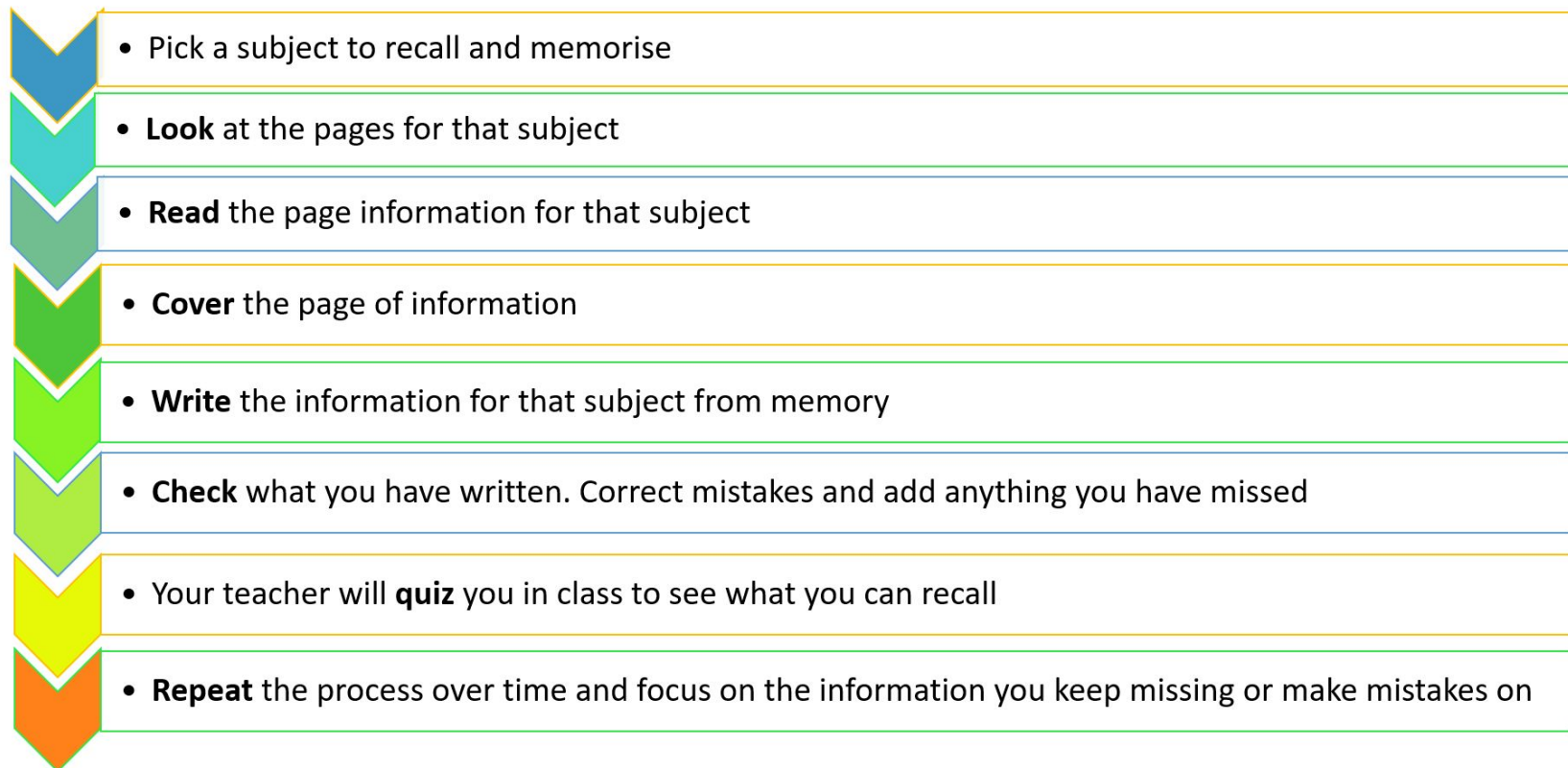


Year 9 Knowledge Organiser

Term 1

This booklet contains some of the key content we want the students to learn this term. Knowledge Organisers are placed in the relevant Google Classroom.

How students and parents can use a Knowledge Organiser to maximise learning:

- 
- Pick a subject to recall and memorise
 - **Look** at the pages for that subject
 - **Read** the page information for that subject
 - **Cover** the page of information
 - **Write** the information for that subject from memory
 - **Check** what you have written. Correct mistakes and add anything you have missed
 - Your teacher will **quiz** you in class to see what you can recall
 - **Repeat** the process over time and focus on the information you keep missing or make mistakes on

Contents

Art	Slides 3-5	Maths	Slides 20-33
Computing	Slides 6-7	Science	Slides 34-36
Design Technology	Slides 8-10	Spanish	Slides 37-38
Drama	Slide 11		
English	Slides 12-13		
Food Technology	Slides 14-16		
Geography	Slides 17-18		
History	Slide 19		

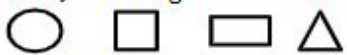
Year 9 – Natural Forms

Assessment Objectives:

- A01 – Developing ideas through research
- A02 – Using resources, experimenting with different media and ideas
- A03 – Recording ideas (photos & drawings)
- A04 – Personal response

TONAL PENCIL DRAWING: A step by step guide:

Begin by lightly mapping out accurate shapes of the objects you are drawing or use a grid method. Artists often break complex objects down into basic shapes such as circles, squares, rectangles and triangles.



Then begin shading. Start at the darker areas and slowly shade towards the lighter parts. Build up layers of pencil slowly- try not to start too dark!

Pencil pressure: The harder you push down the darker your shading will be. Gently press down for lighter shades.

Remember: DRAW IT LIGHT TILL YOU GET IT RIGHT!



Tonal Ladder

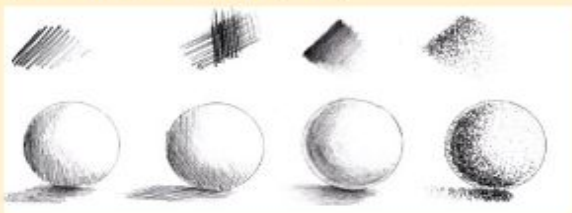
All tonal shades from dark to light should be present in your drawing.



Making objects look 3D:

To create a 3D effect you need to add shading to your outline or 2D drawings. You should add a range of tones, areas of highlight (where light is reflected) and shade (darker areas where the light does not reach). To enhance your drawing you should also add shadows if they appear around your objects.

Shading techniques



Hatching Cross Hatching Blending Pointillism

Overview of Topic

In this project you will investigate the theme of Natural Forms. Working from primary and secondary sources you will learn how to respond to a theme using a variety of materials. You will explore creating work using pencil, fine liner, watercolour and acrylic paints. You will then develop skills in printmaking working on monoprints and relief printing. Finally you will learn key skills for GCSE presentation in research and responding to an artists work relevant to the theme.

FORMAL ELEMENTS OF ART

Colour	What you see when light is reflected from a surface. Red, Yellow and Blue are primary colours and can mix to make other colours.
Line	A mark which can be long Short, wiggly, curvy, straight etc...
Tone	How light or dark something is i.e. shading or colour
Pattern	A symbol or shape that is repeated.
Shape	A 2D area which is enclosed by a line i.e. a triangle.
Texture	How something feels or looks like it feels for example rough, smooth.
Form	Something which has 3 dimensions such as a cube, sphere or sculpture.

Directional shading:

When shading your object it's important to shade in the direction of the form. For example when shading a circle into a sphere you must use curved lines to follow the shape of your object, not straight lines.



Painting

Watercolour

A step by step guide:

Watercolour paints can be solid in tins or wet in tubes.
In school we have solid tins.
You have to add water to these to create your paint. The more water you use the lighter and thinner the paint will be. The less water the stronger the colour will become.



Techniques:

You can also use watercolours with other materials for example as a **resist** with oil or wax crayons. **Salt** absorbs the water and creates a sparkly textured effect. You can also use **sponges** or **clingfilm** to create texture.



OIL PASTEL RESIST

SALT

PLASTIC WRAP



Techniques:

There are many techniques for using watercolour. You can use these techniques by themselves to create a piece or you can use multiple techniques on the same piece!
Some examples of techniques such as wet on wet and dry brush are below.



Watercolour Video Tutorials:

Classic techniques Part 1:

<https://www.youtube.com/watch?v=338aXj4Bqgs>

Classic techniques Part 2:

<https://www.youtube.com/watch?v=JbQfyU0Bv0c>

Experimental techniques:

https://www.youtube.com/watch?v=czbxop_pC18

Underpainting:

<https://www.youtube.com/watch?v=Zy1KcEJ2YkA>

Acrylic



Techniques:

There are many techniques for using watercolour. You can use these techniques by themselves to create a piece or you can use multiple techniques on the same piece!
Some examples of techniques such as wet on wet and dry brush are below.



Keywords

Technique	How you apply your material to your work.
Tone	How light or dark your colour is to create the illusion of 3 dimensional shape.
Composition	The layout of your work.

Tutorials:

Basic Techniques:

<https://www.youtube.com/watch?v=cDzcoyeaRKI>

Underpainting:

<https://www.youtube.com/watch?v=jISDMmC7CI4>

Printmaking

Mono printing



Hatching Cross Hatching Blending Pointillism



There are many ways to create a print by transferring ink to paper. Here are two ways!

BEFORE YOU GET INK OUT- Get your station READY!

A step by step guide:

Monoprinting:

Wear an apron- Ink is VERY messy!

- Use masking tape to attach a photograph or drawing to your paper. Make sure you have a pen or pencil.
- Roll ink **evenly** onto the table or plastic sheet.
- Blot excess away with scrap paper or newspaper.
- Carefully lay down your work with the blank paper face down.
- QUICKLY draw over the drawing or photograph.

Techniques: Press harder for darker marks and lighter for lighter marks.
Add **marks** to add **texture**: you can use dots, lines, hatching, cross hatching and any marks you can think of!
If your lines are not coming out- your ink has dried. You will need to wash you table and start again.

Video Tutorials:

How to Monoprint: https://www.youtube.com/watch?v=q12_7tec0zk
Poly Print- Basic one colour: <https://www.youtube.com/watch?v=jEFhzy1TgR4>
Poly Print- Multiple layers (Relief technique): <https://www.youtube.com/watch?v=BESZ8XUpM0Y>

Relief printing



A step by step guide:

Poly Block printing:

Wear an apron- Ink is VERY messy!

- Draw your outline very lightly in marker pen or felt pen.
- Draw over the line with a sharp pen or pencil to create a groove in the poly block.
- Roll ink over your block (If creating a relief this colour will be your background/ base colour)
- Carefully lay your poly block on your paper.
- Gently rub your palm across the back of your block pushing hard to transfer all the ink.
- To create a new layer wash your poly block (GENTLY!) draw a new layer removing more of the surface and reprint using another colour.



Key Characteristics:

No two prints are ever the same. Depending on how hard you push or how go over a line at a different angle or add a little more or less ink for a colour.

- **NO TWO PRINTS ARE EVER THE SAME!**
- The grainy quality of the image
- Mark Making: Using dots, lines and marks which create texture
- Block colours create a graphic style in lino and Poly Block prints.

Binary

- Binary is a number system made up of 1s and 0s
- There are only two possibilities, so this is a base two number system
- Computers use binary because the CPU contains transistors, which are either on or off

Hexadecimal

- Hexadecimal is a number system using 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
- There are 16 possibilities, so this is a base sixteen number system
- Binary strings are long and difficult to work with. Hex is shorter
- Hex is easily converted to binary as there is 1 hex digit per nibble.
- Hex is less prone to error

Converting Binary to Hex

8	4	2	1	8	4	2	1
0	1	1	0	1	1	0	1
$4 + 2 = 6$				$8 + 4 + 1 = 13$			
6				D			

Converting Between Denary and Binary

128	64	32	16	8	4	2	1
1	0	0	0	1	0	1	1

Converting Denary to Hexadecimal

$62 \div 16 = 3 \text{ R } 14$
 $3 \div 16 = 0 \text{ R } 3$
 3 14
 3 E

Units of Data Storage

- Bit
- Nibble - 4 bits
- Byte - 8 bits
- Kilobyte (KB) - 1,000 bytes
- Megabyte (MB) - 1,000 KB
- Gigabyte (GB) - 1,000 MB
- Terabyte (TB) - 1,000 GB
- Petabyte (PB) - 1,000 TB

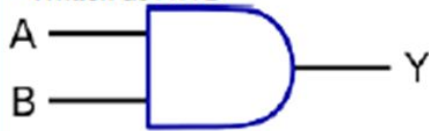
Truth Tables

- Used to show the output of logic gates or logic circuits.
- To create a truth table:
 - Calculate how many rows are needed (2^{number of inputs})
 - So 4 inputs would need 24 or 16 rows
 - List the values for each input
 - Work through the diagram to complete the output for each possible input

Number Systems and Logic

The AND Gate

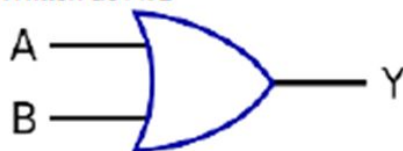
- Will output 1 if both A and B are 1.
- Will output 0 if either A or B is 0.
- Written as $A \wedge B$



A	B	$A \wedge B$
0	0	0
0	1	0
1	0	0
1	1	1

The OR Gate

- Will output 1 if either A or B are 1
- Will output 0 if both A and B are 0
- Written as $A \vee B$



A	B	$A \vee B$
0	0	0
0	1	1
1	0	1
1	1	1

The NOT Gate


- Has a single input
- Inverts the input (1 becomes 0 and 0 becomes 1)
- Written as NOT A



