



**Knowledge Organisers**  
**Year 9**  
**Summer 2022**

# Knowledge Organisers

## Contents

An introduction to Knowledge Organisers

Art

Computing

Drama

Design Technology (DT)

English

Geography

History

Mathematics

MFL

Music

PSHE

Religion, Ethics and Philosophy (REP)

Science

\*Some subjects have Knowledge Organisers which last two terms or a year, therefore it will be the same as in past booklets.

# An Introduction to Knowledge Organisers

## What is a Knowledge Organiser?

A knowledge organiser is a document, usually one side of A4, occasionally two, that contains key facts and information that children need to have a basic knowledge and understanding of a topic, or in some cases a series of topics.

Students are expected to bring their Knowledge Organiser Booklet to school every day. Students will be issued with a new booklet to bring each term. However, it is important they keep the old booklets to help with revision for end of year exams.

## What are the benefits of knowledge organisers?

The main benefit of knowledge organisers is that they give students and parents the 'bigger picture' of a topic or subject area. Some topics can be complicated, so having the essential knowledge, clear diagrams, explanations and key terms on one document can be really helpful.

Research shows that our brains remember things more efficiently when we know the 'bigger picture' and can see the way that nuggets of knowledge within that subject area link together. Making links, essentially, helps information move into our long-term memory.

## How can the students use them?

As mentioned earlier, students are expected to bring their Knowledge Organiser Booklet to school everyday. In lessons they can be used in a number of ways, for example, to look up the meaning of key words, spell words correctly and do some additional work if they have finished classwork.

At home knowledge organisers can be used to support homework, independent work and revise for tests and exams. Two quick and easy ways to do this are:

1. Look, cover write, check – look at part of the knowledge organiser, cover it, write as much as you can remember and then check it
2. Word up – Pick out any words you don't understand. Use a dictionary or thesaurus to find the meaning. If they don't help ask your teacher.

The more often you do this the better. YouTube has some clips on them; search 'Mr Garner look, cover, write, and check' and 'Mr Garner word up'

## How can parents use them?

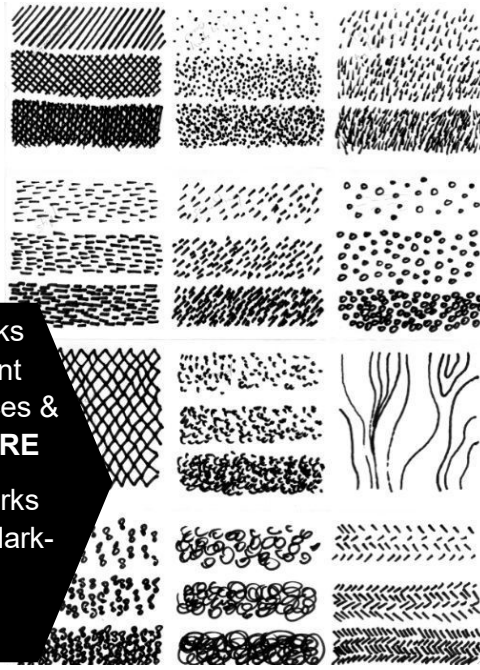
- Read through the organiser with your son/daughter – if you don't understand the content then ask them to explain it to you – 'teaching' you helps them to reinforce their learning.
- Test them regularly on the spellings of key words until they are perfect. Get them to make a glossary (list) of key words with definitions or a list of formulae.
- Read sections out to them, missing out key words or phrases that they have to fill in. Miss out more and more until they are word perfect.

## How the booklet is organised

The knowledge organisers are in alphabetical order by subject.

# YEAR 9 ART Mixed Media

# Knowledge Organiser - Term 2 & 3



## KEY WORDS

- Mark making
- Texture
- Surface
- Stipple
- Crosshatch
- Collage
- Tone
- Print
- Ink
- Roller
- Cutter/Blades
- Register
- Mixed media
- Experiment

Different marks create different effects/surfaces & show **TEXTURE**

The more marks you add the darker the **TONE**

**Tools for printmaking**  
Roller Cutter Blades Ink Lino  
**Health & Safety—cut away from hand & body**



Work on different surfaces/papers/materials

Combine media; charcoal and ink, paint and colour pencil to show the qualities of your subject



Use blades 1-3 for fine lines & edges

Use 4 & 5 to remove large sections of lino



What you cut away will leave the paper blank  
Cut carefully, the more accurate the cut, the better the print

## Artists who use mixed media or expressive

- Frank Auerbach
- Anselm Keifer
- George Baselitz
- Ann Tyler
- Ian Murphy
- Frank Stella
- Kurt Schwitters

## SKILLS

- Design
- Registration & cutting
- Artist understanding/ application
- Printing skills
- Composition
- Presentation
- Formal elements

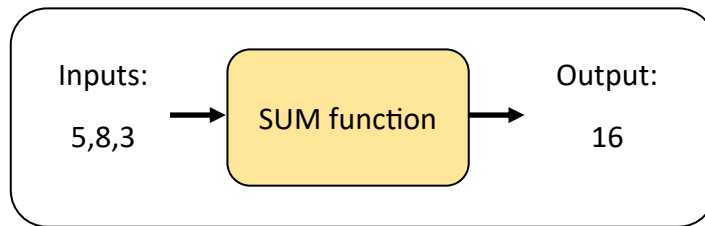
## Artists renown for lino/ block printing

- Ian McCulloch
- Angie Lewin
- Edward Bawden
- Irving Amen
- Dale Deveraux Barker
- Clare Curtis
- Cyril E. Power

# Computing: Spreadsheet software for data analysis

A range of **functions** can be used to analyse data.

A function can be thought of as a machine that takes in some data and converts it into something else.



	A	B
1	Name	Grade
2	Student 1	6
3	Student 2	8
4	Student 3	8
5	Student 4	3
6	Student 5	8
7	Student 6	6
8	Student 7	5
9	Student 8	8
10	Student 9	9
11	Student 10	9
12	Student 11	7
13	Student 12	7
14	Student 13	8
15	Student 14	7

Here is a list of students and their grades. There are 205 students in the list. The last name is in cell A206. Their grade is in B206.

## Functions with a single input

These functions take either a single cell, or range of cells as the input:

- `=AVERAGE( B2: B206)` would find the *mean* grade.
- `=MODE( B2: B206)` would find the most common grade.
- `=MIN( B2: B206)` and `=MAX( B2: B206)` find the lowest and highest grades.
- `=COUNT( B2: B206)` tells you how many cells have numbers in; useful for finding missing data.

## Functions with more than one input

These functions have their inputs separated by a comma:

- `=COUNTIF( B2: B206, ">6")` would find the number of grades that met specified criteria. In this case, all grades higher than 6.
- `=IF( B2>3, "Target met", "Target not met")` would check whether the value in C2 is greater than 3. This is a Boolean expression. If the result is *true*, "Target met" is output. If the value is *false*, "Target not met" is output.
- `=VLOOKUP( B2, D2: E5, 2)` would look in range D2:E5 for student 1's grade and return a value from the second column. B2 is between 4 and 7, so Pass is returned.

	A	B	C	D	E
1	Name	Grade		Grade	Description
2	Student 1	<u>6</u>		0	Fail
3	Student 2	8		4	Pass
4	Student 3	8		7	Merit
5	Student 4	3		9	Distinction

# Drama Knowledge Organiser: Year 9

## Noughts and Crosses

- A dystopian Romeo and Juliet that makes eloquent statements about race relations.
- Non-naturalistic style - synchronisation, ensemble, canon, narration and tableaux.
- Brechtian - Epic theatre including breaking the fourth wall and placards
- Genre - alternative history/ Drama

## Borstal

- Creating devised performances based on a youth offending institution in the 1960's England.
- Teacher in role - when a person leads a whole class improvisation
- Monologue - one speech in role as the character you have created
- Spontaneous improvisation - creating context through on the spot character questions.
- Character profiles developing through class workshops

## Devising from a Stimulus

- A stimulus is a starting point in drama - a source of inspiration
- Devising from various stimuli such as photograph, text, video, music, poem, prop, costume, historical event or quote.
- Performance is inspired by NOT a direct representation of the stimulus
- Collaboration of creative ideas leads to a good devised performance
- A script is created throughout the process not given before
- Rehearsal techniques explored - hot seating, improvisation and peer assessment.

## artaud

- Theatre of cruelty
- Inspired by Surrealism
- Believed in world change through dreams
- Appeals to the irrational mind
- Aims to release the audience's intense emotions through intense tension and suspense
- Plays on fear

## KEY WORDS FOR YEAR 9 DRAMA

Devising	Cross-cutting	Atmosphere	Suspense	Tension	Verbatim
Stimulus	Characterisation	Monologues	Ensemble	Non-naturalism	Documentary
Theatre for social change.	Subtext	Theatre of the absurd	Theatre of Cruelty	Audience emotions	Heightened tension

# Year 9 Cooking and Nutrition Knowledge Organiser

## Hygiene and Safety – The four C's

Food hygiene & safety is about protecting people and minimising the risk.

- Cleaning – e.g. following routine, meeting standards using correct materials, cloths and PPE ,
- Chilling – storing food at appropriate temperatures
- Cooking – making sure food is cooked and served at correct safe temperatures.
- Cross-contamination – avoiding food poisoning.



## Food Plating and Presentation

### Key Focus

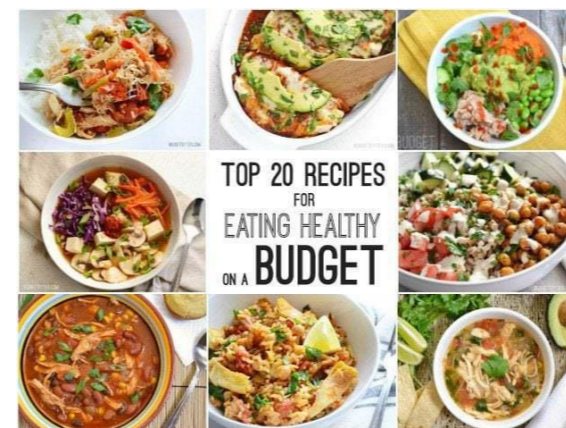
- Create height on the plate.
- Cut meat horizontally.
- Play with textures.
- Use contrasting colours.
- Choose the right plates.
- Serve smaller portion sizes.
- Use edible garnishes and decorations.



## Food Preparation Task

### Key Skills

- Analyse the task by explaining the key areas for consideration
- Carry out relevant research and analysis related to the task (budget meals/meal planning)
- Identify a range of suitable dishes
- Produce a detailed timeplan



### Plan the time plan

Time	Plan of work	Quality and safety checks
10.50	Put chicken pie in oven and cook 20 minutes. Clear up.	Cook for 20 mins and glaze again after 10 minutes.
10.52	Cook lasagne sheets in boiling water.	Cook in roasting tin for 10 mins.
10.55	Glaze chicken pie again. Make sauce for lasagne.	Add cheese to sauce once it is slightly cool.
11.05	Take out chicken pie. Drain lasagne sheets. Add cheese to sauce.	Don't forget chicken pie but keep warm.
11.10	Assemble lasagne - sauce, sheets then veg, then sheets then sauce. Sprinkle with cheese and bake.	Make sure dish is clean before baking. Bake 40 minutes.
11.25	Whisk the cream for the sponge filling and sort the raspberries for decoration.	Don't over whip the cream.
11.35	Peel off the paper from the sponge. Cut in half. Mix half cream with half the raspberries. Spread jam on the cake base then cream mixture then put top on.	Keep working surface clean.
11.45	Decorate cake top with jam, cream and rows of fruit, sprinkle with icing sugar and put in fridge.	Put in fridge to chill. Reheat chicken pie to 72°C.
11.50	Take out lasagne and clean up dish. Serve chicken pie and lasagne then whisked sponge.	Check all dishes well presented and at right temperature.
11.55 - 12.00	Clear up and finish!	



You are asked to dovetail tasks in your Plan of work.  
What is dovetailing?  
Slotting in tasks between other work. For example, while the sponge is baking, prepare vegetables for the lasagne.

To do  
Use the Plan of work and list 4 examples to show how the plan dovetails tasks from one dish to another.

Clear up as you work. It saves using lots of equipment and keeps the preparation area safe and hygienic.

Key vocabulary	
Cross Contamination	Process by which bacteria or other microorganisms are unintentionally transferred from one substance or object to another, with harmful effect.
Food Plating	Process of arranging and decorating food to enhance its presentation.
Task analysis	Detailed examination of the given task.
Meal Planning	Thinking ahead about what you'll make for meals and snacks and getting prepared.

# Year 9 Product Design Knowledge Organiser



## Architecture Light

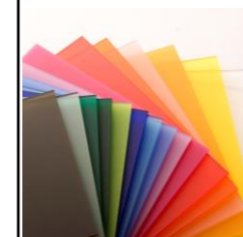
### Key Skills

- Responding to a Design Context
- Analysing & researching information
- Creating a brief & identifying an audience
- Writing a product specification
- Applying Health & Safety procedures and PPE in the workshop environment
- Developing an understanding of basic electronic components.
- Identifying & using specific workshop tools and equipment
- Developing practical skills to create a well finished product.
- Knowledge of timbers, manufactured boards, thermosetting polymers & electrical components
- Evaluating the design & manufacturing process



Tools & Equipment		
 Try square	 Steel rule	 Marking gauge
 Bench vice	 Bench hook	 Tenon saw
 Band saw	 Chisel	 File
 Pillar drill	 Belt & Disc sander	 LED

Thermoplastic polymers are chemically manufactured and can be heated and shaped many times.

### Acrylic



Acrylic is used in sheet form it is lightweight or shatter-resistant. It comes in a variety of colours it can be frosted or transparent. Acrylic is durable and is a good electrical insulator but scratches easily. It is recyclable and can be heat moulded.

Key vocabulary	
Design Context	The circumstances, problem or setting in which a product will be used.
Design Brief	An written outline which explains the aims and objectives of a project.
Specification	A statement that details exactly a products function and the design requirements.
CAD	Computer aided design
CAM	Computer aided manufacture e.g. laser cutter
Finishing	The process of applying a finish to preserve or protect a material & improve aesthetics.
Prototype	A prototype is a model that is built to test to see if it is successful or whether it needs further modification or improvements.
PPE	Personal protective equipment are items
Timber is a natural material with imperfections, knots and grain – always sand with the grain	
Softwood	From coniferous trees that are evergreen, which are faster to grow and are less expensive than hardwoods. Softwoods are a sustainable material as the resource can be regrown and not depleted. Softwoods are strong and easy to work with.
	
