

Symbolism: used to represent something different than what you will see at face value.

Melodrama: a sensational dramatic piece with exaggerated characters and exciting events intended to appeal to the emotions.

Epic: theatre which avoids illusion and often interrupts the story line to address the audience directly with analysis, argument, or documentation (i.e., placards)

Comedy: a literary genre and a type of dramatic work that is amusing and satirical in its tone, mostly having a cheerful ending.

Absurdism: theatre in which standard or naturalistic conventions of plot, characterization, and thematic structure are ignored or distorted to convey the irrational or fictive (created by the imagination) nature of reality and the essential isolation of humanity in a meaningless world.

Classical: an umbrella term for different **acting** techniques used together. It encompasses the use of the whole body, the full range and quality of the voice, the **actor's** imagination, the **actor's** ability to personalize, improvise, use external stimuli, and analyse scripts.

Forum Theatre: Audience stopping the performance and improving the action through feedback or by taking on the role of one character.

Naturalism: attempts to create an illusion of reality in terms of the setting and performances, should be realistic and not flamboyant or theatrical.

Theatre of Cruelty: developed by Antonin Artaud, aimed to shock audiences through gesture, image, sound and lighting. Artaud believed gesture and movement to be more powerful than text. Sound and lighting could also be used as tools of sensory disruption.

Commedia dell' Arte: a form of popular theatre that emphasized ensemble acting (small group). Its improvisations were set in a firm framework of masks and stock situations.

ACTING FOR THE SCREEN VERSES ACTING ON STAGE: <http://en-acting-what-are-the-differences/#:~:text=When%20acting%20for%20screen%2C%20actors,can%20look%20unrealistic%20on%20screen.>

CLASSICAL ACTING: an umbrella term for different **acting** techniques used together. It encompasses the use of the whole body, the full range and quality of the voice, the **actor's** imagination, the **actor's** ability to personalize, improvise, use external stimuli, and analyse scripts.

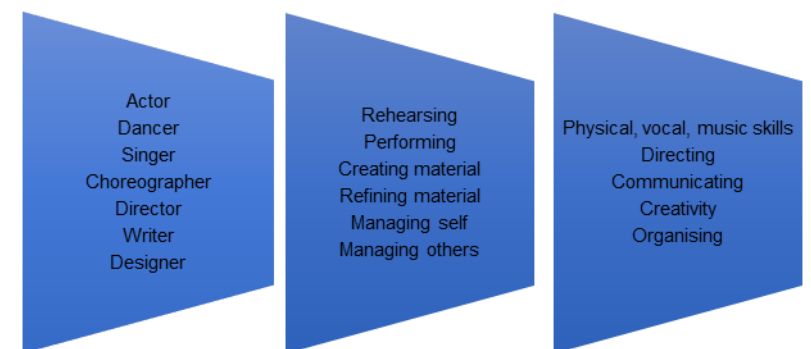
https://en.wikipedia.org/wiki/Classical_acting

METHOD ACTING: a **technique** or type of **acting** in which an **actor** aspires to encourage sincere and emotionally expressive performances by fully inhabiting the role of the character. It is an emotion-oriented **technique** instead of classical **acting** that is primarily action-based.

<https://strasberg.edu/about/what-is-method-acting/#:~:text=The%20Method%20trains%20actors%20to,can%20fire%20the%20actors%20imagination.&text=As%20Lee%20Strasberg%20said%2C%20Method,done%20whenever%20they%20acted%20well.>

CREATIVE INTENTIONS (reference performance style, theme, and target audience): refers to the decisions, made by theatre makers to communicate deeper **meaning** through their work. Without an artistic **intention** a piece of drama lacks a purpose or a message for its intended audience.

ROLES, RESPONSIBILITIES AND SKILLS IN THE PERFORMING ARTS:



Drama