A	NOT A
0	1
1	0

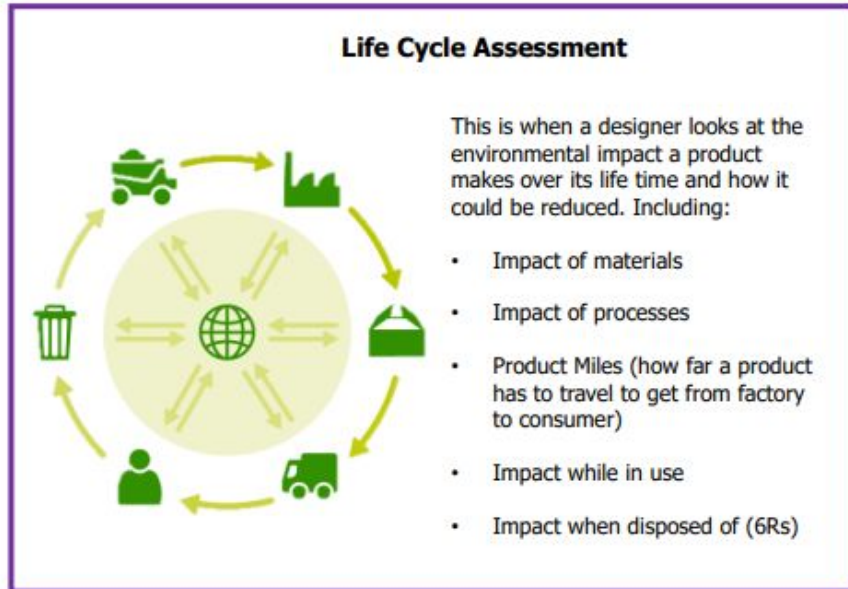
Key Terms

- Logic Gate – components which compare one or more inputs based on a logical function to provide a single output.
- Logic Diagram – a diagram showing one or more logic gates.
- Transistor – components contained in the CPU which can be either on or off.
- Truth Table – a table representing the possible outputs of a logic gate or diagram
- Logic Circuit – two or more logic gates used together one after the other
- Binary – a number system containing two symbols, 0 and 1. Also known as Base 2

Key Terms	Data Types	Selection	
<p>Algorithm: A set of instructions or code used to solve a problem.</p> <p>Syntax: The rules of the programming language that need to be followed in order for it to work.</p> <p>Variables: Data that is stored in memory that is likely to change.</p> <p>Program: Code compiled together to perform a specific function.</p>	<p>String: A Variable data type that can store a combination of letters, characters and numbers.</p> <p>Integer: A Variable data type that can store whole numbers.</p> <p>Float: A Variable data type that can store decimal numbers.</p> <p>Boolean: A Variable data type that stores either TRUE or FALSE</p>	<p>Selection is used to allow the program to make a choice and take a different path. The keywords used in Python are:</p> <p>if - checks if the condition is true, if so the program runs the indented code below it.</p> <p>elif - if the first if fails then this elif condition is checked, there can be multiple of these.</p> <p>else - if all if and elif statements are not true then the code indented below else will run.</p>	
Inputs	Iteration	<p>Example:</p> <pre>colour = input("Enter your favourite colour"); if colour == "Red": print("Reminds me of tomatoes"); elif colour == "Blue": print("Reminds me of the sea!"); else: print("If it isn't Red or Blue then it doesn't matter!")</pre>	
<p>To allow your Python program to get information from the user you will need to use the input command. Make sure you use the correct command for what you are asking for.</p> <p>String inputs (such as a name) input("Enter your name")</p> <p>Integer Inputs (for whole number responses): int(input("What is your age?"))</p> <p>Float Inputs (for decimal number responses): float(input("What is your shoe size?"))</p> <p>To use these examples you need a variable at the start!</p>	<p>Iteration is used to repeat a set of instructions or commands in a program. It saves having to write them all out over and over again.</p> <p>There are two loops in Python programming:</p> <p>While - Checks if a condition is true and while it is true will keep repeating it.</p> <p>For - Runs for a specific amount of times and stops when it reaches the desired number.</p> <p>Examples:</p> <pre>while answer != "London": answer = input("What is the capital of London?");</pre> <p>Or</p> <pre>for i in range(5): movie = input("What is one of your top 5 favourite movies?")</pre>	<th style="background-color: #f4a460;">Variables</th>	Variables
Outputs		<p>Variables are simply a place on the computer's memory that is given a name in order for it to remember it.</p> <p>In Python you create a variable by writing the name of the variable followed by an =.</p> <p>Examples:</p> <pre>name = "Spongebob" age = 14</pre>	
<p>To print out a statement or a variable we use the code below:</p> <p>Printing a new message: print("Hello World");</p> <p>Printing the value of a variable: print(x);</p> <p>Printing a message with variables included: print("Hello",name,"you are",age,"years old")</p>			

Environment

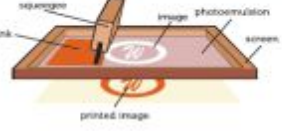
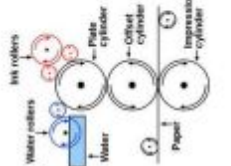
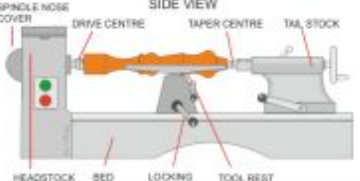
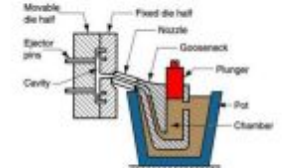
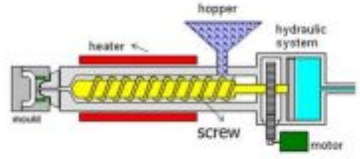
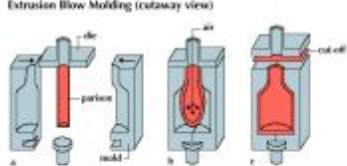
The 6Rs	Meaning
Reuse	To use a product again either for the same purpose or a different one
Reduce	To have less of material/packaging/pollution when making products by making them more efficient
Recycle	Breaking down and forming the material into another product
Refuse	Customers not buying or supporting products that make an environmental impact
Rethink	Designers and customer rethinking their decisions when making and buying products.
Repair	Fixing a product rather than throwing it away. Extending its life rather than using more resources to make another Often products are Designed for Maintenance so can easily be repaired. E.g. Using screws so even non-specialists can take a product apart, or using components that can easily be replaced like fuses or batteries



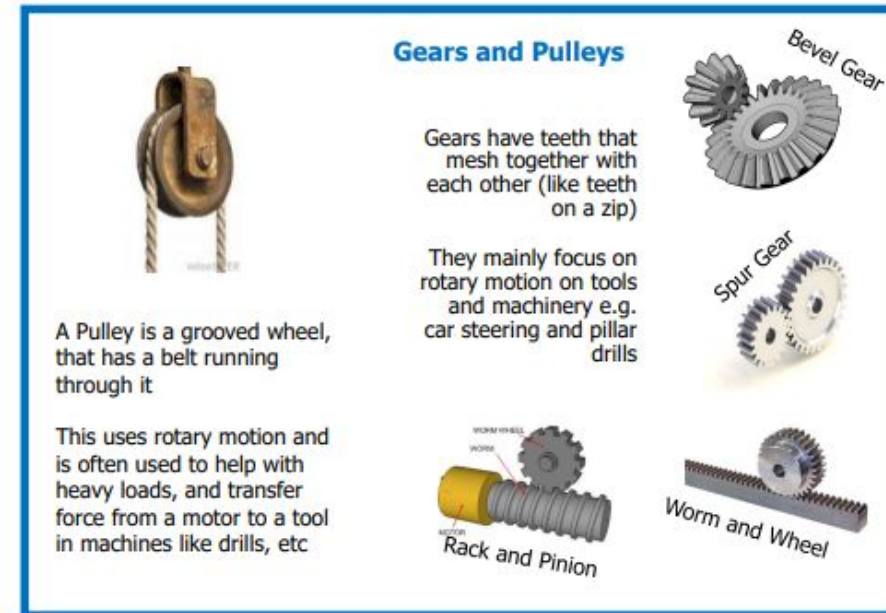
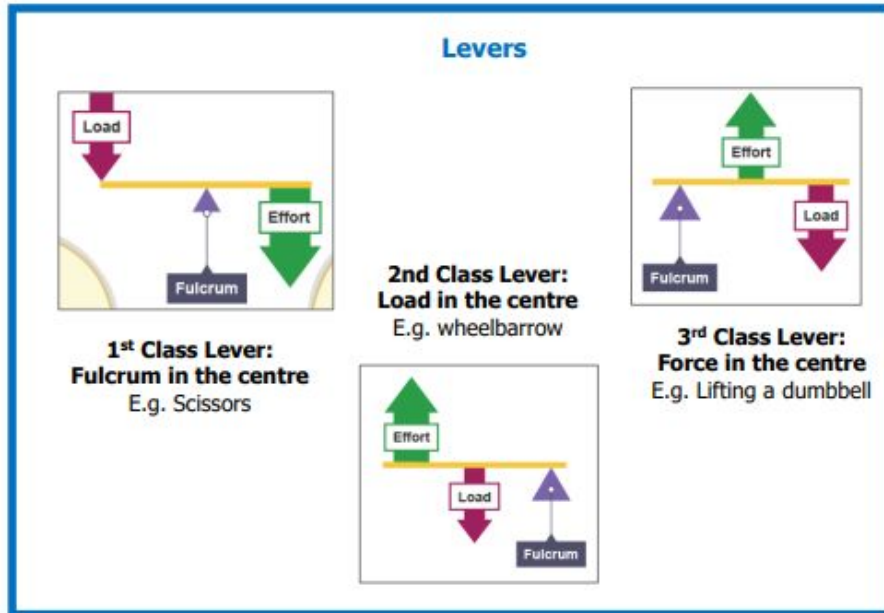
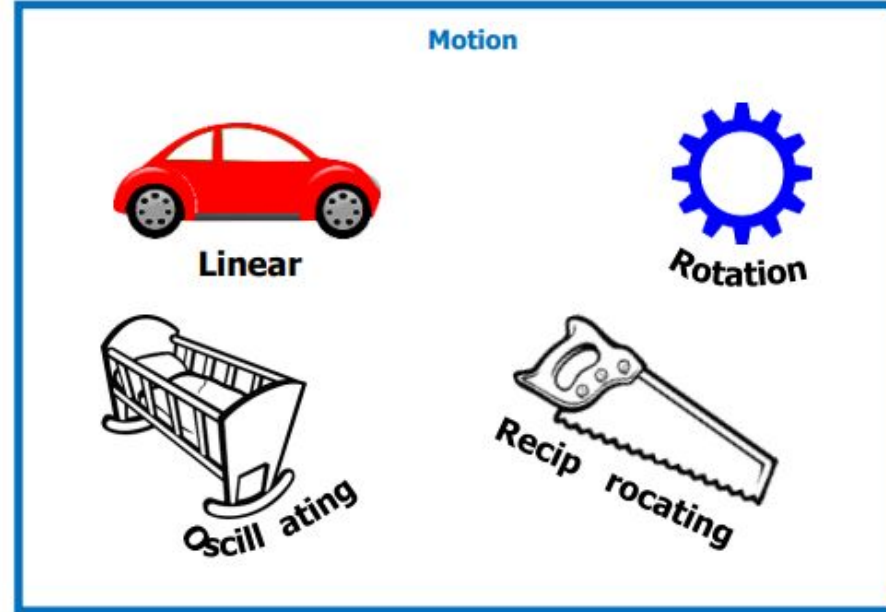
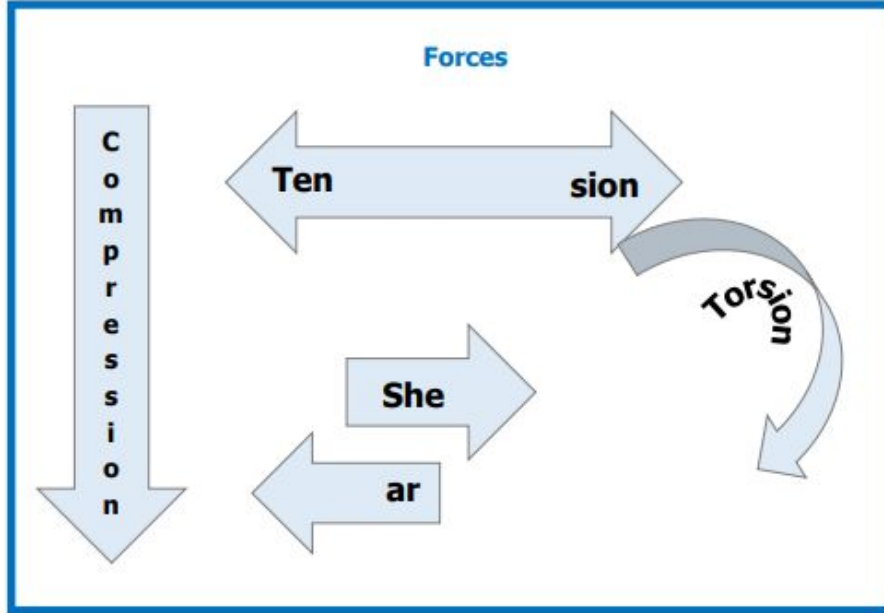
Sustainability is maintaining our planet and its resources and making a minimal negative impact

Finite Resources <i>Will run out of eventually</i>	Infinite Resources <i>Can be re-grown and re-bred. Will not run out of</i>
Plastics	Paper
Metals	Boards
Polymers (Textiles)	Natural Timbers
	Cotton
	Leather

Planned Obsolescence	This is where products "die" after a certain amount of time. E.g. Disposable cups, Phones, Lightbulbs, Printer Ink, etc This can have a big environmental impact as customers are throwing away lots of products, and resources are being used to create new ones.
-----------------------------	---