Manufactured boards are timber produced by gluing wood layers or wood fibres together.	
Medium Density Fibreboard	Medium Density Fibreboard or also known as MDF is made from wood fibres which are glued together. MDF has a smooth even surface which makes it easier to work than natural timber.
	

## Electrical Components

### LED

Light-emitting diodes (LEDs) and lamps produce light when a current flows through them in the forward direction.



### Resistor

A resistor is an electrical component that restricts the flow of electric current.



### Switch

In electrical engineering, a switch is an electrical component that can disconnect or connect the conducting path in an electrical circuit





# Year 9 Product Design Knowledge Organiser



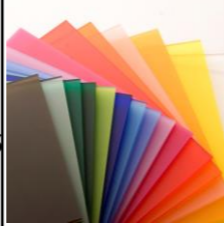
## Desk Organiser



### Key Skills

- Responding to a Design Context
- Analysing & researching information
- Creating a brief & identifying an audience
- Writing a product specification
- Developing CAD/CAM skills using:
  - Techsoft 2D Design
  - Google SketchUp
  - Serif Draw Plus
- Applying Health & Safety procedures and PPE in the workshop environment
- Identifying & using specific workshop tools and equipment
- Developing practical skills to create lap, housing & dowel joints to join materials
- Using a line bender to manipulate Acrylic
- Knowledge of timbers, manufactured boards, thermosetting polymers & card
- Prototype modelling, finishing & presentation skills
- Evaluating the design & manufacturing process

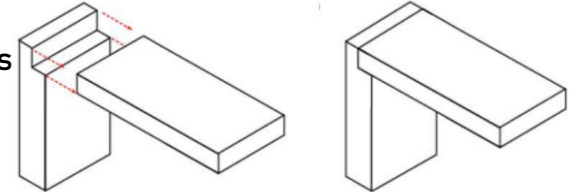
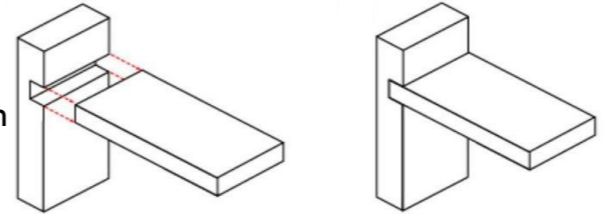
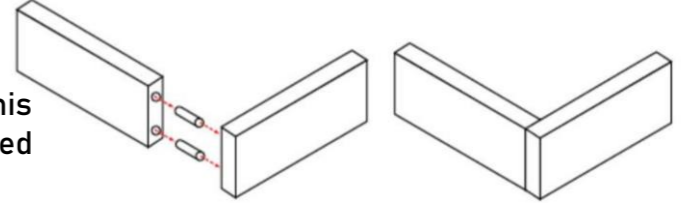
Tools & Equipment		
 Try square	 Steel rule	 Marking gauge
 Bench vice	 Bench hook	 Tenon saw
 Coping saw	 Chisel	 File
 Pillar drill	 Belt & Disc sander	 Line bender

Thermoplastic polymers are chemically manufactured and can be heated and shaped many times.

	Acrylic is used in sheet form it is lightweight or shatter-resistant. It comes in a variety of colours it can be frosted or transparent. Acrylic is durable and is a good electrical insulator but scratches easily. It is recyclable and can be heat moulded.
--	--

Key vocabulary	
Design Context	The circumstances, problem or setting in which a product will be used.
Design Brief	An written outline which explains the aims and objectives of a project.
Specification	A statement that details exactly a products function and the design requirements.
CAD	Computer aided design
CAM	Computer aided manufacture e.g. laser cutter
Finishing	The process of applying a finish to preserve or protect a material & improve aesthetics.
Prototype	A prototype is a model that is built to test to see if it is successful or whether it needs further modification or improvements.
PPE	Personal protective equipment are items
Timber is a natural material with imperfections, knots and grain – always sand with the grain	
Softwood 	From coniferous trees that are evergreen, which are faster to grow and are less expensive than hardwoods. Softwoods are a sustainable material as the resource can be regrown and not depleted. Softwoods are strong and easy to work with.
Manufactured boards are timber produced by gluing wood layers or wood fibres together.	
Medium Density Fibreboard 	Medium Density Fibreboard or also known as MDF is made from wood fibres which are glued together. MDF has a smooth even surface which makes it easier to work than natural timber.

## Joining materials – construction techniques

<p><b>Lap joint</b> A joint in which two pieces of material overlap. This joint can be used to join wood, plastic, or metal.</p> 	<p><b>Housing joint</b> A housing joint is cut across the grain or width to the thickness of the material partition.</p> 	<p><b>Dowel joint</b> A dowel joint is very strong and stable. This type of joint is secured with an adhesive.</p> 
--	--	--

# Year 9 Textiles Knowledge Organiser

## Hat Design

### Key Skills

- Responding to a Design Context
- Analysing existing products
- Identifying a target audience
- Write a product specification
- Demonstrate the ability to apply decorative techniques:
  - Appliqué (including reverse)
  - Computerised embroidery
  - Embroidery stitches (hand & machine)
- Using a sewing machine to complete a range of construction techniques:
  - Seams & hems
  - Applying a facing
  - Using interface
  - Applying components
- Understanding the properties of materials
  - Fleece
  - Felt
  - Polyester
  - Cotton
- Understand CAM using computerised embroidery



Product features	
Use of woven, knitted & non woven materials	Consideration of a specified target market
Originality	Creative
Components used as decoration	Efficient use of space
A variety of hand embroidery stitches	Components & fastenings
CAD/CAM embroidery	Machine appliqué

Health & safety
Follow teacher instructions
Move slowly around the room do not run
Tie long hair back
Hold scissors or shears correctly when walking around the room.
Only one person operating a sewing machine at one time
Never use a sewing machine unless supervised by a teacher/ technician
Turn off the sewing machine when not in use.
Report any injuries or breakages to the teacher immediately

Key vocabulary	
Components	The parts/materials/threads needed to make a product.
3D features	Use of wadding to make a feature stand up or raised from the backing fabric.
Function	What a product does, how it works and what it will be used for? Is it sensory or educational or both?
CAD/CAM	Computer Aided Design/Computer Aided Manufactured
Target Audience	The person or people most likely to be interested or use your design or product.
Embroidery	Even stitch widths and lengths completed by sewing by hand or machine.
Reverse appliqué	A decorative technique whereby a fabric placed on the back and visible on the front and is sewn in place by hand or machine.
Original	A product that is unique, creative and has functional features.
Appliqué	A decorative technique whereby one material is sewn on top of another by hand or machine.
Design Context Design Brief	The circumstances, problem or setting in which a product will be used. A Design Brief is a written outline which explains the aims and objectives of a project.

**SPEAKING AND LISTENING UNIT**

- In this unit, you will be learning how to develop your speaking and listening skills. You will all have skills in these areas already and the aim of this unit is to develop and extend them so that you are GCSE ready. The outcome of this unit will be the completion of a presentation on a topic of your choice.
- Students will be expected to complete this presentation in front of the class. We appreciate that this sounds incredibly daunting, but try to embrace the challenge! You will be supported by your teacher and your classmates throughout. Adjustments can be made if this is something that you are unable to do - however, you will still need to complete the presentation in front of a smaller audience.

**YOUR TOPIC FOR YOUR PRESENTATION**

- Depending on what your teacher decides, you will either be given a choice of topics and you will select the one that interests you the most, or you will select your own topic to present on. The topic will need to be of interest to you and of interest to your audience also.
- When planning your presentation, you will be expected to research it and discover key facts and ideas surrounding it.
- What will be the purpose of your presentation? Will it be to inform? To persuade? To educate?
- Ideas will need to be prioritised: what will your audience need to know? What will need to be explained in more detail and elaborated upon? How will you order and organise the information you give?
- It will be a good idea to watch other speeches/presentations that people make that are similar in style and purpose to the one you are creating - do not copy their content, though!

**THE PRESENTATION ITSELF**

- Practise, practise, practise: this will help you refine your presentation content and delivery.
- Whilst you are not expected to learn your presentation by heart, you cannot read it out: you can, however, use cue cards to aid your presentation (but remember that you can't read these, only refer to them).
- You will also be expected to answer questions about the topic you have presented on, so you will need to think on your feet also. These questions aren't designed to catch you out - you may be asked to elaborate on an idea or explain something in a little more detail. If possible, practise your speech in front of an audience and have them ask you questions about what you have presented on.

**KEY SPELLINGS FOR THIS SCHEME OF WORK**

**WHAT NEEDS TO BE CONSIDERED WHEN DELIVERING YOUR TALK**

Standard English	audience	You need to ensure that: your presentation is <b>audible</b> , your ideas are expressed clearly with appropriate vocabulary, you have organised and structured your talk in a way that engages the audience, your presentation has a clear purpose that you achieve and that you can listen to questions and elaborate on details when asked.
organised	listening	
audible	presentation	
structure	purpose	



# COMPARING UNSEEN POEMS KNOWLEDGE ORGANISER



## Content – the subject matter, context, mood and atmosphere of the poem.

### Subject Matter – Consider these questions:

- What is the poem about? Where/ when is the poem set?
- Are meanings clear or ambiguous? Literal or figurative?
- Who is the speaker? What are their thoughts?
- Are there any alternative interpretations?
- What is the key message/ morale of the poem?
- How is the reader intended to react?
- What meanings can be inferred/ deduced?
- Who is the poem written to? What person is the poem written in?
- What themes are in the poem? Why are these significant?



### Tone/Atmosphere – Consider these questions:

- How does the speaker/ subject feel?
- What is the feeling that you get when reading the poem? What attitudes does the poem express?
- What mood runs through the poem? Why has the poet done this? What is the poet trying to say?
- Does the mood stay the same throughout the poem, or change in different lines/ stanzas?
- What ideas is the poet trying to get across through the tone/ atmosphere of the poem?



### Context – Consider these questions:

- When/where do you think that the poem was set/written? Does the poem make this clear?
- What were the prevailing ideas/ attitudes at the time? What clues in the poem are there for this?
- Is the poem linked to any historical events? How is this significant?
- How would the intended readers of this poem have reacted?
- How do ideas differ from the modern day/ social norms?
- What messages is the poet trying to get across about the society in which the poem is set/ written? How do you know?



### The Poet – Consider these questions:

- Who is the poet and when did they live?
- What happened in the poet's life? Did this influence their poetry?
- What type of family did the poet come from? What type of upbringing did they have?
- What social/ political ideas did the poet hold? How do these affect his/her poetry? What styles/ forms/ language is the poet known for? Are these evident in this poem?
- What messages is the poet trying to get across to the reader?



## Form and Structure – the style of the poem, its rhyme, rhythm, and meter, and how it is set out on the page

**Form** – The form of a poem is its physical structure. A poem's form is dictated by its stanza structure, line lengths, and rhyme scheme, amongst other features. Here are some common forms of poetry:

- Sonnet** – A short rhyming poem with 14 lines. Sonnets use iambic meter in each line, and use line-ending rhymes.
- Elegy** – A poem of serious reflection, normally about the dead.
- Narrative** – Narrative poems tell the story of events through poetry. There are clear narration, characters and plot.
- Epic** – A lengthy poem celebrating adventures & accomplishments.
- Free Verse** – Free verse poems do not follow any rules.
- Ballad** – A long poem in short stanzas – normally quatrains (4 lines) – that tells a story. They often use repetition.

**Rhyme** – Rhyme is the 'correspondence of sound between words or the endings of words, especially when these are used at the ends of lines of poetry.'

- Poets use rhyme for a number of reasons:**
- To make a poem more musical and give it a 'beat' or 'rhythm, or to show creativity and sophistication in language'
  - To emphasise particular words/sounds that hold value or add meaning to the poem/ its messages;
  - Aid the memory for recitation purposes;
- Poets organise the rhyme in their poems using Rhyme Schemes:**  
This can help to establish the form – for example, the English sonnet traditionally holds an ABAB-CD-DEFE-GG rhyme scheme.



### Stanzas

A **stanza** is a grouped set of lines in a poem, set apart from other lines by a blank line of indentation. Stanzas are often used to group related ideas, or show content related to a particular time or place. Poets manipulate the number, type, and length of stanzas to aid meaning. Names of stanzas of different lengths are shown on the right.



### Metre/Rhythm

The metre of a poem is the measured pattern of rhythm created by **stressed** and **unstressed syllables**. **Rhythm** refers to the overall tempo, or pace, at which the poem unfolds. Poets who write free verse often tend to ignore meter and focus instead on the content and tone of their poem. However, many poems follow a clear metre throughout. Common metres are below:

- Iambic:** Metre which starts with an unstressed and then a stressed syllable.
- Trochaic:** Metre which starts with a stressed and then an unstressed syllable.
- Dactylic:** Metre which starts with a stressed and then 2 unstressed syllables.
- Anapestic:** Metre which has 2 unstressed and then a stressed syllable.

### Line Type/Length

**Lines of poetry** can end in two ways – **enjambment** (the sentence runs over two lines) or **end-stopped**. Unlike prose, writers of poetry can end lines where they choose, meaning that the line type and length is often employed to support meaning. The use of long lines, containing enjambment, for example, can reflect complex or even confusing ideas, whilst short, end-stopped lines may be used for dramatic effect, or to allow the reader to dwell on ideas.



### Key Questions Regarding Structure –

- What is the form of the poem? How do you know?
- Does the poem have a regular or irregular structure? Why?
- How many stanzas does it have? What can be read from this?
- Does the poem rhyme? What rhyme scheme does it use? What is the effect of this? Is the rhyme regular or irregular?
- What can be noted about the line length/ metre?
- What rhythm (if any) runs through the poem? Why did the poet include this line length/ metre/ rhythm in the poem?

## Language – vocabulary, phrases, techniques and devices used by the poet.

### Interesting Adjectives

Describing words that are specific or beyond the most obvious, creating a clear effect.



"Parting with his poison – Flash of diabolic tail in the dark room – he risked the rain again."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Interesting Verbs

Doing words that are specific or beyond the most obvious, creating a clear effect.



"Stumbling across a field of clods towards a green hedge That dazzled with rifle fire, hearing Bullets smacking the belly out of the air"

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Imagery

Words or phrases that appeal to any sense or any combination of senses.



"Yellow, and black, and pale, and hectic red, Pestilence-stricken multitudes: O thou, Who chariotest to their dark wintry bed"

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Similes

A comparison between two objects using "like" or "as"



"O my Luv is like a red, red rose That's newly sprung in June O my Luv is like the melody That's sweetly played in tune."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Metaphors

A comparison between two things in order to give clearer meaning to one of them.



"'Hope' is the thing with feathers— / That perches in the soul And sings the tune without the words/ And never stops – at all"

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Alliteration

The repetition of initial consonant sounds



"With swift, slow; sweet, sour; adazzle, dim; He fathers-forth whose beauty is past change."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Assonance

The repetition of vowel sounds



"With its leaping, and deep, cool murmur... ..White and shining in the silver-flecked water."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Repetition

The repeating words, phrases, lines, or stanzas



Keeping time, time, time, In a sort of Runic rhyme, To the tintinnabulation that so musically wells From the bells, bells, bells, bells,

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Onomatopoeia

The use of words which imitate sound



"A child sitting under the piano, in the boom of the tingling strings And pressing the small, poised feet of a mother who smiles as she sings."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Oxymoron

A figure of speech in which apparently contradictory terms appear together.



"Down the close, darkening lanes they sang their way To the siding-shed, And lined the train with faces grimly gay."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Personification

A figure of speech which gives animals, ideas, or inanimate objects human traits or abilities



"Death, be not proud, though some have called thee Mighty and dreadful, for thou art not so;"

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Hyperbole

Exaggerated statements or claims not meant to be taken literally.



"The sea him lent those bitter tears Which at his eyes he always wears/ And from the winds the sighs he bore, Which through his surging breast do roar."

- Consider these questions:
- Why is the technique used?
  - What did the writer intend?
  - How does the reader react?

### Adding Connectives

– Add to what has already been stated.

**In addition also and similarly moreover furthermore as well as additionally indeed let alone not only too another equally**

### Contrasting Connectives

– Go against what has already been stated.

**but however in contrast on the other hand conversely in spite of this actually in fact yet nevertheless nonetheless unlike alternatively**

# Year 9 Geography

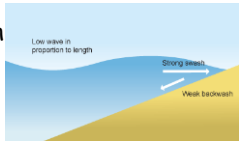
## Unit 3: Coastal Landscapes

KEYWORDS



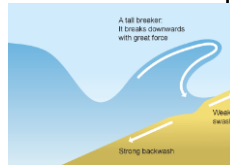
### Constructive wave

Powerful swash  
Weaker backwash  
Long wave length  
Low wave height  
Gentle beach



### Destructive wave

Weak swash  
Strong backwash  
Short wave length  
High wave height  
Steep beach



**Mass Movement** - the downward movement of the land due to the pull of gravity. This usually occurs when the ground is saturated by water, is unstable or during a storm surge.



### Transportation:

Saltation - the bouncing motion of pebbles  
Traction - the rolling motion of rocks  
Solution - the dissolved load within the body of water  
Suspension - fine sediment is suspended within the flow of the water

### Types of Erosion:

- Attrition - when rocks/pebbles collide and chip away
- Abrasion - the sandpapering effect of the material rubbing against a cliff face
- Solution - when rock dissolves due to a reaction between the rock and sea
- Hydraulic Action - when water is forced into cracks into the cliff face, compressing air inside which in turn makes the crack wider.

### Deposition

When the flow of the water falls and so material is dropped off along the coastline.

Erosion

### Definition

The wearing away and removal of material by a moving force, such as a breaking wave.

Transportation

The movement of eroded material. The size and weight of the material affects how it moves.

Deposition

Occurs when material being transported by the sea is dropped due to the sea losing energy.

Soft Engineering

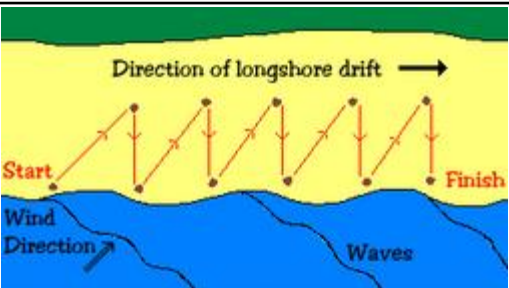
Managing erosion by working with natural processes to help restore beaches and coastal ecosystems.

Hard Engineering

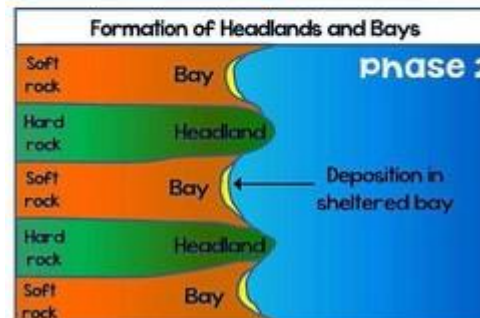
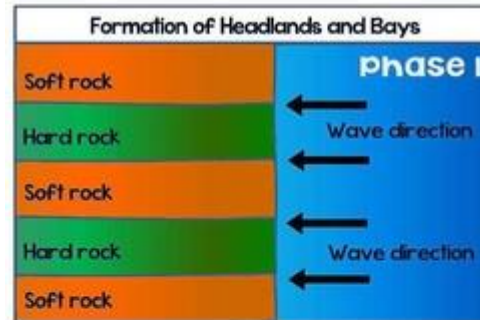
A coastal management technique used to protect coasts by absorbing the energy of waves, preventing erosion and flooding. They are highly visible man-made structures used to stop or disrupt natural processes.

### Longshore Drift

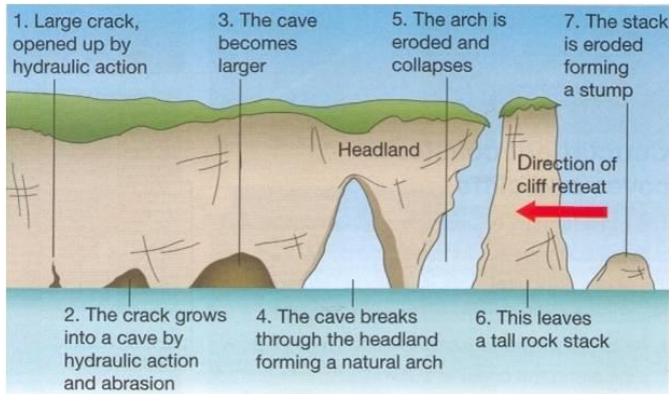
This is the zigzag motion of sediment. Sediment is pushed onto the beach at an angle and returns to sea perpendicular to the coastline due to gravity. When the coastline changes direction a spit will form.



### Formation of a Bay



### Erosion of a headland



# Year 9 Geography

## Unit 4: Challenges of Development



### KEYWORDS



#### Lesson 1-2

Every country in the world is at a different stage of development. If a country is **developing** it is changing for the better. The **Demographic Transition Model** which you studied in year 8 shows how a country changes overtime. They can be classed as:

- **Low Income Country** - a country where the **GNI per capita** is **\$1045 or below**
- **Newly Emerging Economy** - a country that has **begun to experience higher rates of economic development**, usually with higher levels of industrialisation. They no longer rely primarily on agriculture. eg Brazil, Russia, China and South Africa (the so-called **BRICS** countries).
- **High Income Country** - a country where the **GNI per capita** is **\$12746 or above**

#### Lesson 3-4

Development is uneven because...

- Some countries are **landlocked** and so can't trade as easily
- Some countries experience **climate-related diseases** weakening their working population
- **Extreme weather**, e.g. hurricanes, are expensive to respond to and so slow development of public services



#### Lesson 5

**Human development index (HDI)** was created to better measure development. HDI combines:

- **Living standards:** the **GNI per capita**
- **Health:** the life expectancy
- **Education:** the average number of years of schooling children receive



#### Lesson 6

The UK developed during the **Industrial Revolution**.

Today **five countries, BRICS**, are considered to be going through **rapid economic development**.

This will mean that the % employed in primary, secondary and tertiary industries will change.

#### Lesson 8

Inequalities in development can occur at a **global scale** (between countries) and a **local scale** (within countries or even cities).

#### Lesson 9

**10.7%** of the world's population live on less than **\$1.90** per day (World Bank). Poverty exists because of the climate, war, politics, gender inequality and location.

#### Lesson 10-14

**Informal settlements** grow around megacities where there are economic opportunities.

**Megacities** continue to grow due to **natural increase** and **rural-urban migration**.



#### Lesson 10-14

**Informal settlements** are areas of land where groups of housing units have been constructed on land that the occupants have no legal claim to. **They often have social, economic and environmental problems.**

#### Top 10 mega-cities by population

	2014	2030
Tokyo	37.8 million	37.2 million
Delhi	25	36.1
Shanghai	23	30.8
Mexico City	20.8	27.8
Mumbai	20.8	27.7
Sao Paulo	20.7	27.4
Osaka	20.1	24.8
Beijing	19.5	24.5
New York	18.6	24.2
Cairo	18.4	23.9

Quartz | qz.com

Data: United Nations

#### Lesson 15

**Gender inequality** occurs when people are treated differently just because they are male or female. If women are empowered the work force will increase and the number of dependent children will decrease.

#### Lesson 16-17

**Aid** can be given to areas in need to help them develop faster. In **2000**, the United Nations set up **8 Millennium Development goals** focussed on reducing global poverty. In **2015**, a new set of **17 targets were created**.

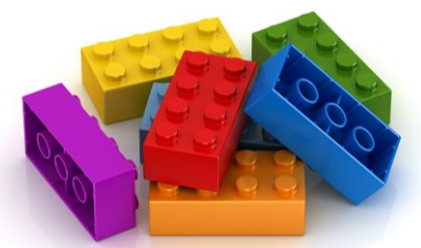
	Definition
<b>Develop ment</b>	People reaching an acceptable standard of living or quality of life.
<b>Human development</b>	A measure of the access the population has to wealth, jobs, education, nutrition, health, leisure and safety - as well as political and cultural freedom
<b>Economic development</b>	A measure of a country's wealth and how it is generated (for example agriculture is considered less economically advanced than banking).
<b>Standard of living</b>	How much wealth a group of people have and the goods and services available to them. Life expectancy and literacy rate may also be taken into account.
<b>Quality of Life</b>	The general well being of people, which includes income, health, education, employment and the environment.



# Wellington History

## Year 9 HT 5 Knowledge Organiser

### Why does Britain no longer have an empire?



- ✓ What and why? You will learn about the decline of the British Empire
- Stop, think and link: What caused country's to fight for their independence?

#### ❖ **Want to explore further?**

Book: The Decline and Fall of the British Empire by Piers Brendon

Book: The Rise and Fall of the British Empire by Lawrence James

Website:

<https://www.bbc.co.uk/bitesize/guides/zf7fr82/revision/1>

Website:

<https://www.bbc.co.uk/bitesize/guides/zp6csg8/revision/1>

#### **Key Questions**

- What allowed Britain to grow such a vast empire?
- What factors led to the decline of empire?
- How did war play a crucial role in the decline of empire?
- How did country's gain their independence?
- What legacy has the Empire left today?
- Which individuals were important in nationalist movements?
- What control does Britain have today?

#### **Keywords**

##### **Empire**

an extensive group of states or countries ruled over by a single monarch, an oligarchy, or a sovereign state.

##### **Imperialism**

a policy of extending a country's power and influence through colonization, use of military force, or other means.

##### **Independence**

the fact or state of being independent

##### **Nationalism**

identification with one's own nation and support for its interests, especially to the exclusion or detriment of the interests of other nations.

##### **Dominion**

sovereignty or control.

##### **Colonialism**

the policy or practice of acquiring full or partial political control over another country, occupying it with settlers, and exploiting it economically.

#### **Key events and Key People**

**1867 – Britain passes the British North America Act. The Provinces of the British North America become a federation called Canada. Canada rules itself but has close trade links to the British Empire**

**1901 – Australia became a federation of territories.**

**1931 – Britain created the Commonwealth of Nations. This effectively ended British rule over Canada, Australia and New Zealand.**

**1947- India gain Independence**

**1949 – Ireland became a Republic and Northern Ireland remained part of the UK.**



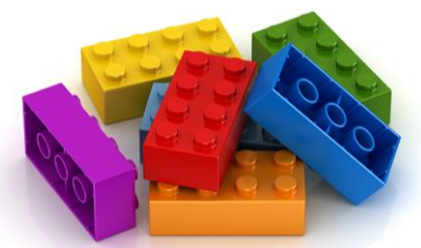


# Wellington History

## Year 9 HT 4 Knowledge Organiser

### Why was the Second World War so significant?

### Who was to blame for the Holocaust?



- ✓ What and why? You will learn about the damage war can create to millions of lives.
- Stop, think and link: How would the end of WWI have helped to cause WWII?
- ❖ Significance Assessment – Why was the dropping of the Atomic Bombs significant?
- ❖ **Want to explore further?**  
 Book: Woeful Second World War by Terry Deary  
 Book: My Story Wartime Princess by Valerie Wilding  
 Book: My Secret War Diary by Marcia Williams  
 Website: <https://www.bbc.co.uk/teach/class-clips-video/history-ks2-world-war-two/zjnyscw>  
 Website:

#### Key Questions

- How did Hitler's foreign policy cause World War 2?
- What was it like living in Britain during World War 2?
- What was it like living in Germany during World War 2?
- Was the Second World War a global war?
- What was Hitler's Final Solution?
- Who was to blame for the Holocaust?
- Why did the war end?