Name of Process	Diagram	Material	Products Made	Key info
Screen-printing		Papers and Textiles	Posters, signs and t-shirts	<p>Screen printing places paint on top of a screen. The screen has a stencil embedded in it, so when the paint is passed across it the desired shape is printed underneath.</p> <p>Good process in one-off and batch production as often done by hand</p>
Offset Lithography		Papers and card (thin, flexible plastics)	Posters, newspapers, plastics bags	<p>Rollers containing the colours and water go onto the plate cylinder. The water stops the colours sticking to certain places, creating the shape. The shape is transferred between rollers and onto the material.</p> <p>Can be used at batch and mass production</p>
Lathe Turning		Wood and metal	Chair legs, baseball bats (cylindrical items)	<p>Material is placed between the tail stock and the headstock and spun at high speed. The material is then cut using specialist tools (either by hand or by automated machinery) to the desired shape.</p> <p>Can be used in one-off and batch production</p>
Die Casting		Metal	Car parts, engine components, etc	<p>Molten metal is poured into a chamber and a plunger forces the metal through the nozzle into the mould. Unlike sand casting, the mould is reusable.</p> <p>Good process for both one-off and batch production</p>
Injection Moulding		Plastics	Chairs, toys, etc	<p>Plastic granules are poured into the hopper and onto the screw. The screw moves the material towards the heater where it turns into a liquid. The liquid is then forced into the mould, cooled and released.</p> <p>Great process for mass production as it makes 100s+ of products at once, to a identical standard.</p>
Blow Moulding		Plastics	Plastic bottles	<p>A Plastic parison is heated and put into the mould. The parison is then filled with air (like blowing up a balloon) and is forced to fit the mould shape. It is then cooled and then released.</p> <p>This is a great process for mass producing bottles.</p>

Mechanical Systems



Devising to a Brief

Key Vocab

Artistic Intention	What you want the audience to understand or learn from your piece.
Brief	The requirements given for a performance.
Cooperation	Working together to achieve the same goal.
Contribution	The impact you have during the devising and rehearsal process.
Devising	Creating a performance for a specific reason.
Ensemble	A group of actors who work closely together.
Genre	A style or category of art, music, or media.
Plot	The main events of a play that have been devised and presented by the writer.
Stimulus	Something that provokes or causes an action or response.
Tension	A growing sense of expectation within the drama, a feeling that the story is building up towards something exciting happening.

Devising Theatre Companies

Artemis Theatre Company	Little Bulb Theatre
Complicité	People Show
Frantic Assembly	Snippet Theatre Company
Gecko Theatre Company	The Paper Birds Theatre Company
Improbable	Told by an Idiot



Key Development Questions

What can you do to develop your pieces?
How can you structure your rehearsal? Will you each have different responsibilities?
What problems might you encounter during your rehearsals? How could you overcome them?
How can you give others constructive feedback?
How can you respond to feedback others give you?

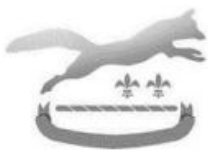
Key Considerations

Artistic Intention
Performance Space
Structure of the piece
Style and Genre
Target audience
Timing

Types of Stimulus

Existing Scripts
Historical Events
Photos
Poetry
Social Issues
Themes and Phrases

'An Inspector Calls'



Context:

J.B. Priestley

- 1914-18: WW1, Aged 20, Priestley serves on the front line in France and is wounded.
- 1919: awarded place at Trinity Hall, Cambridge to study Literature, History and Politics.
- 1922: begins to work as a journalist in London.
- 1934: writes 'English Journey' about the poorer parts on Britain.
- 1939-45: makes regular wartime radio broadcasts called 'Britain Speaks'.
- 1945: writes An Inspector Calls.

1912 England

- Work strikes
- Workers' rights
- Pre WW1
- Suffragette movement
- Class system

1945 England

- Post WW1 and WW2
- Social levelling
- Women's rights
- Workers' rights
- Trade unions
- National Insurance
- Welfare system
- NHS



PLOT STRUCTURE

Act One

- The Birling family and Gerald Croft are celebrating Sheila's engagement to Gerald.
- Mr B makes pompous speeches outlining his political and social views. He says we should ignore the 'cranks' talking about socialism.
- The evening is interrupted by the arrive of Inspector Goole making enquiries about the suicide of Eva Smith.
- Mr B is questioned and admits sacking her for leading strike action for higher wages.
- Sheila is questioned and admits having Eva sacked from Milwards due to her jealousy.
- Gerald reacts to the news that she changed her name to Daisy Renton.

Act Two

- Gerald is questioned and admits keeping Daisy as his mistress for six months.
- Mrs B tries to bully the Inspector and to control events.
- Sheila starts to realise that the Inspector's enquiries are well founded, and that her mother might have had some dealings with the girl.
- While Eric is out of the room, Mrs B is forced to admit that the girl asked for help from her charity, and she refused help.
- It is revealed that the girl was pregnant. Mrs B lays the blame on the father of he unborn child.
- Suspicion grows that Eric is the father of the unborn child.

Act Three

- Eric returns and confesses that he got a girl pregnant. He also confesses to stealing money from his father's office.
- Eric blames his mother for the girl's death.
- The Inspector makes a dramatic speech about the consequences of selfish behaviour and social irresponsibility.
- The Inspector, having shows that each had a part in ruining the girl's life, leaves.
- Between them, Gerald and Mr B gradually prove that the man was not a real police inspector.
- A telephone call to the Chief Constable establishes that there is no Inspector Goole on the police force.
- A telephone to the Infirmary reveals that there has been no recent suicide.
- Eric and Sheila continue to feel guilty about their own, and their family's, behaviour whilst the others shrug it off.
- Mr B answers the telephone: a young woman has just died on the way to the infirmary. An Inspector is on his way to make enquiries.

Characterisation	Key Quotes
Mr Arthur Birling <ul style="list-style-type: none"> ✓ Capitalist ✓ Arrogant ✓ Verbose ✓ Stubborn ✓ Industrialist 	"Heavy looking, rather portentous man" "A hard-headed practical man of business" "Just a knighthood, of course." "A man has to mind his own business and look after himself...." "Look - there's nothing mysterious - or scandalous - about this business..."
Mrs Sybil Birling <ul style="list-style-type: none"> ✓ Judgemental ✓ Old money ✓ Traditional ✓ Insincere ✓ Controlling 	"Rather cold woman... her husband's social superior." "Please don't contradict me like that" "It's disgusting to me." "Unlike the other three, I did nothing I'm ashamed of or that won't bear investigation." "He didn't make me confess - as you call it."
Miss Sheila Birling <ul style="list-style-type: none"> ✓ Intelligent ✓ Feminine ✓ Emotional ✓ Transformative ✓ Empowered 	"But these girls aren't cheap labour - they're people" "I had her turned out of a job" "At least I'm trying to tell the truth. I expect you've done things you're ashamed of." "Why - you fool - he knows!" "The point is, you don't seem to have learnt anything."
Master Eric Birling <ul style="list-style-type: none"> ✓ Irresponsible ✓ Spoilt ✓ Reckless ✓ Immature ✓ Transformative 	"Not quite at ease half shy, half assertive." "I wasn't in love with her or anything - but I liked her - she was pretty and a good sport -" "In a way, she treated me - as if I were a kid" "You're not the kind of father a chap could go to when he's in trouble." "You're beginning to pretend that nothing's really happened at all. And I can't see it like that."
Mr Gerald Croft <ul style="list-style-type: none"> ✓ Aristocratic ✓ Secretive ✓ Traditional ✓ Privileged ✓ Evasive 	"Easy, well-bred young man-about-town." "You seem to be a nice well-behaved family" "You're just the kind of son-in-law I always wanted." "The hero... the wonderful Fairy prince." "I'm rather more upset - by this business than I probably appear to be -"
Miss Eva Smith <ul style="list-style-type: none"> ✓ Working class ✓ Determined ✓ Vulnerable ✓ Emblematic ✓ Allegorical 	"A lively good-looking girl - country bred... and a good worker too." "She had a lot to say - far too much - so she had to go." "She was very pretty and looked as if she could take care of herself." "Now she had to try something else." She went away "to be alone, to be quiet, to remember all that had happened."
Inspector Goole <ul style="list-style-type: none"> ✓ Priestley's mouthpiece ✓ Impressive ✓ Commanding ✓ Social justice ✓ Omnipotent 	"Massiveness, solidity and purposefulness." "But after all it's better to ask for the earth than to take it." "It's my duty to ask questions." "A nice promising life there, I thought, and a nasty mess somebody's made of it." "You see, we have to share something. If there's nothing else, we'll have to share our guilt." "One Eva Smith has gone - but there are millions and millions and millions of Eva Smiths and John Smiths still left with us." "Fire and blood and anguish"

Key Terms:

- ✓ Stage directions
- ✓ Dialogue
- ✓ Monologue
- ✓ Didactic
- ✓ Polemic
- ✓ Dramatic irony
- ✓ Foreshadowing
- ✓ Entrances and exits
- ✓ Props
- ✓ Sentence moods
- ✓ Social expectations
- ✓ Cliff-hanger
- ✓ Characterisation
- ✓ Dramatic device
- ✓ Timings
- ✓ Interruptions
- ✓ Tone
- ✓ Irony
- ✓ Imagery
- ✓ Symbolism
- ✓ Euphemism



"All mixed up like bees in a hive"

Key Concepts and Themes:

- ✓ Mystery
- ✓ Social responsibility
- ✓ Truth and lies
- ✓ Hypocrisy
- ✓ Wealth, power and influence
- ✓ Rights and responsibilities
- ✓ Public versus private
- ✓ Morality versus legality
- ✓ Young versus old
- ✓ Capitalisation versus socialism
- ✓ Individual and collective responsibility
- ✓ Love, sex and consent

KS4 Independent Study Tasks

Task 1: Context Timeline

An Inspector Calls is set in the fictional industrial city of Brumley in 1912. The action takes place on one evening just before the First World War. But, the play was first performed to an audience in 1945, after the Second World War had devastated Britain, its infrastructure and its families.

Use the context section on the Knowledge Organiser to start your research into the two key time periods. Think about the key events that happened in Britain and how they changed society.

Research and then create a timeline that shows the historical events and social changes in Britain between the Edwardian period of 1912 and the post war time of 1945 e.g. the Titanic, the Suffragettes, the start of the Welfare State and the NHS.

Grade 7-9 enrichment:

Research some of the 'cranks' that Mr Birling mentions in his line: "We can't let all these Bernard Shaws and H. G. Wells do all the talking." Who were these people? What did they write, think, say, do? How are they linked to JB Priestley in their political stances?

Deadline:

Task 2: Stage Craft

Choose 2 tasks to complete.

1. Explore the **stage directions** that tell us how each character speaks, feels and behaves. Find two key stage directions for each character. Analyse how they develop character for the audience.
2. Look at the **description of the Inspector** when he arrives. Find 4 key points about him, his appearance, his personality or his role. Analyse what the clues tell you about him and his role in the rest of the play.
3. Explore the **stage directions** that tell us how the Inspector speaks, behaves and feels. Choose 4 key stage directions and analyse what they tell us about his sense of purpose and his personality.

Grade 7-9 enrichment:

Explore the dramatic devices of the photograph, the telephone, the doorbell, the timings, the entrances and exits... How do they add to the dramatic impact of the play?

Deadline:

Task 3: Eva Smith

Track information about the character **Eva Smith** through the play. Find details about her life, experiences and her personality. Explore what they tell the audience, and how her character compares to the Birling and Croft families.

Create a **character profile** which includes dates, quotes, details, images, arrows...

Explore the idea that she is one girl, or maybe multiple girls. Add your own ideas about who she really was.

Grade 7-9 enrichment:

Consider the Inspector's line: "A nice little promising life there... and a nasty mess somebody's made of it." How does JB Priestley construct Eva Smith to represent a wider issue in society?

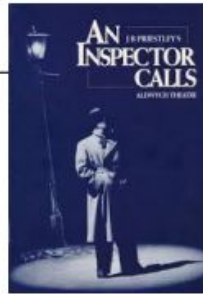
Deadline:



AO1: What?
Details and evidence

AO2: How?
Methods and effects

AO3: Why?
Contexts and meanings



Task 5: Extended Writing

Choose 1 task to complete; **Read and plan** then **write** for 30 minutes

Foreshadowing. Find a range of clues that you feel foreshadow events that happen later in the play. Include quotes and your interpretations of their meaning or symbolism.

Context. Explore how the context of this play is essential in creating meaning and drama. You could explore class distinctions, gender roles, workers' rights, the upcoming war, the links to Titanic...

Language. Think about how the language of different characters helps to represent them. You could look at who speaks in confident statements, who asks questions, who uses exclamative language, who talks about emotions, who interrupts... Find quotes and explore what they tell us about characters.

Grade 7-9 enrichment:

Meaning. An Inspector Calls is a didactic play. Write about what you think the message is. What did Priestley want his audience to think about and why? How did he use characters, language, plot and structure to convey this meaning?

Deadline:

Task 6: Timed essay

In your exam you will have 45 minutes to write an essay about the play. You will get two choices. Remember to plan and write by making points, providing evidence, exploring language and structure and discussing context.

Choose 1 essay, plan for 15 minutes and write for 45 minutes.

How does Priestley use the character of the Inspector to suggest ways that society could be improved?

OR,

How does Priestley present Eric as a character who changes his attitudes towards himself and others during the play?

Grade 7-9 enrichment:

Dramatic Irony. Think about how the audience of 1945 would react to the characters of 1912. Find examples of when Priestley includes details that would be considered ironic to the audience. Analyse why Priestley would include such details.

Deadline:

Task 4: The Birling Family and Gerald Croft

Write about how each character has been affected by the events of the evening. What did they do? How did they react? How did they feel? How did they show it? How did they change? Write for 45 minutes.

Grade 7-9 enrichment:

Explore in more detail, what each character represents e.g. Sheila might represent the possibility of change for women in society. What is Priestley showing us through the range of characters he constructs?

Deadline:

Food Technology

Functions of ingredients
Ingredients provide a variety of functions in recipes.

Carbohydrate, protein and fat
Carbohydrate, protein and fat all have a range of properties that make them useful in a variety of food products.

Carbohydrates perform different functions in food.

They can:

- help to cause the colour change of bread, toast and bakery products (dextrinisation);
- contribute to the chewiness, colour and sweet flavour of caramel;
- thicken products such as sauces and custards (gelatinisation).

Maillard reaction

Foods which are baked, grilled or roasted undergo colour, odour and flavour changes. This is primarily due to a group of reactions involving amino acids (from protein) and reducing sugars.

Dextrinisation

When foods containing starch are heated they can also produce brown compounds due to dextrinisation. Dextrinisation occurs when the heat breaks the large starch polysaccharides into smaller molecules known as dextrins which produce a brown colour.

Caramelisation

When sucrose (table sugar) is heated above its melting point it undergoes physical and chemical changes to produce caramel.

Gelatinisation

When starch is mixed with water and heated, the starch granules swell and eventually rupture, absorbing liquid, which thickens the mixture. On cooling, if enough starch is used, a gel forms.

Proteins perform different functions in food products.

They:

- aerate foods, e.g. whisking egg whites;
- thicken sauces, e.g. egg custard;
- bind ingredients together, e.g. fishcakes;
- form structures, e.g. gluten formation in bread;
- gel, e.g. lime jelly.

Gluten formation

Two proteins, gliadin and glutenin, found in wheat flour, form gluten when mixed with water. Gluten is strong, elastic and forms a 3D network in dough. In the production of bread, kneading helps untangle the gluten strands and align them. Gluten helps give structure to the bread and keeps in the gases that expand during cooking.

Gelation

Gelatine is a protein which is extracted from collagen, present in animal connective tissue. When it is mixed with warm water, the gelatine protein molecules start to unwind. On cooling, a stable, solid network is formed, trapping the liquid.

Denaturation

Denaturation is the change in structure of protein molecules. The process results in the unfolding of the protein's structure. Factors which contribute to denaturation are heat, salts, pH and mechanical action.

Coagulation

Coagulation follows denaturation. For example, when egg white is cooked it changes colour and becomes firmer (sets). The heat causes egg proteins to unfold from their coiled state and form a solid, stable network.

Aeration

Products such as creamed cakes need air incorporated into the mixture in order to give a well-risen texture. This is achieved by creaming a fat, such as butter or baking spread, with sugar. Small bubbles of air are incorporated and form a stable foam.

Fats performs different functions in food.

They help to:

- add 'shortness' or 'flakiness' to foods, e.g. shortbread, pastry;
- provide a range of textures and cooking mediums;
- glaze foods, e.g. butter on carrots;
- aerate mixtures, e.g. a creamed cake mix;
- add a range of flavours.

Plasticity

Fats do not melt at fixed temperatures, but over a range. This property is called plasticity.

Colloidal systems

Colloidal systems give structure, texture and mouthfeel to many different products.

System	Disperse phase	Continuous phase	Food
Sol	Solid	Liquid	Unset jelly
Gel	Liquid	Solid	Jelly
Emulsion	Liquid	Liquid	Mayonnaise
Solid emulsion	Liquid	Solid	Butter
Foam	Gas	Liquid	Whipped cream
Solid foam	Gas	Solid	Meringue

Raising agents

Raising agents include anything that causes rising within foods, and are usually used in baked goods. Raising agents can be:

- biological, e.g. yeast;
- chemical, e.g. baking powder;
- mechanical, e.g. adding air through beating or folding.

Functional ingredients

These are ingredients that are specifically included in food for additional health benefits. They include:

- probiotics – 'good' bacteria that may have a positive impact on human health;
- prebiotics – food ingredients that promote the growth of beneficial microorganisms in the gut;
- sterols/stanols – compounds that can lower cholesterol;
- healthy fats (e.g. omega-3);
- added vitamins and minerals (more than in the original food).

Why is food prepared and cooked?

Food is prepared and cooked to:

- make the food more palatable – improves flavour, texture and appearance;
- reduce the bulk of the food;
- provide variety and interest to meals.

Methods of cooking food

The methods of cooking are divided up into groups. These are based on the cooking medium used.

They are:

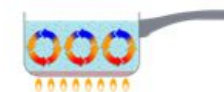
- moist/liquid methods, e.g. boiling;
- dry methods, e.g. grilling;
- fat-based, e.g. frying.

Selecting the most appropriate way of preparing and cooking certain foods is important to maintain or enhance their nutritional value.

- Vitamins can be lost due to oxidation during preparation or leaching into the cooking liquid.
- Fat-based methods of cooking increase the energy (calories) of the food.
- The use of different cooking methods affects the sensory qualities of the food.

There are three ways that heat is transferred to food.

- Conduction – the exchange of heat by direct contact with foods on a surface.
- Radiation – energy in the form of rays.
- Convection – currents of hot air or hot liquid transfer the heat energy to the food.



Tasks

1. Choose a recipe that you enjoy or have made recently and explain in detail the functions of the ingredients.
2. Explain the function of raising agents, giving examples of recipes.

Key terms

Conduction: The exchange of heat by direct contact with foods on a surface.

Convection: Currents of hot air or hot liquid transfer the heat energy to the food.

Functional ingredients: Included in food for additional health benefits.

Heat transfer:

Transference of heat energy between objects.

Radiation: Energy in the form of rays.

Tenderisation

- Mechanical tenderisation – a meat cleaver or meat hammer may be used to beat the meat. Cutting into small cubes or mincing can also help.
- Chemical tenderisation (marinating) – the addition of any liquid to flavour or soften meat before cooking.

Food labelling

Manufacturers include a range of information on food labels. Some of which is legally required and some of which is useful to the consumer or supermarket.

Nutrition information helps consumers make healthier choices. Back-of-pack nutrition information is legally required on food packaging.

NUTRITION

When heated according to instructions

Typical values	Per 100g	Each pack (390g**)
Energy	457kJ 109kcal	1781kJ 424kcal
Fat	3.9g	15.2g
of which saturates	1.9g	7.5g
Carbohydrate	12.1g	47.1g
of which sugars	1.6g	6.2g
Fibre	1.1g	4.2g
Protein	5.8g	22.6g
Salt	0.6g	2.2g

Legally required information

- Name of food or drink.
- List of ingredients (including water and food additives), in descending order of weight.
- Weight or volume.
- Date mark (Best-before and use-by).
- Storage and preparation conditions.
- Name and address of the manufacturer, packer or seller.
- Country of origin and place of provenance.
- Nutrition information.

Additional information may also be provided, such as cooking instructions, serving suggestions or price.

Date marks

Best-before-date: The date after which foods may not be at their best, although probably safe to eat if stored according to instructions.

Use-by-date: The date given to foods that spoil quickly, such as cooked meats. It is unsafe to eat foods beyond their use-by-date.



Beetroot salad

Keep refrigerated. Once opened consume within 24 hours and by the 'use-by' date shown.

Additives

Food additives must be shown clearly in the list of ingredients on food labels, either by the additive's name or E number.

Additives are added to ensure safety, increase shelf life or improve the taste, texture or appearance of food. Additives need to be approved before they can be used. Additives are given an 'E number' to show that they have been rigorously tested for safety and have been approved for use in food by the European Commission.

An example is E100 or curcumin, made from turmeric.

Another example is caramel (E150), a synthetic colouring commonly used to colour colas.



Key terms

Additives: Are added to ensure safety, increase shelf life or improve the taste, texture or appearance of food. They must be shown clearly on food labels.

Allergen labelling: Allergens must be clearly shown in **bold**, **highlighted**, underlined or in *italics*.

Back-of-pack labelling: Is legally required and can help consumers make healthier choices.

Claim: Any statement about the nutrient content or health benefit of a food product.

Front-of-pack labelling: Is voluntary but must provide certain information and can use red, amber and green colour coding.

Labelling: The term given to the information about the product which is displayed on the packaging.

Nutrition information: Helps consumers make healthier choices.

Front-of-pack labelling

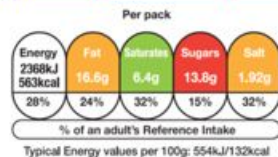
Front-of-pack-nutrition information is voluntary but if a food business chooses to provide this, only the following information may be provided:

- energy only;
- energy along with fat, saturates, sugar and salt.

Red, amber and green colours, if used, show at a glance whether a food is high, medium or low for fat, saturates, sugars or salt. The colour coding can be used to compare two products.

Nutrient	Low	Medium	High	
Fat	≤3.0g/100g	>3.0g to ≤17.5g/100g	>17.5g/100g	>21g/portion
Saturates	≤1.5g/100g	>1.5g to ≤5.0g/100g	>5.0g/100g	>6.0g/portion
(Total sugars)	≤5.0g/100g	>5.0g and ≤22.5g/100g	>22.5g/100g	>27g/portion
Salt	≤0.3g/100g	>0.3g to ≤1.5g/100g	>1.5g/100g	>1.8g/portion

Note: Portion size criteria apply to portion sizes/servings greater than 100g.



To find out more, go to:
<https://bit.ly/2SPnj1g>

Allergen labelling

An allergic reaction to a food can be described as an inappropriate reaction by the body's immune system to the ingestion of a food.

By law, food, drink and ingredients that are known to contain allergens are required to be in **bold**, **highlighted**, underlined or in *italics*.

The most common allergens are present in:

Celery (and celeriac)	Milk
Cereals containing gluten	Molluscs
Crustaceans	Mustard
Eggs	Nuts
Fish	Peanuts
Lupin	Sesame
	Soybeans
	Sulphur dioxide

INGREDIENTS

Water, Carrots, Onions, Red Lentils (4.5%), Potatoes, Cauliflower, Leeks, Peas, Cornflour, **Wheat flour**, Cream (**milk**), Yeast Extract, Concentrated Tomato Paste, Garlic, Sugar, **Celery Seed**, Sunflower Oil, Herb and Spice, White Pepper, Parsley

ALLERGY ADVICE

For allergens, see ingredients in **bold**

Nutrition and health claims

Nutrition and health claims are controlled by European regulations. Claims on a food or drink should have been authorised and listed on the European register of claims and have met certain conditions.

Nutrition claims

A nutrition claim describes what a food contains (or does not contain) or contains in reduced or increased amounts. Examples include:

- Low fat (less than 3g of fat per 100g of food);
- High fibre (at least 6g of fibre per 100g of food);
- Source of vitamin C (at least 15% of the nutrient reference value for vitamin C per 100g of food).

Health claims

A health claim states or suggests there is a relationship between a product and health. In order to make a claim, the amount present of the nutrient, substance or food must fulfil the specific conditions of use of the claim. The types of health claims are:

- 'Function Health Claims';
- 'Risk Reduction Claims';
- Health 'Claims referring to children's development'.

Tasks

- Find four different packaged food items in your household or online and list the information provided on the packaging. Explain the purpose of each piece of information and identify if it is legally required or consumer information.
- Explain the importance of date marks and storage instructions, including the consequences of not following them.

Dairy farming

- There are thousands of dairy farms in the UK. The farming techniques and the size of dairy farms differ around the UK. Although different feed, housing and milking parlours may be used, the health and welfare of the dairy cows remains the highest priority for farmers.
- Dairy farms are mainly based in the western half of Britain where the warm, wet climate is ideal for grass growth.
- In the UK most cows eat grass during the summer and silage (dried grass or maize) in the winter. This is usually supplemented with dry feeds such as cereals and protein feeds to ensure they have a nutritionally balanced diet. Animal nutritionists help plan special diets for them.
- Dairy cows eat 25-50kg of food a day and drink around 60 litres of water.
- A dairy cow needs to give birth to a calf to produce milk. A cow is milked 2-3 times a day and can produce around 22 litres of milk a day.
- Holstein-Friesen cows, which are black and white, are the most common type of dairy cow in the UK.
- Cows wear ear tags so they can be identified and are a unique passport. Traceability from the farm is important when producing food.
- After milking, the milk is chilled and stored, ready to be taken away to be processed by the dairy.
- Farmers use modern technology to help manage their farm which includes systems to monitor individual cow's movements and milk yield, robotic milking systems, and satellite-controlled tractors.

The farm environment

- Throughout the year, the farmer will maintain the fields, gateways, fences, and hedgerows to help protect and enhance the environment.
- Cow manure known as slurry is spread on the land as an excellent source of nutrients and reduces the need for chemical fertilisers.
- The carbon footprint of milk produced in the UK is nearly a third lower than the global average.

Farm assurance and standards

- The Red Tractor symbol on packaging helps consumers know that the milk and dairy foods have been produced according to the high standards of the Assured Dairy Farms scheme.



Processing milk

1. After the milk is delivered to the dairy it is pasteurised. Pasteurisation is a process used to kill harmful microorganisms, such as certain pathogenic bacteria, yeasts and moulds, which may be present in the milk.
2. Pasteurisation involves heating the milk to a temperature of no less than 71.7°C for 25 seconds. This process extends the shelf life of milk and is known as High Temperature Short Time (HTST).
3. The milk is then cooled for packing, labelling, storage, transportation and then distributed to retailers.
4. Homogenisation of milk involves it being pumped at very high pressures through narrow tubes, breaking up the fat globules in order for these to disperse through the liquid. Most milk available to purchase is homogenised.
5. Sterilisation is a process that destroys all micro-organisms present in a food. It uses a temperature more than 100°C. Sterilising enables milk to be kept for months unopened and unrefrigerated, but may result in a burnt, caramelised flavour and browning.
6. Ultra-heat treatment (UHT) destroys all micro-organisms in the food without causing as much damage to the product as sterilisation. Typical temperatures is 130°C-150°C for 1-3 seconds.