#### Keywords

- Air Raid**  
An attack in which bombs are dropped from aircraft
- Axis Powers**  
Name given to Germany, Italy, Japan
- Allied Powers**  
Name given to Britain, France, USA and USSR
- Blitz**  
Bombing Raid
- Blitzkrieg**  
Lightning War
- Civilians**  
Non-Combatants in war
- Concentration Camps**  
Large prison camps for confinement and persecution of prisoners
- D-Day**  
Allied attack on Western Europe
- Evacuation**  
Leaving your home
- Holocaust**  
Mass murder of Jews in occupied Europe
- Liberate**  
To set free
- Rationing**  
Fixed amounts of food and goods

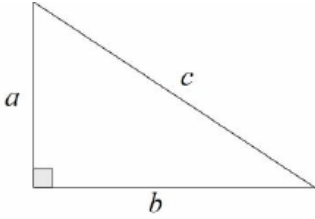
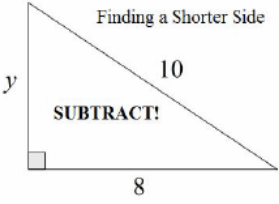


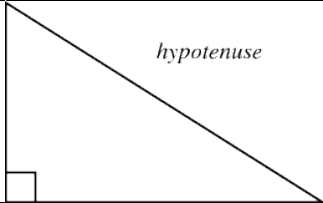
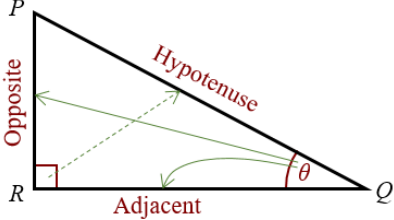
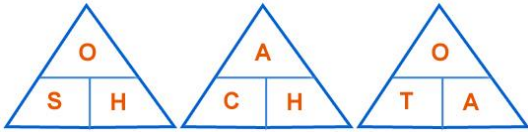
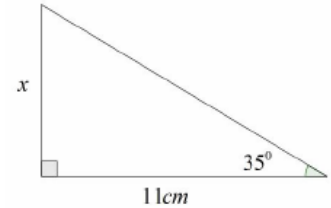
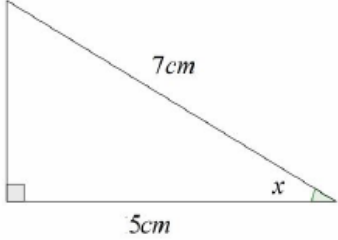
#### Key events and Key People

- 1939** Hitler invades Poland on 1 September. Britain and France declare war on Germany two days later.
- 1940** German 'Blitzkrieg' overwhelms Belgium, Holland and France.
- 1941** Hitler begins Operation Barbarossa - the invasion of Russia. Japan attacks Pearl Harbour, and the US enters the war.
- 1942** Mass murder of Jewish people at Auschwitz and the Extermination camps begins.
- 1943** Surrender at Stalingrad marks Germany's first major defeat in Russia.
- 1944** Soviet offensive gathers pace in Eastern Europe. German troops begin retreats. D Day: The Allied invasion of France. Paris is liberated in August.
- 1945** Russians reach Berlin: Hitler commits suicide and Germany surrenders on 7 May. After atomic bombs are dropped on Hiroshima and Nagasaki, Japan surrenders on 14 August.



## Year 9: Pythagoras' Theorem

Topic/Skill	Definition/Tips	Example
1. Pythagoras' Theorem	<p>For any <b>right angled triangle</b>:</p> $a^2 + b^2 = c^2$  <p>Used to find <b>missing lengths</b>. a and b are the shorter sides, c is the <b>hypotenuse (longest side)</b>.</p>	<p>Finding a Shorter Side</p>  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <math display="block">a = y, b = 8, c = 10</math> <math display="block">a^2 = c^2 - b^2</math> <math display="block">y^2 = 100 - 64</math> <math display="block">y^2 = 36</math> <math display="block">y = 6</math> </div>
2. 3D Pythagoras' Theorem	<p>Find missing lengths by <b>identifying right angled triangles</b>.</p> <p>You will often have to find a missing length you are not asked for before finding the missing length you are asked for.</p>	<p>Can a pencil that is 20cm long fit in a pencil tin with dimensions 12cm, 13cm and 9cm? The pencil tin is in the shape of a cuboid.</p> <p>Hypotenuse of the base =  <math>\sqrt{12^2 + 13^2} = 17.7</math></p> <p>Diagonal of cuboid = <math>\sqrt{17.7^2 + 9^2} = 19.8\text{cm}</math></p> <p>No, the pencil cannot fit.</p>

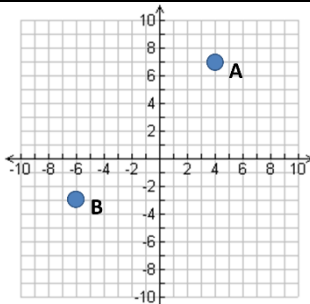
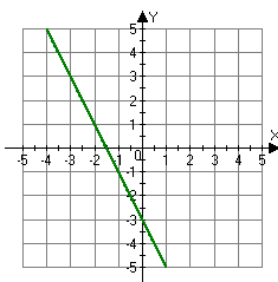
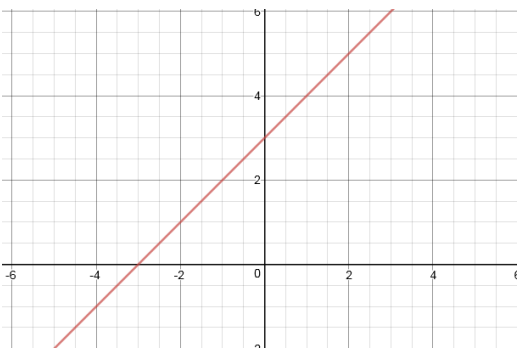
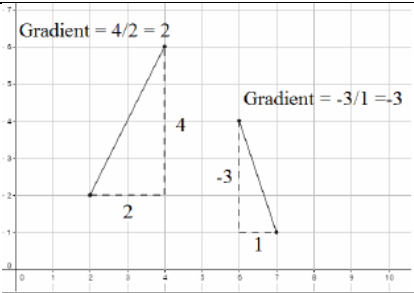
Topic/Skill	Definition/Tips	Example
1. Trigonometry	The <b>study of triangles.</b>	
2. Hypotenuse	The <b>longest side</b> of a <b>right-angled triangle.</b>  Is always <b>opposite</b> the <b>right angle.</b>	
3. Adjacent	<b>Next to the angle given or trying to find.</b>	
4. Trigonometric Formulae	<p>Use <b>SOHCAHTOA.</b></p> $\sin \theta = \frac{O}{H}$ $\cos \theta = \frac{A}{H}$ $\tan \theta = \frac{O}{A}$  <p>When finding a missing angle, use the 'inverse' trigonometric function by pressing the 'shift' button on the calculator.</p>	 <p>Use 'Opposite' and 'Adjacent', so use 'tan'</p> $\tan 35 = \frac{x}{11}$ $x = 11 \tan 35 = 7.70\text{cm}$  <p>Use 'Adjacent' and 'Hypotenuse', so use 'cos'</p> $\cos x = \frac{5}{7}$ $x = \cos^{-1}\left(\frac{5}{7}\right) = 44.4^\circ$

## Year 9: Right Angled Trigonometry

### *Exact Values of Trigonometric Functions*

Angle ( $\theta$ ) Degrees	$0^\circ$	$30^\circ$	$45^\circ$	$60^\circ$	$90^\circ$
$\sin(\theta)$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos(\theta)$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\tan(\theta)$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not Defined

## Year 9: Coordinates and Linear Graphs

Topic/Skill	Definition/Tips	Example																
1. Coordinates	Written in <b>pairs</b> . The <b>first</b> term is the <b>x-coordinate</b> (movement <b>across</b> ). The <b>second</b> term is the <b>y-coordinate</b> (movement <b>up or down</b> )	 <p>A: (4,7) B: (-6,-3)</p>																
2. Midpoint of a Line	<p>Method 1: <b>add the x coordinates and divide by 2, add the y coordinates and divide by 2</b></p> <p>Method 2: Sketch the line and find the values half way between the two x and two y values.</p>	<p>Find the midpoint between (2,1) and (6,9)</p> $\frac{2+6}{2} = 4 \text{ and } \frac{1+9}{2} = 5$ <p>So, the midpoint is (4,5)</p>																
3. Linear Graph	<p><b>Straight line</b> graph.</p> <p>The general equation of a linear graph is <math>y = mx + c</math></p> <p>where <b>m</b> is the <b>gradient</b> and <b>c</b> is the <b>y-intercept</b>.</p> <p>The <b>equation</b> of a linear graph can contain an <b>x-term</b>, a <b>y-term</b> and a <b>number</b>.</p>	<p>Example:</p>  <p>Other examples:  <math>x = y</math>  <math>y = 4</math>  <math>x = -2</math>  <math>y = 2x - 7</math>  <math>y + x = 10</math>  <math>2y - 4x = 12</math></p>																
4. Plotting Linear Graphs	<p>Method 1: <b>Table of Values</b> Construct a table of values to calculate coordinates.</p> <p>Method 2: <b>Gradient-Intercept Method</b> (use when the equation is in the form <math>y = mx + c</math>)</p> <ol style="list-style-type: none"> <li>Plots the y-intercept</li> <li>Using the gradient, plot a second point.</li> <li>Draw a line through the two points plotted.</li> </ol>	<table border="1" data-bbox="981 1164 1428 1276"> <tr> <td><b>x</b></td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td><b>y = x + 3</b></td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> </table> 	<b>x</b>	-3	-2	-1	0	1	2	3	<b>y = x + 3</b>	0	1	2	3	4	5	6
<b>x</b>	-3	-2	-1	0	1	2	3											
<b>y = x + 3</b>	0	1	2	3	4	5	6											
5. Gradient	<p>The gradient of a line is how <b>steep</b> it is.</p> <p><b>Gradient</b> = <math>\frac{\text{Change in } y}{\text{Change in } x} = \frac{\text{Rise}}{\text{Run}}</math></p> <p>The gradient can be positive (sloping upwards) or negative (sloping downwards)</p>	 <p>Gradient = <math>4/2 = 2</math></p> <p>Gradient = <math>-3/1 = -3</math></p>																

<p>6. Finding the Equation of a Line <u>given a point and a gradient</u></p>	<p><b>Substitute</b> in the <b>gradient (m)</b> and <b>point (x,y)</b> in to the equation <math>y = mx + c</math> and <b>solve for c.</b></p>	<p>Find the equation of the line with gradient 4 passing through (2,7).</p> $y = mx + c$ $7 = 4 \times 2 + c$ $c = -1$ $y = 4x - 1$
<p>7. Finding the Equation of a Line <u>given two points</u></p>	<p>Use the two points to <b>calculate the gradient</b>. Then <b>repeat the method above</b> using the gradient and either of the points.</p>	<p>Find the equation of the line passing through (6,11) and (2,3)</p> $m = \frac{11 - 3}{6 - 2} = 2$ $y = mx + c$ $11 = 2 \times 6 + c$ $c = -1$ $y = 2x - 1$
<p>8. Parallel Lines</p>	<p>If two lines are <b>parallel</b>, they will have the <b>same gradient</b>. The value of m will be the same for both lines.</p>	<p>Are the lines <math>y = 3x - 1</math> and <math>2y - 6x + 10 = 0</math> parallel?</p> <p>Answer: Rearrange the second equation in to the form <math>y = mx + c</math></p> $2y - 6x + 10 = 0 \rightarrow y = 3x - 5$ <p>Since the two gradients are equal (3), the lines are parallel.</p>
<p>9. Perpendicular Lines</p>	<p>If two lines are <b>perpendicular</b>, the <b>product</b> of their <b>gradients</b> will always equal <b>-1</b>. The gradient of one line will be the <b>negative reciprocal</b> of the gradient of the other line.</p> <p>You may need to rearrange equations of lines to compare gradients (they need to be in the form <math>y = mx + c</math>)</p>	<p>Find the equation of the line perpendicular to <math>y = 3x + 2</math> which passes through (6,5)</p> <p>Answer: As they are perpendicular, the gradient of the new line will be <math>-\frac{1}{3}</math> as this is the negative reciprocal of 3.</p> $y = mx + c$ $5 = -\frac{1}{3} \times 6 + c$ $c = 7$ $y = -\frac{1}{3}x + 7$ <p>Or</p> $3x + x - 7 = 0$

## Year 9: Algebra: Quadratics and Rearranging Formulae

Topic/Skill	Definition/Tips	Example
1. Quadratic	<p>A quadratic expression is of the form</p> $ax^2 + bx + c$ <p>where <math>a, b</math> and <math>c</math> are numbers, <math>a \neq 0</math></p>	<p>Examples of quadratic expressions:</p> $x^2$ $8x^2 - 3x + 7$ <p>Examples of non-quadratic expressions:</p> $2x^3 - 5x^2$ $9x - 1$
2. Factorising Quadratics	<p>When a quadratic expression is in the form <math>x^2 + bx + c</math> find the two numbers that <b>add to give b</b> and <b>multiply to give c</b>.</p>	$x^2 + 7x + 10 = (x + 5)(x + 2)$ <p>(because 5 and 2 add to give 7 and multiply to give 10)</p> $x^2 + 2x - 8 = (x + 4)(x - 2)$ <p>(because +4 and -2 add to give +2 and multiply to give -8)</p>
3. Difference of Two Squares	<p>An expression of the form <math>a^2 - b^2</math> can be factorised to give <math>(a + b)(a - b)</math></p>	$x^2 - 25 = (x + 5)(x - 5)$ $16x^2 - 81 = (4x + 9)(4x - 9)$
4. Factorising Quadratics when $a \neq 1$	<p>When a quadratic is in the form</p> $ax^2 + bx + c$ <ol style="list-style-type: none"> <li>1. Multiply a by c = ac</li> <li>2. Find two numbers that add to give b and multiply to give ac.</li> <li>3. Re-write the quadratic, replacing <math>bx</math> with the two numbers you found.</li> <li>4. Factorise in pairs – you should get the same bracket twice</li> <li>5. Write your two brackets – one will be the repeated bracket, the other will be made of the factors outside each of the two brackets.</li> </ol>	<p>Factorise <math>6x^2 + 5x - 4</math></p> <ol style="list-style-type: none"> <li>1. <math>6 \times -4 = -24</math></li> <li>2. Two numbers that add to give +5 and multiply to give -24 are +8 and -3</li> <li>3. <math>6x^2 + 8x - 3x - 4</math></li> <li>4. Factorise in pairs: <math>2x(3x + 4) - 1(3x + 4)</math></li> <li>5. Answer = <math>(3x + 4)(2x - 1)</math></li> </ol>
5. Inverse	<p><b>Opposite</b></p>	<p>The inverse of addition is subtraction. The inverse of multiplication is division.</p>
6. Rearranging Formulae	<p><b>Use inverse operations</b> on both sides of the formula (balancing method) until you find the expression for the letter.</p>	<p>Make x the subject of <math>y = \frac{2x-1}{z}</math></p> <p>Multiply both sides by z</p> $yz = 2x - 1$ <p>Add 1 to both sides</p> $yz + 1 = 2x$ <p>Divide by 2 on both sides</p> $\frac{yz + 1}{2} = x$ <p>We now have x as the subject.</p>

## Year 9 French FOUNDATION Knowledge Organiser

### HT 6 – End of Year Revision

Past		Present		Future	
J'ai joué	I played	Je joue	I play	Je vais jouer	I'm going to play
J'ai mangé	I ate	Je mange	I eat	Je vais manger	I'm going to eat
J'ai nagé	I swam	Je nage	I swim	Je vais nager	I'm going to swim
J'ai regardé	I watched	Je regarde	I watch	Je vais regarder	I'm going to watch
J'ai visité	I visited	Je visite	I visit	Je vais visiter	I'm going to visit
J'ai bu	I drank	Je bois	I drink	Je vais boire	I'm going to drink
J'ai fait	I did	Je fais	I do	Je vais faire	I'm going to do
Je suis allé(e)	I went	Je vais	I go	Je vais aller	I'm going to go
<b>C'était</b>	<b>It was</b>	<b>C'est</b>	<b>It is</b>	<b>Ce sera</b>	<b>It will be</b>