Types and nutrition of milk

There are several different types of milk available for consumers to buy. The fat content of cow's milk will vary according to the type:

- Whole milk contains 3.5%
- Semi-skimmed milk 1.7%
- Skimmed milk is 0.1-0.3%

Dairy foods provide protein, calcium, B vitamins and iodine.

Dairy alternative milks include oat, soy, coconut, almond. Choose those that are fortified with calcium and ideally other vitamins and minerals.

Other types of milk:

- Evaporated milk – is heated to reduce the liquid content
- Condensed milk – is evaporated milk that has had sugar added
- Dried milk powder – is heated to dry the milk and remove the water

Types of cheeses

There are over 750 different cheeses produced in Britain today. Here are some examples:

- Hard e.g. West Country Cheddar
- Semi-hard e.g. Wensleydale
- Soft e.g. Cornish Brie
- Blue e.g. Blue Stilton

For more information, go to: bit.ly/3ucDIFr

Processing yogurt

1. The milk is pasteurised and homogenised. A starter culture (harmless bacteria) is then added, and the bacteria will ferment the lactose (sugar) in the milk to produce lactic acid.
2. The lactic acid fermentation process allows the milk proteins to coagulate and set producing sharp, tangy flavoured 'natural' yogurt.
3. Sugar, sweetener, pieces of fruit and/or fruit flavouring are added to the yogurt either before or after the fermentation stage. It is then packaged and chilled.

Processing cheese

1. Pasteurisation - the first stage in the process is the pasteurisation of the milk.
2. Curdling - a starter culture, similar to freeze dried natural yogurt, is then added to the pasteurised milk. This begins to acidify the milk and allows the bacteria to grow and begin fermentation. Rennet is added so the milk curdles and separates into curds and whey. It is then drained on cooling tables.
3. Cheddaring - as the liquid is drained off a solid mass is created, called curd mats, which are cut into sections, piled on top of each other and turned regularly. Salt is added to preserve it and to prevent the cheese from going rancid during the maturing process. It is then stored in a cool room to ripen.
4. Whey - the liquid from curdling, known as whey, is further processed where cream is removed called 'whey cream' and made into butter. Protein is also extracted from the whey for different ingredients and commonly used as a protein supplement. In addition, lactose (a sugar in the milk) is removed from the water and used in the food industry and for animal feed.

Tasks

1. Explain in detail pasteurisation and the importance of this to ensure food is safe to consume.
2. Research 5 different types of cheeses and explain how and where they are made.

Key terms

Cheddaring: A secondary process in making cheese.

Curds: A solid product formed during cheesemaking, through coagulation.

Lactose: A sugar present in milk. Lactose is a disaccharide (galactose in chemical combination with glucose).

Milking parlour: A building where cows are milked on a dairy farm.

Milking: The primary process in making dairy products.

Pasteurisation: The process of heating food to kill most food spoilage organisms and pathogenic organisms, e.g., milk.

Rennet: A mixture of enzymes in cheese production. Makes the milk 'curdle'.

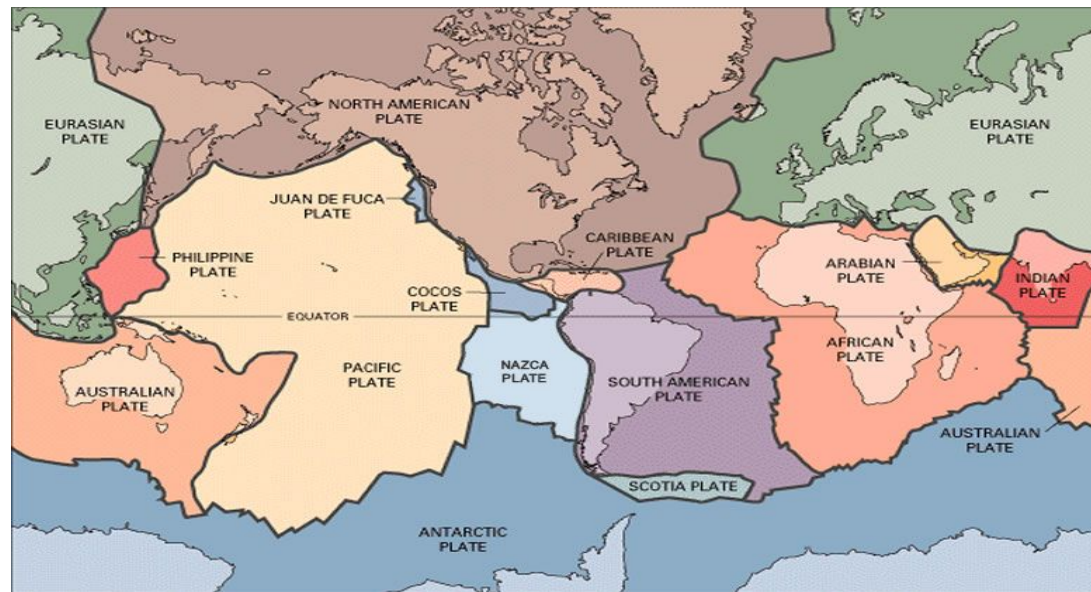
Sterilisation: The severe heating of food to kill all micro-organisms, e.g., sterilised milk.

Traceability: A system to track food through the stages of production, processing and distribution.

Ultra-heat treatment (UHT): The heating of food to kill or inactivate all micro-organisms without causing damage to the product, e.g., UHT milk.

Whey: The liquid remaining after the curds have been separated from the milk.

Key term:	Definition:
Natural Hazard	A cataclysmic event due to natural processes
Plate tectonics	The earth's crust divided into large chunks or plates
Earthquake	A tremor on the surface of the earth due to energy from the crust
Volcanoes	A release of lava through a vent in a volcano
Crust	The thin outer layer of earth
Mantle	The largest layer of earth composed of molten rock
Inner Core	The solid centre of earth
Plate boundary	The point at which two tectonic plates meet



Processes:	Explanation:	Example:
Plate tectonics	The earth's surface is made up of a number of large plates which are constantly moving due to mantle convection.	The North American & Eurasian plates diverge to create the mid Atlantic ridge; this is home to volcanic islands such as Iceland.
Earthquakes	Earthquakes are formed due to a buildup of pressure in the earth's crust which is released and causes the earth to tremor or quake.	Earthquakes are located along the Mid Atlantic Ridge (Iceland), the Alpide Belt (Turkey) & The Pacific Ring of Fire (Japan).
Volcanoes	Volcanoes erupt with a combination of lava and other volcanic materials due to the movement of magma to the surface of the earth.	There are three main types of volcano; stratovolcano (convergent), shield (divergent) and calderas or supervolcanoes (Yellowstone).
Divergent plate boundary	This is when two tectonic plates (oceanic crust) pull apart which causes tectonic hazards such as earthquakes and volcanoes.	The volcanic island of Iceland is home to strong earthquakes and spectacular volcanic eruptions.
Convergent plate boundary	This is when two tectonic plates collide causing the oceanic crust to subduct and violent earthquakes/volcanic eruptions to occur.	The Pacific Island of Japan is the most hazard prone nation in the world and suffers from violent volcanic eruptions and strong earthquakes such as in 2011.

LITHOSPHERE

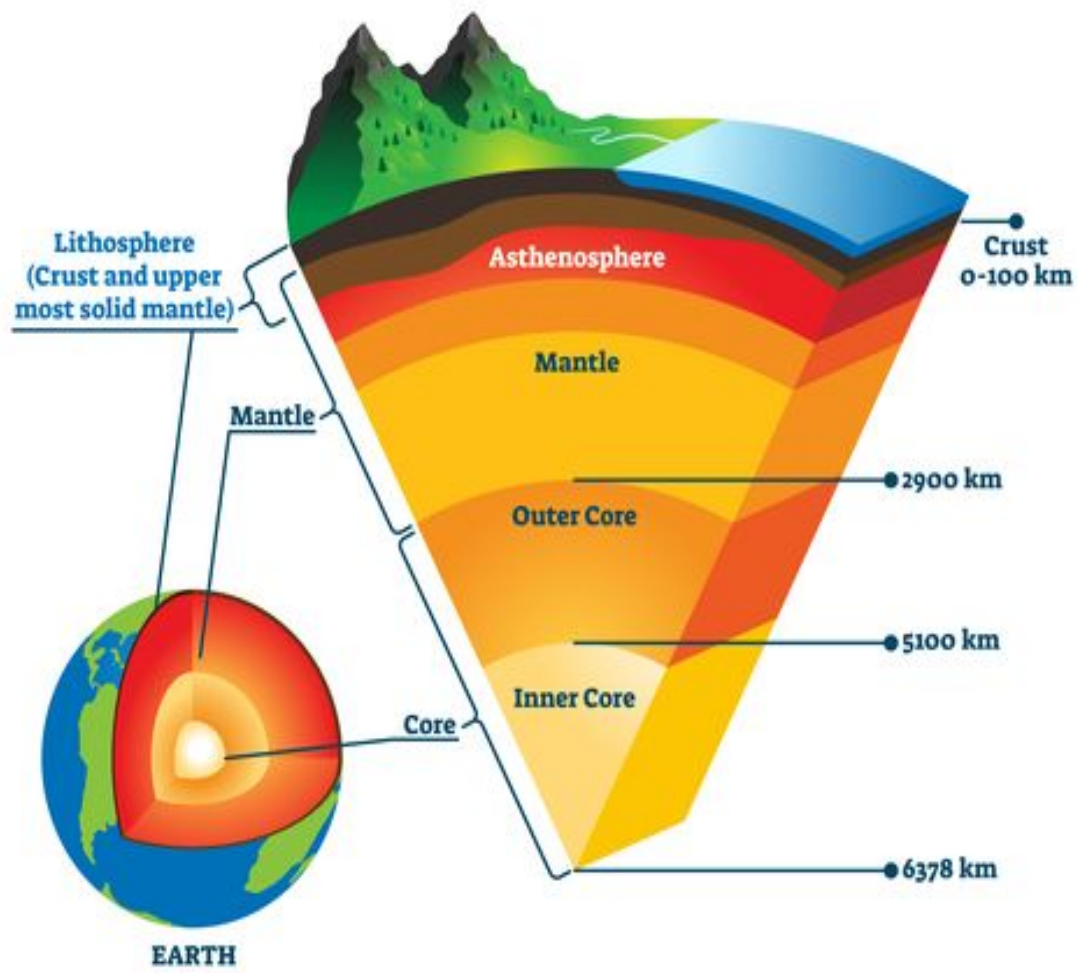
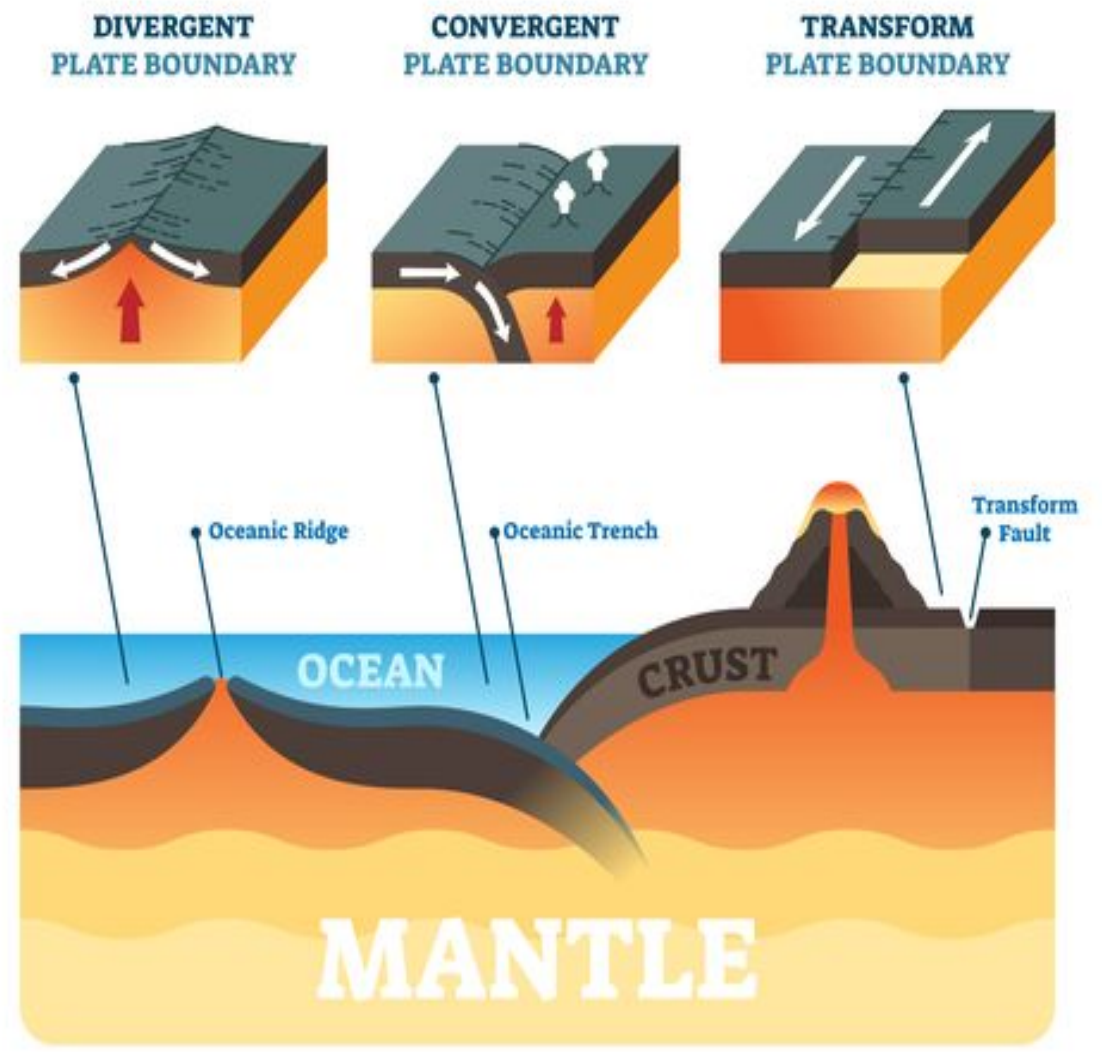


PLATE BOUNDARIES

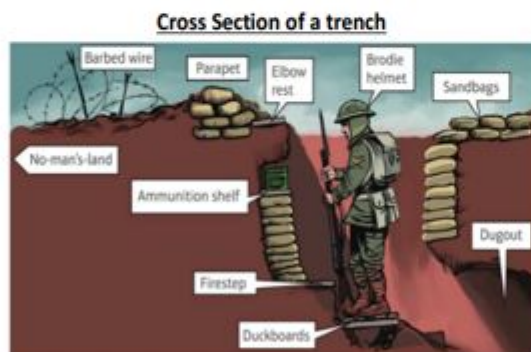


Year 9
World war
1914 – 1918.



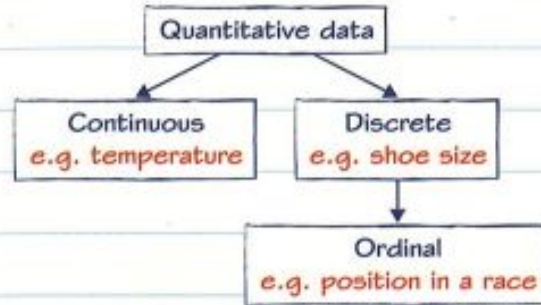
Long term causes of WW1		Important events of WW1
<p>Militarism – Britain and other European nations mobilised their army and navy in preparation for war.</p> <p>Imperialism – Britain had an empire that spanned 25% of the world and Germany were “jealous” and began to threaten Britain by empire building.</p> <p>Short term cause of WW1: Archduke Franz Ferdinand of Austria is assassinated by a Serbian terrorist. Following a number of threats, Austria-Hungary declares war on Serbia.</p> <p>Countries involved in WW1: Britain, France, Russia, Italy, Germany, Austria-Hungary, Australia, India, Canada, America</p>	<p>Alliances – Europe divided into two armed camps, The triple Entente and the triple Alliance</p> <p>Nationalism – Pride and patriotism in all European countries fuelled the desire to be in control and go to war.</p>	<p>4 August 1914 Britain declares war on Germany September 1914 The German army is stopped short of Paris by British and French soldiers. Both sides dig in and trench warfare begins with only tiny gains achieved.</p> <p>January 27th 1916 Conscription introduced in Britain</p> <p>The Somme: Battle of the Somme - July-November 1917. 1st day of battle, 60,000 casualties and 20,000 died. In total, 400,000 Allied casualties and this put pressure on medical services on the Western Front.</p> <p>11 November 1918 an armistice is agreed that sees Germany admit defeat at the end of the war. Guns officially fall silent at 11am.</p>
<p>Key words</p> <p>Propaganda Official government communications to the public that are designed to influence opinion. The information may be true or false, but it is always carefully selected for political effect.</p> <p>Conscription A process which requires people to join the army if they are able to fight, with penalties if they do not.</p>		<p>Key words</p> <p>Assassination murder of an important person for political or religious reasons</p> <p>Mobilise Preparing the armed forces for fighting in a conflict</p> <p>No Man’s Land: Land between Allied and German trenches in WW1.</p> <p>Trenches: Long, narrow ditches dug during the First World War.</p> <p>Bayonet: a long blade that is attached to the barrel of a rifle.</p>
<p>Life in the trenches</p> <p>Duckboard To prevent soldiers from standing in water. Possibly preventing Trench-foot.</p> <p>Fire step Allows the soldiers to fire towards the other trench. Trenches were 2.5m deep.</p> <p>Parapet Low protective wall at top of trench.</p> <p>Ammunition shelf Area in which ammo was kept near the fire step.</p> <p>Dugout Area dug into side of the trench where men could take protective cover.</p>		<p>Problems in the trenches and impact of the Western Front on Medicine</p> <p>Trench foot Muddy and wet conditions in the trenches caused feet to swell up and turn black</p> <p>Trench fever Due to the lack of clean water and good hygiene, soldiers were often very dirty which led to being infected with lice all over their bodies.</p> <p>Shellshock Constant shelling, lack of sleep and harsh conditions meant that soldiers would suffer psychological problems and the inability to function.</p> <p>The Thomas Splint: Stopped joints moving and increased survival rates from 20 to 82%. Reduced infection from compound fractures.</p> <p>Mobile X-rays: 6 operated on the front line, used to locate shrapnel and bullet wounds. Transported around in a truck and enabled soldiers to be treated more quickly.</p> <p>Blood Transfusions: Blood loss = major problem. Blood transfusions used at Base Hospitals by a syringe and tube to transfer blood from patient to donor. Extended to CCS from 1917.</p> <p>Brain surgery: Magnets used to remove metal fragments from the brain. Local anaesthetic.</p> <p>Plastic surgery: Harold Gillies developed new techniques, skin drafts developed for grafts.</p>
<p>Women and WW1</p> <p>At the beginning of World War 1, most women were barred from voting or serving in military combat roles. Many saw the war as an opportunity to not only serve their countries but to gain more rights and independence. With millions of men away from home, women filled manufacturing and agricultural positions on the home front. Others provided support on the front lines as nurses, doctors, ambulance drivers, translators and, in rare cases, on the battlefield.</p>		<p>Animals and Weapons of WW1</p> <p>Over 16 million animals served in the First World War. They were used for transport, communication and companionship. Horses, donkeys, mules and camels carried food, water, ammunition and medical supplies to men at the front, and dogs and pigeons carried messages from the frontline.</p>

1914



Statistics

Quantitative data



Qualitative data

Qualitative data are measures of types. Variables can be sorted into categories and are called **categorical data**. Categorical data is always qualitative. For example, raw data collected on where people went on holiday last year could be classed by continent: Europe, Asia, North America, South America, Africa, Australia and Antarctica.

Related data

Bivariate data involves pairs of related data values, such as exam results and time spent on study. **Multivariate data** involves sets of three or more related data values, such as age, height and weight.

Primary data

Primary data is information that you collect yourself.

You could do an experiment, carry out a survey or use a questionnaire to collect primary data.

Secondary data

Secondary data comes from published sources, such as newspapers, books or the internet.

You could take information from a table in a magazine to collect secondary data.

Statistics

Populations

Technical words and phrases

You need to know these definitions:

A **population** is everything or everybody that could possibly be involved in an investigation, e.g. students in a school, all the people who use the local gym.

A **census** gathers data from the whole population.

A **sample** gathers data from some of the population.

A **representative sample** should contain all the characteristics of the population to avoid **bias**. A sample that is too small may not represent the population and may bias the results.

The **sampling units** are the people or items that are to be sampled.

A **sampling frame** is a list of all the members of the population from which the sample will be taken.

A **pilot survey** is a small sample analysed first before any large-scale samples.

A **pre-test** is a pilot where questions for a questionnaire are usually tried out.

Census vs sample

Here is a population.

A census would gather information from **everyone**.

All the members of the population can be numbered to form a **sampling frame**.



A **representative sample** is shown in red. A census collects more information than a sample but takes a lot longer and is a lot more expensive.

Good and poor samples

Good samples	Poor samples
are as large as possible	are too small
are representative	are biased – they unfairly favour one set of values
have a suitable sampling frame	have a poor sampling frame (e.g. out of date, people missing, people counted twice, names on a list that shouldn't be there)

Statistics

A **random sample** is one in which every member of the population has an **equal chance** of being selected. A random sample is fair or **unbiased** and, if it is large enough, it is more likely to be **representative** of the population.

Methods for random sampling

Give each item in your sampling frame a unique number. To select the numbers for the items in your sample, you can:

- use a random number table
- use a random number generator on a computer or calculator
- put the numbers of the items on pieces of paper and select at random from a hat
- roll sets of fair 10-sided dice to generate digits from 0 to 9.

Non-random sampling

You need to know about these methods of **non-random sampling**.

- 1** **Judgement sampling** uses judgement to select a sample that is representative of the population.
- 2** **Opportunity sampling** uses the people (or objects) that are available at the time.
- 3** **Cluster sampling** can be used when the population is in groups. A random sample of these groups is selected and all items in the selected groups are included in the sample.
- 4** **Quota sampling** involves splitting the population into groups with certain characteristics (e.g. age, gender) and selecting a given number from each group. For example, a market researcher might ask 10 adults and 10 children about their reaction to the 2018 GCSE results.
- 5** In **systematic sampling**, items are selected from the population at regular intervals either in time or in space. For example, every 5th car that passes a location or every 3rd house on a street.

Statistics

Stratified sampling can be used when the population can be split into distinct **groups**. The advantage over simple random sampling is that you can be certain that all the groups are represented in the sample. This may not be true for simple random sampling.

Petersen capture-recapture formula

You can use the **Petersen capture-recapture formula** to estimate population size for large populations. The diagrams below show how this method works on a population of fish.

Using the formula

You can use this formula to estimate the population size, N :

$$N = \frac{Mn}{m} \text{ or } \frac{m}{n} = \frac{M}{N}$$

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M = number of fish marked then released

n = size of recapture sample

m = number of marked fish in recapture sample

Assumptions

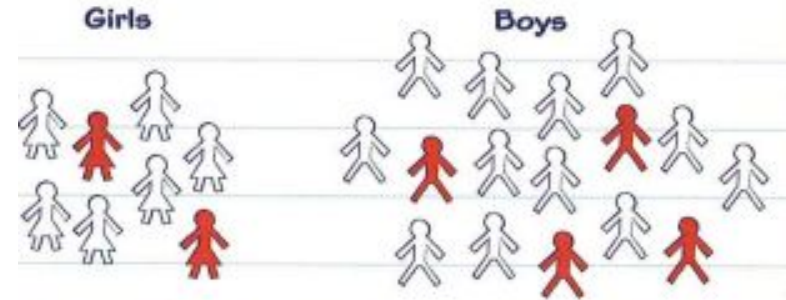
Learn the underlying assumptions.

- ✓ The population is closed – no migration.
- ✓ All members of the population are equally likely to be captured in each sample.
- ✓ Capture and marking do not affect catchability and markings are not lost.
- ✓ The population does not change due to deaths or births between sampling occasions.
- ✓ The sample is large enough to be representative of the population.

Strata

A **stratum** is a group in the population. In a stratified sample, the relative sizes of the groups in the sample are the same as their relative sizes in the whole population.

There are twice as many boys as girls in this population.



So you need twice as many boys as girls in the stratified sample (shown in red).

Statistics

A **questionnaire** is a set of questions designed to collect primary data.

The person who completes the questionnaire is called the **respondent**.

Questionnaires are given to people to complete anonymously, either printed or online.

Interviews are usually carried out in person or by telephone.

	Advantages	Disadvantages
Questionnaires	<ul style="list-style-type: none"> • Much cheaper to do • Each person answering the question is treated in the same way 	<ul style="list-style-type: none"> • Can be inflexible • People may misunderstand some questions
Interviews	<ul style="list-style-type: none"> • Interviewer can explain complex questions • Interviewer can follow up on unclear responses 	<ul style="list-style-type: none"> • Interviewer may be biased • Can be costly

Golden rules

Remember these rules for designing questionnaires:

- ✓ Make questions clear and closed.
- ✓ Avoid open questions.
- ✓ Don't ask leading questions.
- ✓ Have response boxes which are unambiguous.
- ✓ Have response boxes which cover all possible replies and don't overlap.

Types of questions

Avoid **open** questions which allow a wide variety of responses.

e.g. 'What do you think about programmes on TV?'

Use **closed** questions to restrict the replies given.

e.g. 'Are you over 18 years old?'

Avoid **leading or biased** questions which might lead the respondent towards the answer that you want or expect.

Pilot surveys

Pilot surveys are used to test questions in a questionnaire, to make sure that respondents understand the questions and can answer in ways that will collect all the data needed and give valid results. Pilot surveys are usually carried out on a proportion of the total sample population.

When asked to criticise a question on a questionnaire, ask these questions:

- Is there a time frame?
- Do the response boxes overlap?
- Do the response boxes cover all possible responses?

Statistics

Designing investigations

There are **constraints** which must be considered when **designing** an investigation to test a hypothesis.

Considerations

- **Time and cost** to set up and carry out investigation.
- **Ethical issues** You must respect people's dignity and rights.
- **Confidentiality** It is important to keep data secure and confidential.
- **Convenience** of getting data locally.
- **Identifying the population** and method to collect sample data.
- Planning to gain more responses than you think you need, in case of **non-response**.
- Doing a **pilot survey** to help work out likely responses to sensitive questions.
- Planning what to do with **anomalous results**. (Read page 5 for a reminder about anomalous results.)

Planning for non-response

- Decide on the number of responses you need to do a valid analysis of data.
- Do a pilot survey to work out the proportion of surveys which are likely to be returned.
- Use this proportion to work out how many surveys to send.

Calculating the number of surveys

For a survey, 300 responses are needed.

In the pilot survey, 50 questionnaires are sent out. 40 responses are received.

The proportion of responses received

$$\text{is } \frac{40}{50} = \frac{4}{5}$$

Statistics

Completing a two-way table

This two-way table shows the numbers of male and female musicians in each section of an orchestra.

To complete a two-way table look for rows or columns with only one missing value.

Top row total is $23 + 17 = 40$.

	Strings	Wind and brass	Total
Male	23	17	40
Female	34	8	42
Total	57	25	82

$42 - 34 = 8$ so '8' must go in female wind and brass.