### Giving an opinion

J'apprécie	I appreciate
Ça me fait...	It makes me...
...rire	...laugh
...pleurer	...cry
...peur	...scared
Je pense que	I think that
À mon avis	In my opinion
Je préfère	I prefer
J'adore	I love
J'aime bien	I really like
J'aime mieux...	I like ... better
J'aime beaucoup	I really like
J'aime	I like
Je n'aime pas	I don't like
Je déteste	I hate
Je ne supporte pas	I can't stand

### La nourriture

### Food

le pain	bread
le beurre	butter
le poulet	chicken
une banane	a banana
une pomme	an apple
les bonbons	sweets
les chips	crisps
la dinde	turkey
les frites	chips
le fromage	cheese
les fruits	fruit
les fruits de mer	seafood
les légumes	vegetables
un oeuf	an egg
les sucreries	sweet things
un gateau	a cake
une glace	an ice cream
le poisson	fish
la viande	meat
l'eau	water
un jus d'orange	an orange juice
le lait	milk
le vin	wine
la bière	beer

### Frequency words/How often?

Souvent	Often
Quelquefois	Sometimes
Parfois	Sometimes
Normalement	Normally
De temps en temps	From time to time
Tous les weekends	Every weekend
Une/ deux fois	
par semaine	Once/twice a week
Ne...jamais	never
Ne...plus	no more/no longer

### Connectives

Mais	But
Cependant	However
Aussi	Also
Puis	Then
Plus tard	Later
D'abord	Firstly
Ensuite	Next
Après	Afterwards

### Intensifiers

Vraiment	Really
Très	Very
Assez	Quite
Un peu	A little bit
trop	too

### Time phrases When?

Le weekend	At the weekend
Le weekend dernier	Last weekend
Le matin	In the morning
L'après-midi	In the afternoon
Le soir	In the evening
<u>Samedi</u> dernier	Last <u>Saturday</u>

### La forme

Je mange beaucoup de fruits /des légumes.  
 Je ne fais pas assez d'exercice.  
 Je bois beaucoup d'eau.  
 Je vais à la gym.  
 Je fume.  
 bon pour la santé  
 mauvais pour la santé

### Fitness

I eat a lot of fruit/vegetables  
 I don't do enough exercise.  
 I drink lots of water.  
 I go to the gym.  
 I smoke.  
 good for your health  
 bad for your health

### Adjectives

ennuyeux	Boring
drôle	Funny
rasant	Boring
barbant	Boring
passionnant	Exciting
amusant	Fun/funny
égoïste	selfish
mignon	cute
jaloux	jealous
fidèle	loyal
têtu	stubborn
riche	rich
content	happy

## Year 9 French HIGHER Knowledge Organiser

### HT 6 – End of Year Revision

Past (Perfect)	Past (imperfect)	Present	Future (futur proche)	Future (futur simple)
J'ai joué I played	Je jouais I was playing	Je joue I play	Je vais jouer I'm going to play	Je jouerai I will play
J'ai mangé I ate	/used to play	Je mange I eat	Je vais manger I'm going to eat	Je mangerai I will eat
J'ai nagé I swam	Je mangeais I was eating/	Je nage I swim	Je vais nager I'm going to swim	Je nagerai I will swim
J'ai regardé I watched	used to eat	Je regarde I watch	Je vais regarder I'm going to watch	Je regarderai I will watch
J'ai visité I visited	Je nageais I was swimming/	Je visite I visit	Je vais visiter I'm going to visit	Je visiterai I will visit
J'ai bu I drank	used to swim	Je bois I drink	Je vais boire I'm going to drink	Je boirai I will drink
J'ai fait I did	Je regardais I was watching/	Je fais I do	Je vais faire I'm going to do	Je ferai I will do
Je suis allé(e) I went	used to watch	Je vais I go	Je vais aller I'm going to go	J'irai I will go
J'ai eu I had	Je visitais I was visiting/	J'ai I have	Je vais avoir I'm going to have	J'aurai I will have
<b>C'était It was</b>	used to visit	Je suis I am	Je vais être I'm going to be	Je serai I will be
	Je buvais I was drinking/	<b>C'est It is</b>	<b>Ce sera It will be</b>	
	used to drink			

#### Frequency words/How often

Souvent	Often
Quelquefois	Sometimes
Parfois	Sometimes
Normalement	Normally
De temps en temps	From time to time
Tout le temps	All the time
Tous les weekends	Every weekend
Une/ deux fois par semaine	Once/twice a week
Ne...jamais	never
Ne...plus	no more/no longer

Je faisais	I was doing/ used to do
J'allais	I was going/ used to go
J'avais	I had/used to have
J'étais	I was/used to be

#### Adjectives

ennuyeux	Boring
drôle	Funny
rasant	Boring
barbant	Boring
passionnant	Exciting
amusant	Fun/funny
égoïste	selfish
mignon	cute
jaloux	jealous
fidèle	loyal
têtu	stubborn
riche	rich
content	happy

Après avoir + <b>past participle</b>	After having...
J'ai l'intention de + <b>infinitive</b>	I intend...
Il faut/On doit + <b>infinitive</b>	You must...

#### Giving an opinion

J'apprécie	I appreciate
Ça me fait...	It makes me...
...rire	...laugh
...pleurer	...cry
...peur	...scared
Je pense que	I think that
À mon avis	In my opinion
Je préfère	I prefer
Je <b>les</b> aime	I like <b>them</b>
Je <b>l'</b> aime	I like <b>it/him/her</b>
J'aime bien	I really like
J'aime mieux...	I like ... better
J'aime beaucoup	I really like
Je me passionne pour...	I'm passionate about...
Je m'intéresse à la/au/aux...	I'm interested in...
Ce que j'aime le plus, c'est...	What I like best is...
Je ne supporte pas	I can't stand

Les loisirs	Leisure
Les comédies	Comedies
Les séries policières	Police series
Les feuilletons	Soaps
Les émissions musicales	Music programmes
Les émissions de sport	Sports programmes
Les émissions de science-fiction	Science-fiction programmes
Les émissions de télé réalité	Reality TV shows
Les jeux télévisés	Game shows
Les dessins animés	Cartoons
faire du VTT	to do mountain biking
faire de l'athlétisme	to do athletics
faire des randonnées	to go hiking
s'entraîner	to train
lire	to read

#### Connectives

car	because	où	where
comme	as, since	pourtant	however
de plus	what's more	y compris	including
donc	therefore		
finalement	finally		



**Was gibt es auf dem Foto ?**

**What is in the photo ?**

**Es gibt**

**There is/ are**

einen Mann  
 einen Junge  
 eine Frau  
 eine Familie  
 ein Mädchen  
 zwei **Männer**  
 zwei **Frauen**  
 zwei Jungen  
 viele Leute  
 niemand  
 Sie sprechen  
 Er/ sie spricht  
 Sie spielen  
 Er/ Sie spielt  
 Sie benutzen  
 Er/ sie benutzt  
 Sie essen  
 Er/ sie isst  
 Sie sehen  
 Er/ sie sieht  
 Sie sind  
 Er/sie ist  
 zu Hause  
 in der Stadt  
 in der Schule  
 im Geschäft  
 glücklich  
 unglücklich  
 Es ist ihnen langweilig  
 Es ist ihm/ ihr langweilig

a man  
 a boy  
 a woman  
 a family  
 a girl  
 two men  
 two women  
 two boys  
 lots of people  
 no one  
 They are talking  
 He/ She is talking  
 They are playing  
 He/ She is playing  
 They are using  
 He/ she is using  
 They are eating  
 He/ she is eating  
 They are watching  
 He/ she watches  
 They are  
 He/ she is  
 at home  
 in town  
 at school  
 in a shop  
 happy  
 unhappy  
 They are bored  
 He/ She is bored

**PEOPLE**

**ACTION**

**LOCATION**

**MOOD**

**Role-play vocabulary**

Wie bitte ?	Pardon ?
Gibt es ?	Is there/ are there ?
Hast du ?	Have you (got) ?
Haben Sie ?	Have you (got) (polite) ?
Wo ist ?	Where is ?
Wie komme ich zum/ zur .. ?	How do I get to ?
Was kostet das ?	How much is that ?
Magst du ?	Do you like ?
Wann beginnt.. ?	When does ... begin ?
Wann endet... ?	When does... end ?
Ich möchte..	I would like...
...ins Kino gehen	to go to the cinema
zwei Karten	two tickets
für zwei Personen	for two people
einen Tisch	a table
neben dem Fenster	next to the window
die Speisekarte	menu
eine Ermäßigung	a reduction
...nach Berlin fahren	to go to Berlin
hin und zurück	a return
ein Doppelzimmer	a double room
für zwei Nächte	for two nights
mit einem Blick	with a view
mit Balkon	with a balcony
Frühstück	breakfast
Halbpension	halfboard

**Question words**

Was ?	What ?
Wo ?	Where ?
Wie ?	How ?
Wann ?	When ?
Warum ?	Why ?
Was für ?	What sort ?
Wer ?	Who ?
Mit wem ?	Who with ?
Wie so ?	Why ?

**Pronunciation**

<b>Letter (s)</b>	<b>Sound</b>
ie	ee
w	v
v	f
e	uh
j	yuh
sch	shh
sp	shp
st	sht
z	ts
ei	eye
au	ow
eu	oy
ö	er
ü	oo
ä	e

There are **helpful videos** on how to do a photo card and role-play on the **Wellington MFL YouTube Channel**.

There are **useful videos** on how to pronounce these letters on the **Wellington MFL YouTube Channel**.

INFINITIVE	PAST	IMPERFECT	PRESENT	FUTURE
SPIELEN = to play	Ich habe...gespielt	Ich spielte	Ich spiele	Ich werde....spielen
MACHEN = to do	Ich habe...gemacht	Ich machte	Ich mache	Ich werde...machen
WOHNEN = to live	Ich habe...gewohnt	Ich wohnte	Ich wohne	Ich werde..wohnen
HÖREN = to listen	Ich habe...gehört	Ich hörte	Ich höre	Ich werde...hören
GUCKEN= to look at	Ich habe..geguckt	Ich guckte	Ich gucke	Ich werde...gucken
ARBEITEN = to work	Ich habe...gearbeitet	Ich arbeitete	Ich arbeite	Ich werde...arbeiten
Zeit VERBRINGEN mit = to spend time with..	Ich habe Zeit mit... verbracht	Ich verbrachte Zeit mit ...	Ich verbringe Zeit mit	Ich werde Zeit mit...verbringen
LESEN = to read	Ich habe...gelesen	Ich las	Ich lese	Ich werde...lesen
SEHEN = to watch	Ich habe...gesehen	Ich sah	Ich sehe	Ich werde...sehen
ESSEN = to eat	Ich habe..gegessen	Ich aß	Ich esse	Ich werde...essen
TRINKEN = to drink	Ich habe...getrunken	Ich trank	Ich trinke	Ich werde..trinken
FINDEN = to find	Ich habe es...gefunden	Ich fand es ...	Ich finde es	Ich werde es...finden
HELFFEN = to help	Ich habe...geholfen	Ich half	Ich helfe	Ich werde...helfen
Sport TREIBEN = to do sport	Ich habe Sport getrieben	Ich trieb	Ich treibe Sport	Ich werde Sport treiben
GEHEN = to go	Ich <b>bin</b> ...gegangen	Ich ging	Ich gehe	Ich werde... gehen
AUFWACHEN = to wake up	Ich <b>bin</b> ...aufgewacht	Ich wachte...auf	Ich wache...auf	Ich werde...aufwachen
AUFSTEHEN = to get up	Ich bin ...aufgestanden	Ich stand..auf	Ich stehe..auf	Ich werde...aufstehen
SEIN = to be	Ich bin...gewesen	Ich war	Ich bin	Ich werde...sein
HABEN = to have	Ich habe...gehabt	Ich hatte	Ich habe	Ich werde ...haben
GEBEN = to give (there were/is/will be)	Es hat...gegeben	Es gab	Es gibt	Es wird... geben

## Year 9 German Knowledge Organiser: Half Term 6

### Opinions

Ich mag mein Haus.	I like my house.
Ich mag nicht meine Stadt.	I do not like my town.
Ich liebe Schokolade.	I love chocolate.
Ich hasse Federball.	I hate badminton.
Timperley gefällt mir.	I like Timperley.
Ich interessiere mich für Mode.	I am interested in fashion.
Mein Handy ist mir wichtig.	My mobile is important to me.
Musik macht mich glücklich.	Music makes me happy.
Sport ist nicht mein Ding.	Sport is not my thing,
Ich finde das praktisch	I find that practical.
Ich denke, dass	I think that
Ich glaube, dass	I believe that
Ein Vorteil ist, dass	An advantage is that
Ein Nachteil ist, dass	A disadvantage is that
Meine Eltern denken, dass	My parents think that
Meine Mutter glaubt, dass	My mother believes that

### Qualifiers

<i>sehr</i>	very
<i>wirklich</i>	quite
<i>ganz</i>	quite
<i>echt</i>	really
<i>zu</i>	too

### More interesting adjectives

<i>blöd</i>	rubbish
<i>unterhaltsam</i>	entertaining
<i>lässig</i>	relaxed
<i>idyllisch</i>	idyllic
<i>gemütlich</i>	cosy

### Past Time Expressions:

<i>Gestern</i>	yesterday
<i>Letztes Wochenende</i>	last weekend
<i>Letztes Jahr</i>	last year
<i>Letzten Sommer</i>	last Summer
<i>Früher</i>	before
<i>Neulich</i>	recently
<i>Damals</i>	Back then

Damals **hatte** ich kein Handy.  
Back then I had no phone.

### **40 WORD STRATEGY**

**10 WORDS** for each bullet point.  
**Present tense.**

### Future Time Expressions:

<i>Morgen</i>	tomorrow
<i>Nächstes Wochenende</i>	next weekend
<i>Nächstes Jahr</i>	next year
<i>Nächsten Sommer</i>	next Summer
<i>In der Zukunft</i>	in the future

In der Zukunft **werde** ich in Berlin **wohnen**  
In the future I will live in Berlin.

### **90 WORD STRATEGY**

**20 WORDS** for each bullet point.  
**3 time frames AND 2 opinions.**

### Opinion Adverbs

Rule: ADD to the VERB.