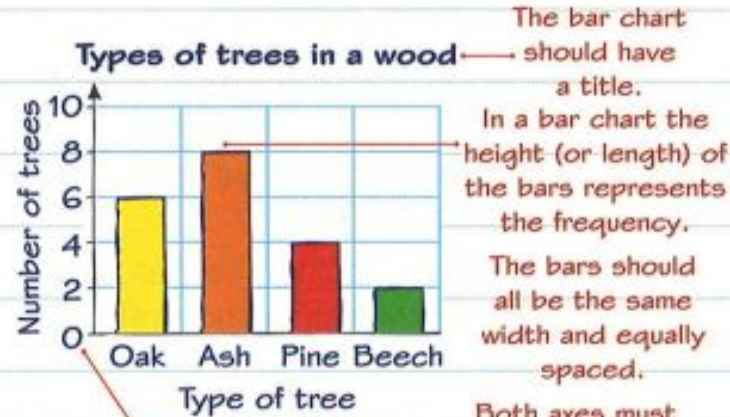
Bar charts and vertical line graphs are a good way of representing discrete data given in a tally chart or frequency table.

They can also be used to represent qualitative data. You met these types of data on page 1.

The table shows information about the types of trees in a wood.

Type of tree	Frequency
Oak	6
Ash	8
Pine	4
Beech	2

The bar chart shows how this information can be displayed.



The vertical axis should start from 0 and go up by equal amounts each division.

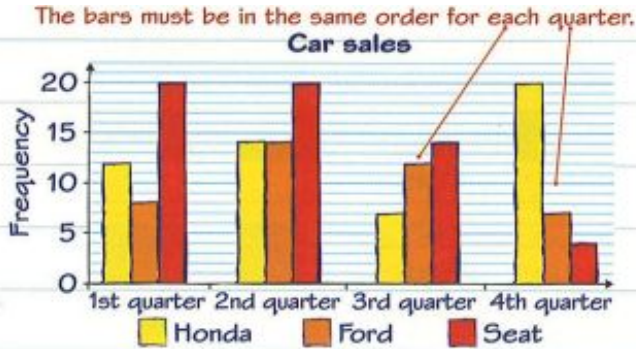
Statistics

Multiple bar charts

This multiple bar chart shows the sales of three makes of cars in four quarters of one year.

There are four sets of three bars to show how sales change over the year.

Using this bar chart it is easy to see that sales of Seat cars were high in the first two quarters but then fell.

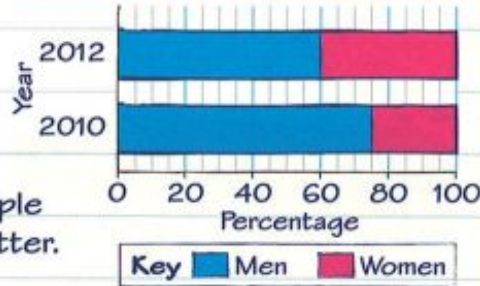


Composite bar charts

This composite bar chart shows how the percentages of men and women seen jogging have changed over two years.

The percentage of women has increased from 25% to 40%.

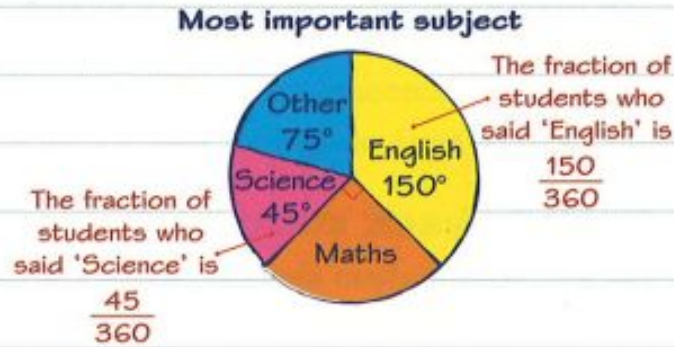
Composite bar charts can be harder to understand than multiple bar charts but do show the proportions within each group better.



Interpreting pie charts

This pie chart gives information about the replies that students gave to the question 'What is your most important subject?'

The pie chart shows that 'English' got the most votes and 'Maths' got one quarter of the votes.



Using a formula

You can use this formula to work out what each sector represents:

$$\text{Number represented} = \frac{\text{angle of sector}}{360} \times \text{total}$$

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Statistics

Stem and leaf diagrams

The ordered display of individual discrete data values in a stem and leaf diagram shows the distribution of the data.

The diagram shows the numbers of emails 15 people received one day.

The **key** is necessary to interpret the diagram.

The **leaves** must always be single digits.

The column with 0, 1, 2 and 3 is the stem.

The rows contain the leaves.

In this case the tens make the stem and the units are the leaves.

0	6	8				
1	2	2	4	6		
2	0	2	3	4	7	7
3	1	3	5			

Key 3 | 5 represents 35 emails

Back-to-back stem and leaf diagrams

Back-to-back stem and leaf diagrams show two sets of data with the same stem. The smallest values on each row are next to the stem.

This diagram shows the marks of a group of students in two tests.

In a back-to-back stem and leaf diagram, the keys can be combined.

Test 1				Test 2		
6	3	1	5	7	9	9
	4	2	6	3	8	
8	0	0	7	5	5	
	6	3	8	7	7	9

Key: 6 | 5 = 56 5 | 7 = 57

6 | 5 | 7 represents 56 marks on the left and 57 marks on the right.

Statistics

Median

The median is the middle value when the data is written in order of size.

In a frequency table the data is already in order.

Make an extra column headed Cumulative frequency.

Fill in the column by starting with 5.

The median is found by using the rule

$$\text{Median} = \frac{n + 1}{2} \text{th data value}$$

where n is the total frequency.

Number of cars	Frequency	Cumulative frequency
0	5	5
1	16	21
2	12	33
3	10	43
4	7	50
5	3	53

Add a cumulative frequency column.

Write down the first frequency.

$5 + 16 = 21$ goes here.

The final number in this column should equal the total frequency.

The median is the $\frac{53 + 1}{2}$ th value.

The 27th value is 2, so median is 2.

Mode

The mode is the value with the **highest frequency** (the value that appears most often). Be careful – the mode is the **data value** and **not** the frequency.

Mean of discrete data from a frequency table

Use the formula:
$$\text{Mean} = \frac{\sum fx}{\sum f}$$

Add another column to the right of the table for $f \times x$.

The table here gives information about European shoe sizes of 20 people.

The mean = $598 \div 20 = 29.9$

Shoe size	Frequency	$f \times x$
28	8	$8 \times 28 = 224$
30	7	$7 \times 30 = 210$
32	3	$3 \times 32 = 96$
34	2	$2 \times 34 = 68$
	20	598

28, 30, 32 and 34 are the x -values.

These two columns are the original table.

This is $\sum f$ (the sum of the frequencies).

This is $\sum fx$.

Statistics

Modal class and class containing the median

The **modal class** is the interval which has the highest frequency.

The table gives information about the lengths of time some trains were late.

The **class that contains the median** is found by using cumulative frequency.

The median is the $\frac{n+1}{2}$ th data value in the table where n is the total of the frequencies.

The modal class is $0 < T \leq 5$ because it has the highest frequency.

Time late, T (minutes)	Frequency	Cumulative frequency
$0 < T \leq 5$	12	12
$5 < T \leq 10$	8	20
$10 < T \leq 15$	11	31
$15 < T \leq 20$	8	39
$20 < T \leq 25$	4	43

$$\frac{n+1}{2} = \frac{43+1}{2} = 22$$

The 22nd data value lies in the interval $10 < T \leq 15$

The lowest 20 times go up to here. The 21st and 22nd times are in the next interval.

Mean of continuous data from a frequency table

The table gives information about the times some students spent on homework.

The midpoint of each interval is found by adding the end points and dividing by 2.

The midpoint of the interval $20 < T \leq 30$ is $x = \frac{20+30}{2} = 25$

Time, T (mins)	Frequency	Midpoint (x)	$f \times x$
$0 < T \leq 10$	12	5	$12 \times 5 = 60$
$10 < T \leq 20$	8	15	$8 \times 15 = 120$
$20 < T \leq 30$	3	25	$3 \times 25 = 75$
$30 < T \leq 40$	2	35	$2 \times 35 = 70$
	25		325

Because you are using the midpoint of each interval, you are working out an **estimate** for the mean. You would need to know the time taken by every student to find the exact value.

This is $\sum f$ (the sum of the frequencies).

This is $\sum fx$.

Using the formula, $\bar{x} = \frac{\sum fx}{\sum f} = 325 \div 25 = 13$

Transforming data

Calculating with transformed values

You can sometimes calculate the mean more easily if the data is transformed first.

This is a list of door heights:

2.05 2.02 2.14 2.01 2.20 2.09

To find the mean, these numbers can be transformed.

First subtract 2 from each value:

0.05 0.02 0.14 0.01 0.20 0.09

Then multiply by 100:

5 2 14 1 20 9

Mean of transformed numbers

$$= \frac{5 + 2 + 14 + 1 + 20 + 9}{6} = \frac{51}{6} = 8.5$$

Now reverse what you did to the numbers:

- divide by 100
- add 2.

$$\text{Mean of original numbers} = \frac{8.5}{100} + 2 = 2.085$$

Worked example



- (a) Find the mean, median and mode for this list of prices. (3)

£45 £28 £36 £57 £28

$$\text{Mean} = (45 + 28 + 36 + 57 + 28) \div 5 = £38.80$$

In order: 28 28 (36) 45 57

Median = £36

Mode = £28

- (b) The prices are increased by 20%. Find the new mean, median and mode for this data. (2)

$$\text{New mean} = £38.80 \times 1.2 = £46.56$$

$$\text{New median} = £36 \times 1.2 = £43.20$$

$$\text{New mode} = £28 \times 1.2 = £33.60$$

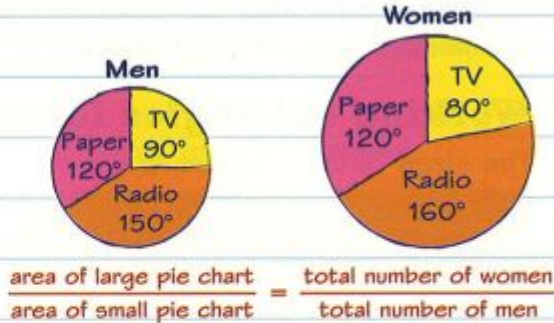
To increase a value by 20% use the multiplier 1.2 to find 120%.

Comparative pie charts

Comparative pie charts are used to **compare** the numbers in populations of **different sizes**.

These two pie charts show preferred sources for news for men and women.

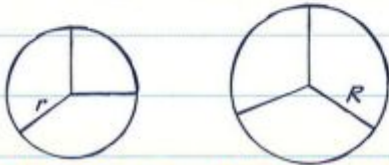
The pie chart for women is larger than the pie chart for men because the total number of women sampled is greater.



Making a comparison

$$\frac{\text{area of large pie chart}}{\text{area of small pie chart}} = \frac{\pi R^2}{\pi r^2} = \frac{R^2}{r^2} = \frac{N}{n}$$

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Total number = n Total number = N

So, use $\frac{R^2}{r^2} = \frac{N}{n}$ where r is the radius of the small circle, R is the radius of the large circle, n is the total number in the small sample and N is the total number in the large sample.

Weighted mean

A weighted mean is one where each data value is multiplied by a number (the weight) based on importance.

The weighted mean \bar{x} is given by the formula

$$\bar{x} = \frac{\sum wx}{\sum w}$$

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where w is the weight given to each variable, x .

For example, in an interview for a job, people have to do four tasks: A, B, C and D.

The weights given to the tasks are 1, 2, 2 and 5, meaning that task D is the most important and task A the least.

Task	A	B	C	D
Weight	1	2	2	5
Jim's mark	10	8	7	4
Anne's mark	3	4	6	8

Jim's weighted mean

$$= \frac{1 \times 10 + 2 \times 8 + 2 \times 7 + 5 \times 4}{1 + 2 + 2 + 5} = 6$$

Anne's weighted mean

$$= \frac{1 \times 3 + 2 \times 4 + 2 \times 6 + 5 \times 8}{1 + 2 + 2 + 5} = 6.3$$

Statistics

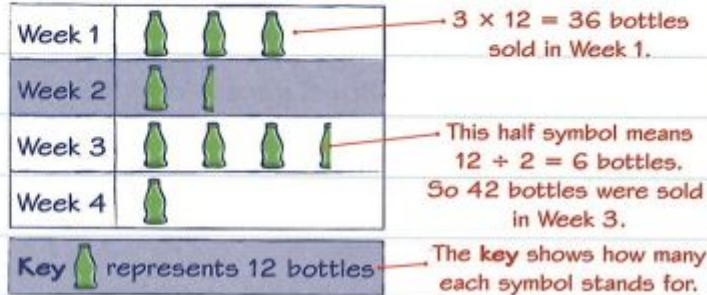
Pictograms

Pictograms are a way of summarising data in a chart. You need to be able to draw and interpret pictograms.

This pictogram shows information about sales from a shop.

You will be expected to deal with halves and quarters when interpreting pictograms.

Pictograms may not be suitable for large numbers as symbols often cannot be easily divided.



Tables

When extracting information from tables make sure you read the table and the units carefully. Figures in tables can sometimes be **rounded**.

This table shows the numbers of people who voted in three General Elections.

Year	Voters (millions)					Total
	CON	LAB	LD	PC/SNP	Other	
2010	10.70	8.61	6.84	0.66	2.88	29.69
2015	11.30	9.35	2.42	1.64	6.00	30.70
2017	13.64	12.88	2.37	1.14	2.18	32.20

Source: House of Commons Library

You may be asked to comment on a **trend**, which is normally **upwards** or **downwards** but can also be **flat**.