Ich trage **gern** Jeans.  
*I like to wear jeans.*

Ich trage **lieber** einen Rock.  
*I prefer to wear a skirt.*

Ich trage am liebsten Ohrringe.  
*I like to wear earrings most/best.*

### Sequencing words:

<i>Jeden Tag</i>	everyday
<i>Zuerst</i>	first of all
<i>Dann</i>	then, next
<i>Danach</i>	afterwards
<i>Später</i>	later
<i>Zum Schluss</i>	finally
<i>Endlich</i>	finally

### Adverbs of frequency

Rule: ADD to the VERB.

Ich trage **nie** Jeans.  
Ich trage **immer** Hose.

oft	<i>often</i>
immer	<i>always</i>
ab un zu	<i>now &amp; again</i>
nie	<i>never</i>

### Question words

Was ?	What ?
Wo ?	Where ?
Wie ?	How ?
Wann ?	When ?
Warum ?	Why ?
Was für ?	What sort ?
Wer ?	Who ?
Mit wem ?	Who with ?
Wie so ?	Why ?

### Use a variety of connectives:

#### Locking: verb locked into the normal position.

und	and
denn	because
oder	or
aber	aber

**1      2**

Ich benutze das Internet **und** ich chatte mit Freunden.

#### Sticking: the verb sticks to it.

jedoch however

**verb**

Ich mag Wasser, **jedoch** trinke ich lieber Cola.

#### Kicking: kicks the verb to the end of the sentence.

weil	because
da	because/ as
dass	that
obwohl	although



Ich lade Musik herunter, **da** es praktisch **ist**.

INFINITIVE	PAST	IMPERFECT	PRESENT	FUTURE
SPIELEN = to play	Ich habe...gespielt	Ich spielte	Ich spiele	Ich werde....spielen
MACHEN = to do	Ich habe...gemacht	Ich machte	Ich mache	Ich werde...machen
WOHNEN = to live	Ich habe...gewohnt	Ich wohnte	Ich wohne	Ich werde..wohnen
HÖREN = to listen	Ich habe...gehört	Ich hörte	Ich höre	Ich werde...hören
GUCKEN= to look at	Ich habe..geguckt	Ich guckte	Ich gucke	Ich werde...gucken
ARBEITEN = to work	Ich habe...gearbeitet	Ich arbeitete	Ich arbeite	Ich werde...arbeiten
Zeit VERBRINGEN mit = to spend time with..	Ich habe Zeit mit... verbracht	Ich verbrachte Zeit mit ...	Ich verbringe Zeit mit	Ich werde Zeit mit...verbringen
LESEN = to read	Ich habe...gelesen	Ich las	Ich lese	Ich werde...lesen
SEHEN = to watch	Ich habe...gesehen	Ich sah	Ich sehe	Ich werde...sehen
ESSEN = to eat	Ich habe..gegessen	Ich aß	Ich esse	Ich werde...essen
TRINKEN = to drink	Ich habe...getrunken	Ich trank	Ich trinke	Ich werde..trinken
FINDEN = to find	Ich habe es...gefunden	Ich fand es ...	Ich finde es	Ich werde es...finden
HELFFEN = to help	Ich habe...geholfen	Ich half	Ich helfe	Ich werde...helfen
Sport TREIBEN = to do sport	Ich habe Sport getrieben	Ich trieb	Ich treibe Sport	Ich werde Sport treiben
GEHEN = to go	Ich <b>bin</b> ...gegangen	Ich ging	Ich gehe	Ich werde... gehen
AUFWACHEN = to wake up	Ich <b>bin</b> ...aufgewacht	Ich wachte...auf	Ich wache...auf	Ich werde...aufwachen
AUFSTEHEN = to get up	Ich bin ...aufgestanden	Ich stand..auf	Ich stehe..auf	Ich werde...aufstehen
SEIN = to be	Ich bin...gewesen	Ich war	Ich bin	Ich werde...sein
HABEN = to have	Ich habe...gehabt	Ich hatte	Ich habe	Ich werde ...haben
GEBEN = to give (there were/is/will be)	Es hat...gegeben	Es gab	Es gibt	Es wird... geben

## KEYWORDS

### Performing Four Chord Pop Songs - Keyboard

Diagram 1: G (Finger 1 on G, 2 on A, 3 on B) and I (Finger 1 on C, 2 on D, 3 on E).  
 Diagram 2: D (Finger 1 on D, 2 on E, 3 on F) and V (Finger 1 on G, 2 on A, 3 on B).  
 Diagram 3: Em (Finger 2 on D, 3 on E, 4 on F) and vi (Finger 2 on C, 3 on D, 4 on E).  
 Diagram 4: C (Finger 1 on C, 2 on E, 3 on G) and IV (Finger 1 on F, 2 on A, 3 on C).

### Performing Four Chord Pop Songs – Drum kit

If you don't have access to a drum kit, use the drum kit sounds on the keyboard. Look for the symbols above the notes on the keyboard.

Simple	1	&	2	&	3	&	4	&	Basic	1	&	2	&	3	&	4	&
Hi-Hat									●			●		●		●	
Snare			●				●				●					●	
Bass	●				●				●					●			

Standard	1	&	2	&	3	&	4	&	Complex	1	&	2	&	3	&	4	&
Hi-Hat	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Snare			●				●				●					●	
Bass	●				●				●			●	●				

### Performing Four Chord Pop Songs - Ukulele

Diagram 1: G (Finger 2 on G, 3 on A, 4 on B) and I (Finger 1 on C, 2 on D, 3 on E).  
 Diagram 2: D (Finger 1 on D, 2 on E, 3 on F) and V (Finger 1 on G, 2 on A, 3 on B).  
 Diagram 3: Em (Finger 2 on D, 3 on E, 4 on F) and vi (Finger 2 on C, 3 on D, 4 on E).  
 Diagram 4: C (Finger 1 on C, 2 on E, 3 on G) and IV (Finger 1 on F, 2 on A, 3 on C).



### Performing Four Chord Pop Songs - Guitar

Diagram 1: G (Finger 2 on G, 3 on B, 4 on D).  
 Diagram 2: D (Finger 1 on D, 2 on F, 3 on A).  
 Diagram 3: Em (Finger 2 on D, 3 on E, 4 on F).  
 Diagram 4: C (Finger 1 on C, 2 on E, 3 on G).



This is an example of the C chord. Figure the rest out in your group.

<b>Rap</b>	Stands for 'rhythm and poetry'. Speaking lyrics to a beat.
<b>Ensemble</b>	A musical group, e.g. a band/choir/orchestra.
<b>Rock</b>	A genre of popular music that evolved from rock and roll and pop music during the 1960s.
<b>Lyrics</b>	The words to the song.
<b>Rhyme</b>	Words with endings that sound the same, e.g. bend and friend, said and shed, day and way.
<b>Chord Progression</b>	Movement from chord to chord
<b>Compose</b>	To create your own piece of music.
<b>Chorus</b>	The catchy part of the song that is repeated after each verse. In rap songs, the chorus is usually the part that is sung.

# Unit 3: Crime and its consequences

## Year 9

### Skills

- Engage with and reflect on different ideas, opinions and beliefs to help develop personal opinion.
- Can express and explain opinions through discussion and written assessments.
- Develop empathy with the situations others may find themselves in

### Knowledge

- Enhance awareness for the reasons young people commit crime.
- Understand both short and long term effects of crime.
- Develop our knowledge about what prison life is like.  
Be able to describe the purpose of prison.  
Be aware of alternatives to prison.  
Be able to assess the impact of prison on human rights.
- Understand the youth justice system.
- Appreciate the dilemma of giving evidence.





# Y9: Unit 3 Humanism

Humanism in the UK is a growing movement that seeks to separate religion from state. Ultimately Humanists want equality and fairness for all human beings and they believe that this cannot be achieved when religion governs our laws, morals and education systems. In this unit you will consider what it actually means to be a Humanist today and how this world view has an impact on ethical decision making and philosophical enquiry. Would the world be a better place if we were all Humanist?

## Knowledge Organiser

### Religions

#### Lesson 1

##### **What does it mean to be Humanist?**

*How do we live fulfilled lives according to a Humanist?*

*What is the role of science and religion in society for a Humanist?*

#### Lesson 4

##### **P4C: should religion be banned?**

*Thinking back in history, when and where was religion banned? Was this necessary?*

*Can you consider various pieces of evidence to agree/disagree with religion being banned across the world?*

#### Lesson 7

##### **What do Humanist marriages/funerals look like?**

*Why would a Humanist say that a marriage ceremony is still important?*

*Can you describe the differences between a religious/humanist wedding/funeral?*

*'A funeral is a waste of money – after all, you're dead!' – how would a Christian, Buddhist and a Humanist respond?*

### Ethics

#### Lesson 2

##### **Is religion necessary in the 21<sup>st</sup> century? A humanist view of society.**

*What does secularisation mean?*

*Is the UK a secular society? Explain why/why not.*

*'Religion still has purpose in the 21<sup>st</sup> century' – how would a Buddhist, Christian and Humanist respond?*

#### Lesson 5

##### **Do Humanists value life? Euthanasia, abortion and animals.**

*What is the difference between being pro-life and pro-choice? Give examples to explain.*

*What are Humanist views on euthanasia, abortion and the treatment of animals?*

*What do the terms quality of life and sanctity of life mean?*

#### Lesson 8

##### **Organ donation after death – should we all do it?**

*What is the organ donor register? How does it work?*

*What is the Humanist view on organ donation?*

### Philosophy

#### Lesson 3

##### **Do we need God to be good?**

*Can you give examples of moral rules for Buddhists and Christians?*

*'Religious people only do good things because they are worried that God is watching' – do you agree or disagree? Can you explain your opinion?*

#### Lesson 6

##### **What are Humanist views on life and death?**

*How do Humanists think that we live on after death?*

*Is there any scientific evidence for life after death?*

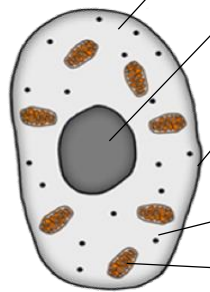
*If there is no life after death, does it make this life pointless?*

#### Lesson 9

##### **Revision for your EOY examination**

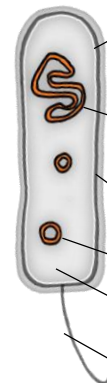
*Your end of year examination will not only include elements of Humanism but also Christianity and Buddhism. Crucially, you need to be able to compare and contrast elements of each of the movements you have studied this academic year.*

*Following these 9 lessons pupils will be assessed and feedback will be given in exercise books.*



<b>cytoplasm</b>	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
<b>nucleus</b>	<i>contains genetic material</i>	controls the activities of the cell and codes for proteins
<b>cell membrane</b>	<i>semi permeable</i>	controls the movement of substances in and out of the cell
<b>ribosome</b>	<i>site of protein synthesis</i>	mRNA is translated to an amino acid chain
<b>mitochondrion</b>	<i>site of respiration</i>	where energy is released for the cell to function

animal cell

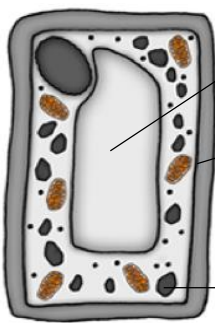


<b>cell membrane</b>	<i>site of chemical reactions in the cell</i>	gel like substance containing enzymes to catalyse the reactions
<b>bacterial DNA</b>	<i>not in nucleus floats in the cytoplasm</i>	controls the function of the cell. Can be found as chromosomal DNA and plasmid DNA (small rings).
<b>cell wall</b>	<i>NOT made of cellulose</i>	supports and strengthens the cell
<b>cytoplasm</b>	<i>semi permeable</i>	controls the movement of substances in and out of the cell
<b>flagella</b>	<i>whip like tail</i>	allows the bacterial cell to move
<b>ribosome</b>	<i>site of protein synthesis</i>	mRNA is translated to an amino acid chain

**SCIENCE BIOLOGY: B1 - Cells (Part 1)**

**Eukaryotes complex organisms**

plant cell contains all the parts of animal cells plus extras



<b>permanent vacuole</b>	<i>contains cell sap</i>	keeps cell turgid, contains sugars and salts in solution
<b>cell wall</b>	<i>made of cellulose</i>	supports and strengthens the cell
<b>chloroplast</b>	<i>site of photosynthesis</i>	contains chlorophyll, absorbs light energy

Bacterial cells are much smaller than plant and animal cells

**Prokaryotes simpler organisms**

Specialised cells

<b>egg</b>		<i>fertilised by a sperm</i>	nutrients in the cytoplasm, haploid nucleus and changes in the cell membrane after fertilisation
<b>sperm</b>		<i>fertilise an egg</i>	streamlined with a long tail acrosome containing enzymes large number of mitochondria, haploid nucleus
<b>Ciliated epithelial cell</b>		<i>push and move mucus</i>	Thin layer of moving hairs on the surface of the cells called cilia.

decreasing size and scale

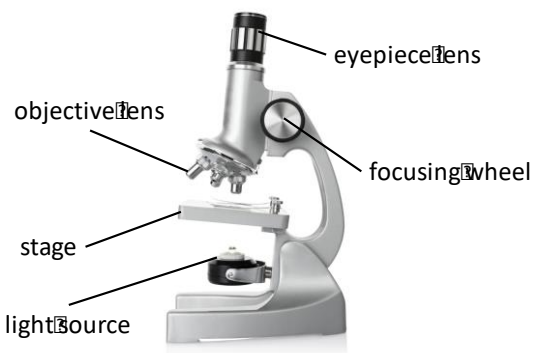
PREFIXES		
Prefix	Multiple	Standard form
<b>centi (cm)</b>	1 cm = 0.01 m	$\times 10^{-2}$
<b>milli (mm)</b>	1 mm = 0.001 m	$\times 10^{-3}$
<b>micro (<math>\mu\text{m}</math>)</b>	1 $\mu\text{m}$ = 0.000 001 m	$\times 10^{-6}$
<b>nano (nm)</b>	1nm = 0.000 000 001 m	$\times 10^{-9}$
<b>pico (pm)</b>	1pm = 0.000 000 000 001m	$\times 10^{-12}$

**Microscopy**

**magnification**  $M = \frac{\text{size of image}}{\text{real size of the object}}$

Estimates can be useful when you only have a sample of what you are counting e.g. the number of red blood cells in a blood sample

Many of the structures found in cells were not able to be seen before the development of electron microscopes e.g. ribosomes



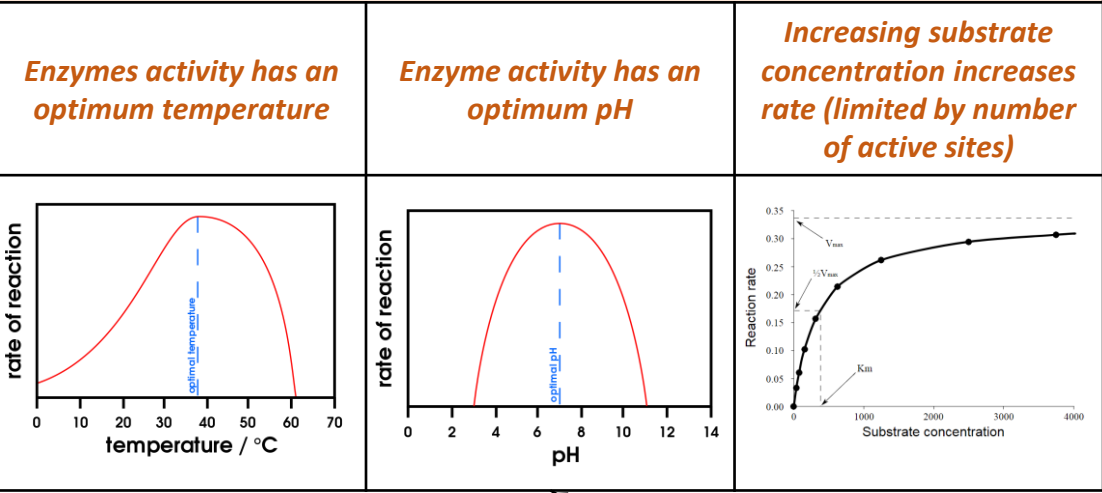
Feature	Light (optical) microscope	Electron microscope
<b>Radiation used</b>	Light rays	Electron beams
<b>Max magnification</b>	~ 1500 times	~ 2 000 000 times
<b>Resolution</b>	200nm	0.2nm
<b>Size of microscope</b>	Small and portable	Very large and not portable
<b>Cost</b>	~£100 for a school one	Several £100,000 to £1 million plus



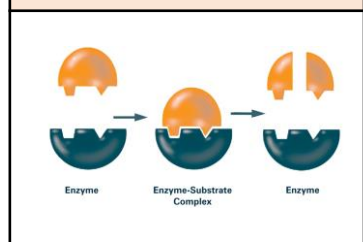
**Enzymes catalyse (increase the rate of) specific reactions in living organisms.**

The rate of a reaction can be measured by how fast reactants are used up or by how fast products are formed.

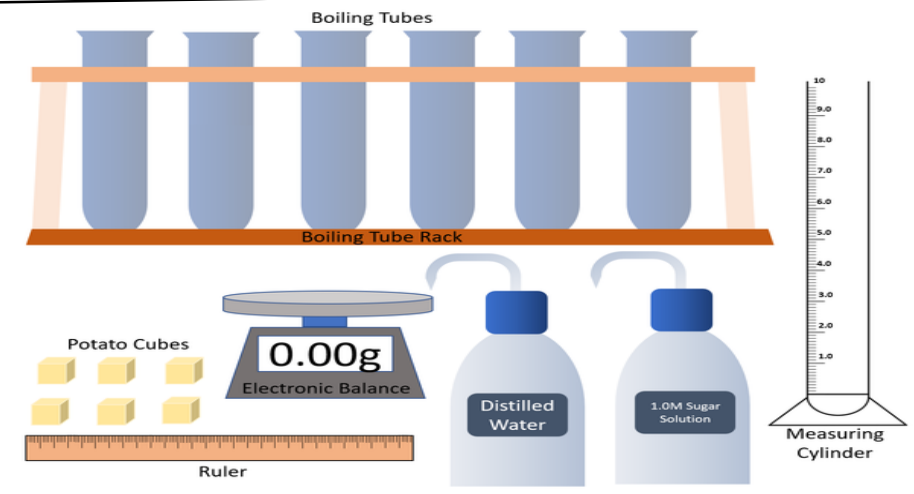
**The activity of enzymes is affected by changes in temperature, pH and substrate concentration**



**The 'lock and key theory' is a simplified model to explain enzyme action**



Enzymes catalyse specific reactions in living organisms due to the shape of their active site.



**Calculate percentage gain/loss of mass in osmosis.**

$$\% \text{ change in mass} = \frac{(\text{final mass} - \text{initial mass})}{\text{initial mass}} \times 100$$

The greater the difference in concentrations the faster the rate of diffusion.

**Digestive enzymes speed up the conversion of large insoluble molecules (food) into small soluble molecules that can be absorbed into the bloodstream.**

**Large changes in temperature or pH can stop the enzyme from working (denature).**

<i>Temperature too high</i>	<i>pH too high or too low</i>
-----------------------------	-------------------------------

Enzyme changes shape (denatures) the substrate no longer fits the active site.

**Enzymes**

**SCIENCE  
BIOLOGY: B1 -  
Cells (Part 2)**

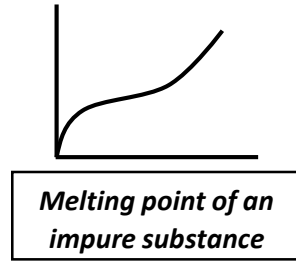
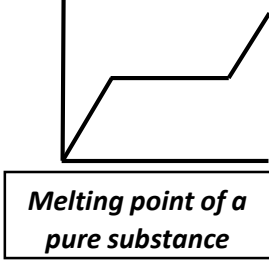
**Osmosis**

**Transport in cells**

<b>Carbohydrases (e.g. amylase)</b>		<i>Made in salivary glands, pancreas, small intestine</i>	Break down carbohydrates to simple sugar (e.g. amylase breaks down starch to glucose).
<b>Proteases</b>		<i>Made in stomach, pancreas</i>	Break down protein to amino acids.
<b>Lipases</b>		<i>Made in pancreas (works in small intestine)</i>	Break down lipids (fats) to glycerol and fatty acids.

The products of digestion are used to build new carbohydrates, lipids and proteins. Some glucose is used for respiration.

<b>Diffusion</b> <u>No</u> energy required	<i>Movement of particles in a solution or gas from a higher to a lower concentration</i>	E.g. O <sub>2</sub> and CO <sub>2</sub> in gas exchange, urea in kidneys. Factors that affect the rate are concentration, temperature and surface area.
<b>Osmosis</b> <u>No</u> energy required	<i>Movement of water from a dilute solution to a more concentrated solution</i>	E.g. Plants absorb water from the soil by osmosis through their root hair cells. Plants use water for several vital processes including photosynthesis and transporting minerals.
<b>Active transport</b> <u>ENERGY</u> required	<i>Movement of particles from a dilute solution to a more concentrated solution</i>	E.g. movement of mineral ions into roots of plants and the movement of glucose into the small intestines.



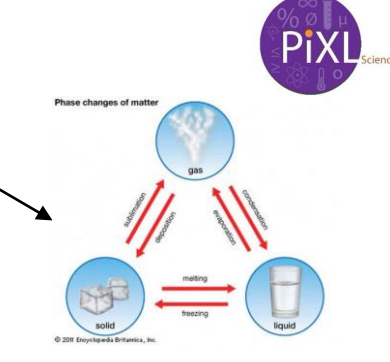
**Solid, liquid, gas**

*Melting and freezing happen at melting point, boiling and condensing happen at boiling point.*

**SOLID**   **LIQUID**   **GAS**

The amount of energy needed for a state change depends on the strength of forces between particles in the substance.

<b>s</b>	<b>solid</b>
<b>l</b>	<b>liquid</b>
<b>g</b>	<b>gas</b>



**Pure substances**

*A pure substances is a single element or compound, not mixed with any other substance.*

Pure substances melt and boil at specific temperatures. Heating graphs can be used to distinguish pure substances from impure.

**States of matter**

**Energy and movement**

*Gas particles have higher levels of energy than liquids and solids*

Gas particles move more than the other states of matter, with solids moving the least due to their tightly packed arrangement. Solid particles can only vibrate around their fixed positions.

**SCIENCE: CHEMISTRY – C2 Separating mixtures (Part 1)**

**Method of separating substances**

**Fractions**

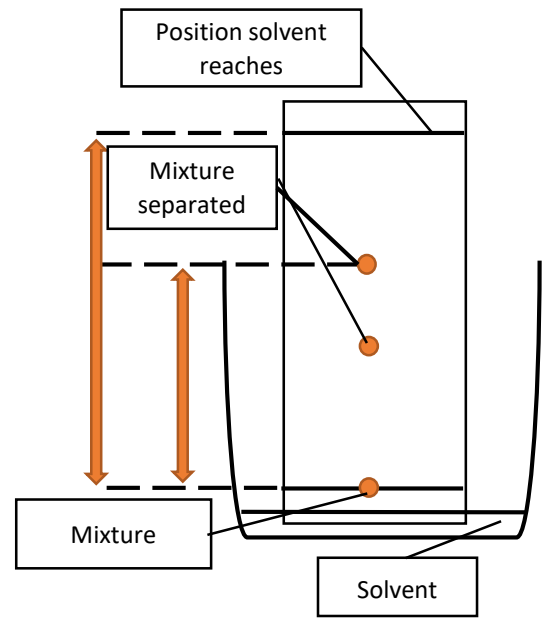
*The hydrocarbons in crude oil can be split into fractions*

Each fraction contains molecules with a similar number of carbon atoms in them. The process used to do this is called fractional distillation.

**Fractional distillation**

*Crude oil is heated and hydrocarbons boil and condense at certain temperatures*

This is due to the different lengths of hydrocarbon chains.



**Chromatography**

**Fractional distillation**

**Simple distillation**

<b>Chromatography</b>	<i>Can be used to separate mixtures and help identify substances.</i>	Involves a mobile phase (e.g. water or ethanol) and a stationary phase (e.g. chromatography paper).
<b>R<sub>f</sub> Values</b>	<i>The ratio of the distance moved by a compound to the distance moved by solvent.</i>	$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$
<b>Pure substances</b>	<i>The compounds in a mixture separate into different spots.</i>	This depends on the solvent used. A pure substance will produce a single spot in all solvents whereas an impure substance will produce multiple spots.

**Distillation**

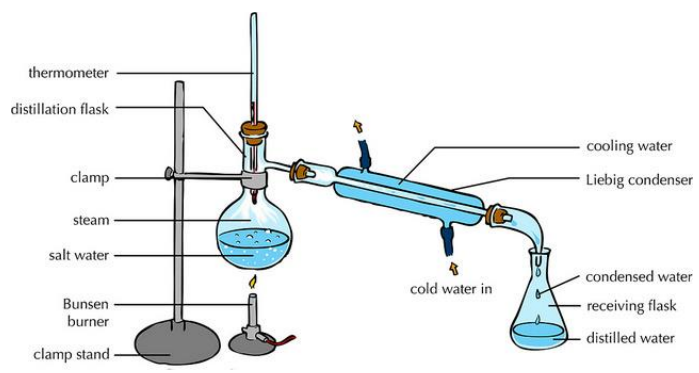
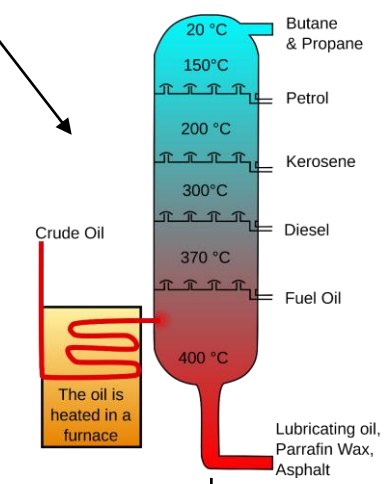
*Used to separate a mixture of liquids*

During distillation, the mixture gets heated causing one liquid at a time to evaporate and then condense in the Liebig condenser.

**Boiling points**

*Each of the liquids in the mixture will have a different boiling point*

This enables the liquids to be separated. Distillation can also be used to analyse purity of a substance as pure substances have a sharp boiling point.



**Using fractions**

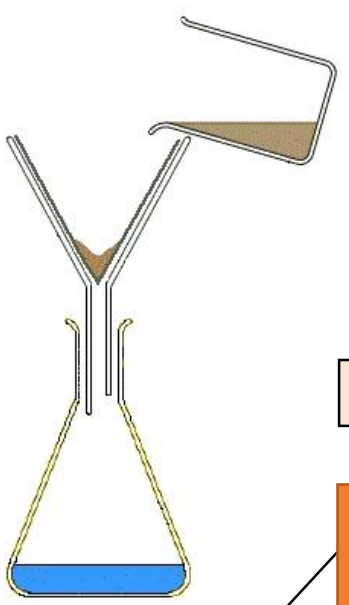
*Fractions can be processed to produce fuels and feedstock for petrochemical industry*

We depend on many of these fuels; petrol, diesel and kerosene.

Many useful materials are made by the petrochemical industry; solvents, lubricants and polymers.

*The filtrate is the liquid that moves through the filter paper and collects underneath*

The residue is the insoluble solid that collects in the filter paper.



**Filtration**

*This technique separates substances that are insoluble in a solvent from those that are soluble*

An example is sand in water; the sand will collect in the filter paper and the water will move through the it.

<b>Potable water</b>	<i>Water of an appropriate quality is essential for life</i>	Human drinking water should have low levels of dissolved salts and microbes. This is called potable water.
<b>UK water</b>	<i>Rain provides water with low levels of dissolved substances</i>	This water collects in the ground/lakes/streams. To make potable water an appropriate source is chosen, which is then passed through filter beds and then sterilised.
<b>Desalination</b>	<i>Needs to occur if fresh water is limited and salty/sea water is needed for drinking</i>	This can be achieved by distillation or by using large membranes e.g. reverse osmosis. These processes require large amounts of energy.

**Filtration**

Sterilising agents include chlorine, ozone and UV light.

**Potable water**

**Methods of separating substances**

**SCIENCE: CHEMISTRY – C2 Separating mixtures (Part 2)**

**Purifying substances**

<b>Using water</b>	<i>Water used for chemical analysis must not contain any dissolved salts</i>	Water used for this purpose must be treated in order to be suitable.
<b>Producing potable water</b>	<i>There are 4 main steps to producing potable water</i>	<ol style="list-style-type: none"> <li>1. Choosing appropriate source of fresh water</li> <li>2. Sedimentation</li> <li>3. Passing the water through filter beds</li> <li>4. Chlorination</li> </ol>

**Crystallisation**

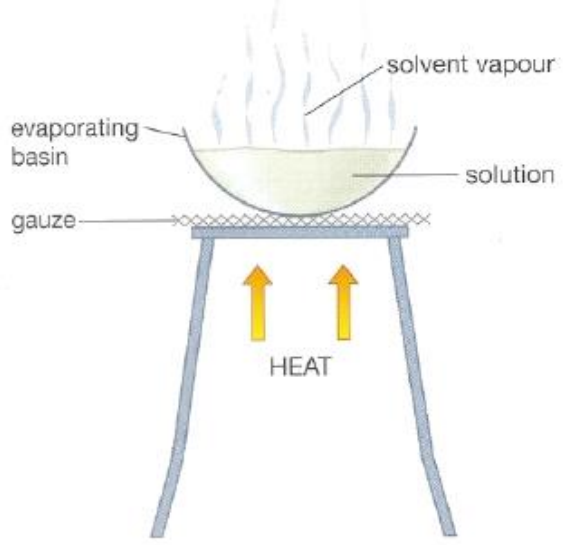
**Crystallisation**

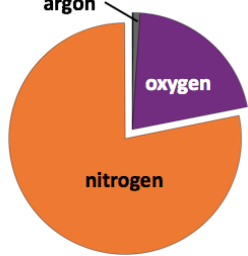
*This technique separates a soluble substance from a solvent by evaporation*

An example is the crystallisation of sodium chloride from a salt solution.

**Waste water treatment**

<b>Waste water</b>	<i>Produced from urban lifestyles and industrial processes</i>	These require treatment before used in the environment. Sewage needs the organic matter and harmful microbes removed.
<b>Sewage treatment</b>	<i>Includes many stages</i>	<ul style="list-style-type: none"> <li>- Screening and grit removal</li> <li>- Sedimentation to produce sludge and effluent (liquid waste or sewage).</li> <li>- Anaerobic digestion of sludge</li> <li>- Aerobic biological treatment of effluent.</li> </ul>





Gas	Percentage
Nitrogen	~80%
Oxygen	~20%
Argon	0.93%
Carbon dioxide	0.04%

**Proportions of gases in the atmosphere**

Algae and plants	<i>These produced the oxygen that is now in the atmosphere, through photosynthesis.</i>	carbon dioxide + water → glucose + oxygen $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
Oxygen in the atmosphere	<i>First produced by algae 2.7 billion years ago.</i>	Over the next billion years plants evolved to gradually produce more oxygen. This gradually increased to a level that enabled animals to evolve.

**How oxygen increased**

**The Earth's early atmosphere**

**Earth and atmospheric science**

**SCIENCE: CHEMISTRY – C8 Earth Science (Part 1)**

**Earth and atmospheric science**

**How carbon dioxide decreased**

Reducing carbon dioxide in the atmosphere	<i>Algae and plants</i>	These gradually reduced the carbon dioxide levels in the atmosphere by absorbing it for photosynthesis.
Formation of sedimentary rocks and fossil fuels	<i>These are made out of the remains of biological matter, formed over millions of years</i>	Remains of biological matter falls to the bottom of oceans. Over millions of years layers of sediment settled on top of them and the huge pressures turned them into coal, oil, natural gas and sedimentary rocks. The sedimentary rocks contain carbon dioxide from the biological matter.

Volcano activity 1 <sup>st</sup> Billion years	<i>Billions of years ago there was intense volcanic activity</i>	This released gases (mainly CO <sub>2</sub> ) that formed to early atmosphere and water vapour that condensed to form the oceans.
Other gases	<i>Released from volcanic eruptions</i>	Nitrogen was also released, gradually building up in the atmosphere. Small proportions of ammonia and methane also produced.
Reducing carbon dioxide in the atmosphere	<i>When the water vapour condensed, the oceans formed and the carbon dioxide dissolved into it</i>	This formed carbonate precipitates, forming sediments. This reduced the levels of carbon dioxide in the atmosphere.

**Greenhouse gases**

Carbon dioxide, water vapour and methane	<i>Examples of greenhouse gases that maintain temperatures on Earth in order to support life</i>
The greenhouse effect	<i>Radiation from the Sun enters the Earth's atmosphere and reflects off of the Earth. Some of this radiation is re-radiated back by the atmosphere (including carbon dioxide, methane and water vapour) to the Earth, warming up the global temperature.</i>

**Human activities and greenhouse gases**

Carbon dioxide	<i>Human activities that increase carbon dioxide levels include burning fossil fuels and deforestation.</i>
Methane	<i>Human activities that increase methane levels include raising livestock (for food) and using landfills (the decay of organic matter released methane).</i>
Climate change	<i>There is evidence to suggest that human activities will cause the Earth's atmospheric temperature to increase and cause climate change.</i>

The total amount of greenhouse gases emitted over the full life cycle of a product/event. This can be reduced by reducing emissions of carbon dioxide and methane.

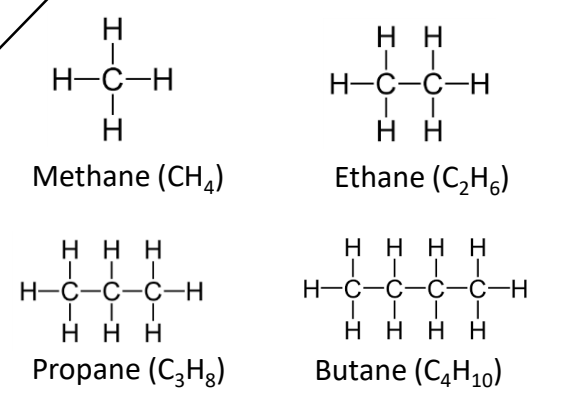
Effects of climate change
Rising sea levels
Extreme weather events such as severe storms
Change in amount and distribution of rainfall
Changes to distribution of wildlife species with some becoming extinct

Testing for oxygen	<i>Glowing splint</i>	Re-lights the splint in the presence of oxygen.
--------------------	-----------------------	---

Carbon dioxide concentration	<i>There is a correlation between atmospheric carbon dioxide levels, fossil fuel usage and global temperature change</i>	There are errors with these measurements due to the location they were taken and the historical accuracy before scientific methods became more robust.
------------------------------	--	--

**Crude oil, hydrocarbons and alkanes**

Displayed formula for first four alkanes



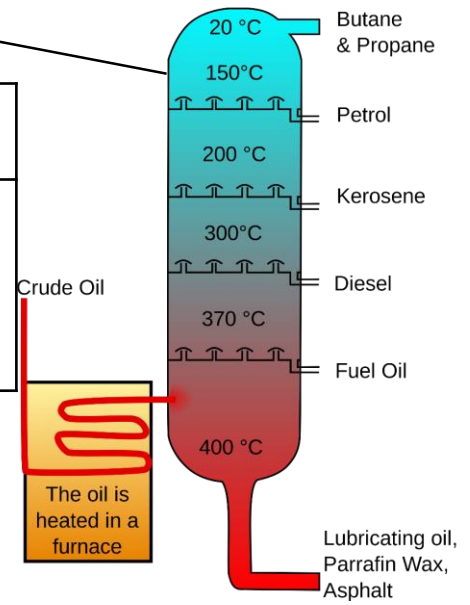
<b>Fractions</b>	<i>The hydrocarbons in crude oil can be split into fractions</i>	Each fraction contains molecules with a similar number of carbon atoms in them. The process used to do this is called fractional distillation.
<b>Using fractions</b>	<i>Fractions can be processed to produce fuels and feedstock for petrochemical industry</i>	We depend on many of these fuels; petrol, diesel and kerosene.  Many useful materials are made by the petrochemical industry; solvents, lubricants and polymers.

**Carbon compounds as fuels and feedstock**

**SCIENCE: CHEMISTRY – C8 Fuels (Part 2)**

**Fractional distillation and petrochemicals**

<b>Hydrocarbon chains</b>	<b>In oil</b>	Hydrocarbon chains in crude oil come in lots of different lengths.
	<b>Boiling points</b>	The boiling point of the chain depends on its length. During fractional distillation, they boil and separate at different temperatures due to this.



<b>Crude oil</b>	<i>A finite resource</i>	Consisting mainly of plankton that was buried in the mud, crude oil is the remains of ancient biomass.
<b>Hydrocarbons</b>	<i>These make up the majority of the compounds in crude oil</i>	These compounds are made up of hydrogen and carbon only.
<b>General formula for alkanes</b>	$C_nH_{2n+2}$	For example: $C_2H_6$ $C_6H_{14}$

<b>Cracking</b>	<i>The breaking down of long chain hydrocarbons into smaller, more useful chains</i>	The smaller chains are more useful. Cracking can be done by various methods including catalytic cracking and steam cracking.
-----------------	--	--

<b>Sulfur dioxide</b>	<i>Released from burning hydrocarbons with sulfur impurities in</i>	Sulfur dioxide dissolves in rain water to form acid rain. This damages plant life and can make water habitats acidic. Acid rain can also weather limestone and sandstone structures. It can make soil acidic and affect crop growth
<b>Oxides of nitrogen</b>	<i>Oxygen and nitrogen react from the air under high temperatures inside engines</i>	As pollutants, oxides of nitrogen cause acid rain and are also classified as greenhouse gases. Can cause respiratory problems.

<b>Hydrogen fuel</b>	<i>Hydrogen reacts with oxygen in the engine as a fuel for the vehicle</i>	<p><b>Advantages:</b></p> <ul style="list-style-type: none"> <li>- Water is the product</li> <li>- No greenhouse gases released</li> <li>- Renewable</li> </ul> <p><b>Disadvantages:</b></p> <ul style="list-style-type: none"> <li>- Expensive to buy</li> <li>- Difficult to re-fuel</li> </ul>
<b>Fossil fuels</b>	<i>Crude oil, natural gas and coal</i>	Petrol, kerosene and diesel oil are non-renewable. Methane is found in natural gas and is also non-renewable.

<b>Incomplete combustion issues</b>	<i>Carbon monoxide is an odourless, toxic gas that can kill</i>	Soot (carbon) is also produced that builds up in the atmosphere and can cause global dimming. This reduces the amount of sunlight that reaches the Earth and can alter rainfall patterns.
-------------------------------------	---	---

**Fuels**

<b>Combustion</b>	During the complete combustion of hydrocarbons, the carbon and hydrogen in the fuels are oxidised, releasing carbon dioxide, water and energy.
<b>Incomplete combustion</b>	During the incomplete combustion of hydrocarbons, there is not enough oxygen available for complete combustion. The products of the reaction is carbon monoxide, carbon and water.

Complete combustion of methane: Methane + oxygen → carbon dioxide + water + energy $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$	
<b>Boiling point (temperature at which liquid boils)</b>	<i>As the hydrocarbon chain length increases, boiling point increases.</i>
<b>Viscosity (how easily it flows)</b>	<i>As the hydrocarbon chain length increases, viscosity increases.</i>
<b>Flammability (how easily it burns)</b>	<i>As the hydrocarbon chain length increases, flammability decreases.</i>

# Science – Physics: P2 Motion

A **quantity** tells us how much of something there is.

A **scalar** quantity is a quantity with just a **magnitude** (size).

A **vector** quantity is a quantity with both a **magnitude** and a **direction**.

Examples of scalar quantities	Examples of vector quantities
<b>Speed</b> <b>Mass</b> <b>Distance</b> <b>Energy</b> <b>Time</b>	<b>Displacement (distance in a straight line)</b> <b>Force</b> <b>Weight</b> <b>Velocity</b> <b>Acceleration</b> <b>Momentum</b>

The **speed** of an object tells us how quickly an object travels a certain distance.

The **average speed** tells us the how quickly an object has completed a whole journey.

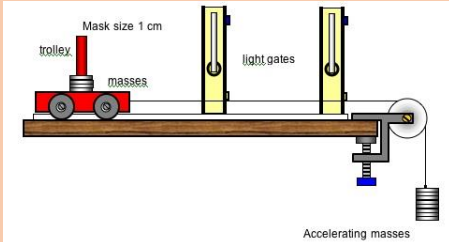
The **instantaneous speed** tells us the how quickly an object has travelled **at a specific point** in the journey.

Speed is calculated using the following formula:

$$\text{speed (m/s)} = \frac{\text{distance travelled (m)}}{\text{time taken (s)}}$$

Some typical speeds include:

<b>Airliners – 250m/s</b>	<b>Ferry – 18m/s</b>	
<b>Speed limit in town centres – 10.5m/s</b>	<b>High speed trains – 90m/s</b>	
<b>Commuter trains – 55m/s</b>	<b>Cycling – 6m/s</b>	<b>Sound – 330m/s</b>
<b>Motorway speed limit – 31m/s</b>	<b>Stong wind – 15m/s</b>	<b>Walking – 1.4m/s</b>



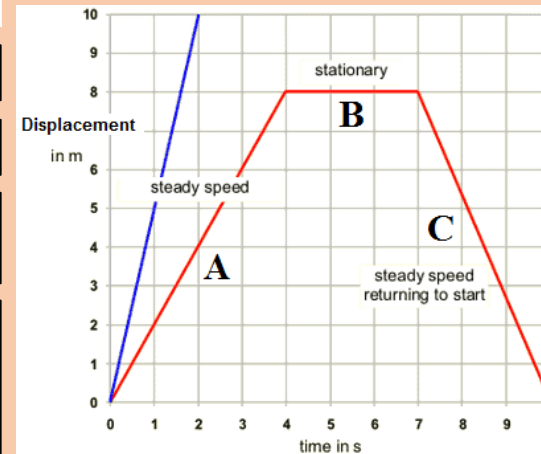
**Light gates** can be used in a lab to measure the time taken for an object to travel.

Light gates are **more accurate** than using a stopwatch as a computer records the time and isn't affected by **reaction times**.

**Light gates** are used in the following way:

- the object passes through the first light gate and starts the timer
- when it passes through the second light gate, the timer stops
- the computer works out the difference between the two times from the light gates

**Distance/time graphs** show us how objects move throughout a journey.



**Horizontal lines** mean the object is **stationary (not moving)**.

**Straight, sloping lines** mean the object is travelling at a **constant speed**.

The steeper the sloping line, **the faster the object is travelling**.

We can calculate the speed of the object by working out the **gradient** of the line.

*Worked example:*

In the graph what is the speed of the red object at point A?

*Step 1: Find the change in distance on the graph = 8m*

*Step 2: Find the change in time on the graph = 4s*

*Step 3: Carry out the speed calculation =  $8 \div 4 = 2\text{m/s}$*

# Science Physics – P1 Maths in Science

In Science, all scientists use **SI units** to measure certain quantities.

Quantity	SI unit	Abbreviation
Distance	metre	m
Mass	gram	g
Time	second	s
Current	ampere	A
Temperature	kelvin	K
Concentration	mole	mol
Frequency	hertz	Hz
Force	newton	N
Energy	joule	J
Power	watt	W
Pressure	pascal	Pa
Electric charge	coulomb	C
Potential difference	volt	V
Electric resistance	ohm	$\Omega$
Magnetic flux density	tesla	T

We use multiples and sub-multiples of SI units if quantities are very large or very small.