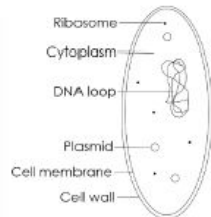
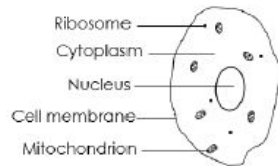
The figures are given in millions.

These numbers have been rounded to two decimal places (the nearest 10000 voters). Rounding can sometimes result in anomalies.

The trend for the total number of voters between 2010 and 2017 is **upwards** (or **increasing**).

Eukaryotes and prokaryotes

- Eukaryotic cells** have membrane-bound organelles and have genetic material contained in the nucleus
- An **organelle** is a part of a cell that carries out a specific function
- Plant and animal cells are examples of **eukaryotic cells**
- Eukaryotic cells are typically between **10-100 µm** in size
- All eukaryotic cells have a nucleus, mitochondria, ribosomes, cytoplasm and a cell membrane. Plant cells also have a cell wall, vacuole and chloroplasts
- Mitochondria** are the site of aerobic respiration which releases energy for cellular processes
- Ribosomes** are the site of protein synthesis
- Prokaryotic cells** do not contain membrane-bound organelles
- Prokaryotic cells are approximately 10 orders of magnitude smaller than eukaryotic cells
- Prokaryotic cells contain genetic material in small rings called **plasmids**, or in larger loops
- Prokaryotic ribosomes are smaller than eukaryotic ribosomes



Growing microorganisms

- Petri dishes are used to produce **cultures** of bacteria and other micro-organisms
- Cultured bacteria are grown on a **nutrient medium** in controlled conditions
- Aseptic techniques** must be used to prepare cultures to prevent contamination of the culture and the growth of harmful bacteria
- Petri dishes, inoculating loops and culture media must be sterilised before use. A flame can be used to sterilise equipment
- An **inoculating loop** is a piece of equipment used to transfer bacteria to the petri dish
- The lid of a Petri dish should be partially secured with tape to ensure bacteria cannot escape but conditions remain aerobic
- The Petri dish must be stored upside down to prevent condensation affecting bacterial growth
- In school laboratories, cultures should generally be incubated at **25 °C** to prevent the growth of harmful bacteria
- A cotton wool swab can be used to transfer a sample to a Petri dish to investigate bacterial growth
- Bacteria on a Petri dish divide rapidly whilst the nutrient supply is rich. Every time the bacteria reproduce, the number doubles. The total number of bacteria can be calculated using the following formula:

$$\text{Final number of bacteria} = \text{Initial number of bacteria} \times 2^{\text{number of divisions}}$$

Microscopy

- Microscopy** is the field of using microscopes to view samples that cannot be seen with the naked eye
- Light microscopes** allow us to see the largest organelles, including the nucleus, cell membrane, cell wall

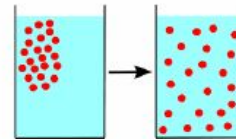
- and cytoplasm. A **stain** is often used to make the organelles clearer
- The parts of a light microscope include the eyepiece lens, objective lenses, stage, coarse focusing wheel, fine focusing wheel, light/mirror
- A sample used with a light microscope must be very thin to allow light to pass through
- The total magnification of a microscope can be calculated using the following equation:
Total magnification = Objective lens x eyepiece lens
- Electron microscopes** have a greater magnification and resolution than light microscopes. They are much more expensive than light microscopes
- Magnification** is the number of times larger an image is than the object
- Resolution** is the ability to distinguish between two points
- Electron microscopes allow are to see more organelles and study cells in greater detail
- Magnification** can be calculated using the following equation:

$$\text{Magnification} = \frac{\text{Size of image}}{\text{Actual size of object}}$$

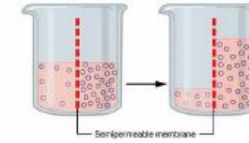
- A **scale bar** can be used to calculate the magnification of an irregular object
- Magnification does not have a unit because it is a ratio

Transport of substances

- Diffusion** is the spreading out of particles, of a gas or liquid, resulting in net movement from an area of high concentration to low concentration

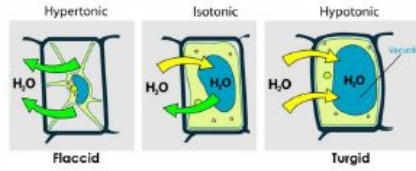


- In gas exchange, oxygen and carbon dioxide diffuse between the alveoli and the blood
- The **rate of diffusion** is increased by:
 - an increase in temperature
 - an increase in the difference in concentrations (**concentration gradient**)
 - a greater surface area
- Unicellular organisms** have a relatively high **surface area to volume ratio** allowing for sufficient transport of all required substances
- Large, **multicellular organisms** have adaptations to increase the surface area to volume ratio to allow for efficient exchange of substances
- Osmosis** is the diffusion of water from a **dilute solution** to a **concentrated solution** through a **partially permeable membrane**

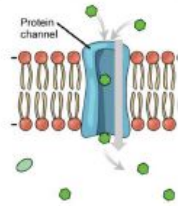


- A **partially permeable membrane** is a membrane that lets particular substances pass through it, either into or out of the cell
- A **hypertonic solution** is one in which the external solution has a higher concentration of solute than the cell. Water always moves out of a cell that is placed in a hypertonic solution, causing the cell to shrivel or become **flaccid**
- Tissue placed in hypertonic solutions decreases in mass
- A **hypotonic solution** is one in which the external solution has a lower concentration of solute than the cell. Water always moves into a cell that is placed in a hypotonic solution, causing the cell to swell or become **turgid**
- Tissue placed in hypotonic solutions increases in mass

45. An **isotonic solution** is one in which the external solution has the same concentration of solute as the cell. Water will not move in or out of cells placed in an isotonic solution so their size will stay constant



46. **Guard cells** open and close due to the movement of water by osmosis
47. The mass of plant tissue can be measured before and after being placed in a solution of known concentration to calculate the **percentage change** in mass due to osmosis
48. **Active transport** moves substances from a more dilute solution to a more concentrated solution, requiring energy from respiration
49. Active transport works **against the concentration gradient**
50. Active transport is used in root hair cells to absorb mineral ions from the soil that are essential for plant growth



Cell division and differentiation

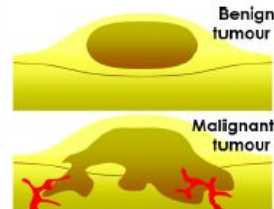
51. Both eukaryotic and prokaryotic cells undergo **cell division**
52. Cells increase in number by dividing into two
53. The **eukaryotic cell cycle** contains a **growth phase** where the cell grows to double sub-cellular structures

(such ribosomes and cell membrane) and DNA, then the cell splits into two during **mitosis**

54. The length of time in a certain stage of the cell cycle can be calculated using the following formula:

$$\frac{(\text{observed number of cells initial stage})}{(\text{total number of cells observed})} \times \text{total length of time of cell cycle}$$

55. The mass of **DNA** in a cell doubles during the growth phase of the cell cycle
56. During **mitosis** DNA (arranged into chromosomes) is pulled to separate ends of the cell ready for division
57. The final part of the cell cycle is when the cell membrane splits to produce two identical **daughter cells**
58. Mitosis is used by eukaryotic organisms for growth and repair and by those that reproduce asexually
59. Mitosis does not occur in prokaryotic cells because they do not possess a nucleus
60. **Checkpoints** in the cell cycle control the rate of cell division
61. **Cancer** is caused by uncontrolled cell division
62. A **tumour** is a mass of cells caused by **uncontrolled cell division**
63. **Benign tumours** are a mass of cells contained in one area
64. **Malignant tumours** are formed of cancer cells that invade other tissues and spread around the body where they form secondary tumours



65. A **risk factor** is a gene or lifestyle choice that can increase the likelihood of a person developing a disease
66. **Lifestyle risk factors** for cancer include poor diet, lack of exercise, smoking, UV exposure
67. **Genetic risk factors** for cancer include gene mutations
68. Specialised cells arise from **stem cells**
69. Stem cells are cells that are capable of **differentiating** into other types of cell
70. When a cell differentiates, it acquires specific structures needed for that cell type
71. Most animal cells differentiate at an early stage of development
72. **Embryonic stem cells** can differentiate into all human cell types
73. **Adult bone marrow** contains stem cells that can differentiate into different types of blood cell
74. Embryonic stem cells can be used to study and treat diseases. There are **religious and ethical objections** to using embryonic stem cells in scientific research
75. Plants contain **meristem tissue** at the tips of shoots and roots that retains the ability to differentiate throughout a plant's life

What will I be learning?

We will be studying Unit 3 in ¡Claro! This will cover:

- ✓ Likes and dislikes
- ✓ Verbs in the present tense
- ✓ Sports
- ✓ Giving opinions
- ✓ The weather

Useful vocabulary and phrases for the units:

aburrido/a	<i>boring</i>
apasionante	<i>exciting</i>
difícil	<i>difficult</i>
divertido/a	<i>fun</i>
emocionante	<i>exciting</i>
fácil	<i>easy</i>
lento/a	<i>slow</i>
rápido/a	<i>fast</i>
me chifla	<i>I love</i>
me fascina...	<i>... fascinates me</i>
me interesa...	<i>... interests me</i>
me mola	<i>I love</i>
en mi opinión	<i>in my opinion</i>
para mí	<i>for me</i>
porque	<i>because</i>

My hobbies- Mis pasatiempos

*Me gusta**No me gusta**Odio**Detesto**Me encanta**I like**I don't like**I hate**I hate**I love*

los pasatiempos

bailar salsa

chatear en el móvil

descansar en casa

escuchar música

jugar a la videoconsola

leer libros

navegar por Internet

practicar deportes

salir con mis amigos

ver la tele

la discoteca

estupendo/a

favorito/a

interesante

el programa

el tipo

*hobbies**to dance salsa**to chat on the phone**to relax at home**to listen to music**to play on the games console**to read books**to surf the Internet**to do/play sports**to go out with friends**to watch TV**nightclub**wonderful**favourite**interesting**programme**type*

el tiempo

¿Qué tiempo hace?

hace (mucho) calor

hace frío

hace sol

hace viento

hay niebla

hay tormenta

lueve (mucho)

nieva

el pronóstico

el calor

el frío

el invierno

la lluvia

la niebla

la nieve

el sol

la tormenta

el viento

cuando

si

*weather**What's the weather like?**it's (very) hot**it's cold**it's sunny**it's windy**it's foggy**it's stormy**it's raining (a lot)**it's snowing**forecast**heat**cold**winter**rain**fog**snow**sun**storm**wind**when**if*

Describe tu rutina diaria.	Me levanto a ... y me ducho/me visto ... desayuno a ... y salgo de la casa a ... Llego al colegio a ...
¿Cómo es tu colegio?	Mi colegio es muy/bastante grande/pequeño ... el edificio es moderno/antiguo ... hay ... profesores y ... alumnos. Hay muchas instalaciones, por ejemplo ...
¿Qué piensas de tu colegio?	Diría que mi colegio es ... ya que en mi opinión hay/no hay ...
¿Cuál es el horario del instituto?	El colegio empieza a ... y termina a ... Tenemos ... clases cada día y cada clase dura ... En mi opinión es un día muy largo.
¿Qué haces durante el recreo?	Normalmente durante el recreo como un bocadillo/charlo con mis amigos/juego al fútbol ...
¿Llevas uniforme?	Desgraciadamente tenemos que llevar uniforme escolar. Tenemos que llevar ... En mi opinión el uniforme es ...
¿Qué actividades hiciste en tu colegio ayer?	Ayer fui al club de ... hice mis deberes ... jugué/practiqué/hice ...
¿Qué reglas hay en tu colegio?	En mi colegio hay muchas reglas, por ejemplo ...
¿Si pudieras, cómo cambiarías el uniforme?	Me gustaría poder llevar mi propia ropa ... preferiría llevar ...
¿Qué cambiarías de tu instituto?	Me gustaría tener un edificio más moderno... cambiaría el uniforme/las reglas ...
¿Cómo sería tu colegio ideal?	Mi colegio ideal sería ... tendría ... habría ...

School building



el aula	classroom
la biblioteca	library
el campo de deportes	sports field
la cantina/el comedor	canteen/dinner hall
el gimnasio	gymnasium
las instalaciones (deportivas)	(sports) facilities
el laboratorio	laboratory
el pasillo	corridor
el patio	playground
el salón de actos	school hall
los vestuarios	changing rooms

Useful verbs



asistir a	to attend	intimidar	to intimidate/ bully
empezar	to start	hacer novillas	to skip a class
durar	to last	comportarse (bien/mal)	to behave well/ badly
castigar	to punish	pasar lista	to call the register
faltar	to be absent	terminar	to finish/end

Advantages and disadvantages of a school uniform



Aspectos positivos	Aspectos negativos
Evita problemas de discriminación.	El uniforme cuesta mucho.
Todos somos iguales.	Es incómodo y feo.
Es fácil vestirse por la mañana	Tenemos demasiado calor en el verano.
Es práctico.	No puedes escoger la ropa.

Impersonal expressions

se debe + infinitive	you must
hay que + infinitive	you have to
es esencial/necesario + infinitive	it is essential/ necessary to
hace falta + infinitive	it is necessary to
(no) se puede + infinitive	you can(not)
(no) se permite + infinitive	it is (not) permitted
se podría + infinitive	you would be able to
se debería + infinitive	you should

School problems



el acoso escolar/la intimidación	bullying
la presión	pressure
el castigo	punishment
los profesores severos/ estrictos	strict teachers
los deberes	homework
los exámenes	exams
la falta de libertad/ respeto/instalaciones	lack of freedom/ respect/ facilities
el estrés	stress
las malas notas	bad grades
el mal comportamiento	bad behaviour

School rules



Tememos que.../ Debemos ...

llegar con puntualidad
llevar el uniforme correctamente
no faltar a clase
traer los materiales necesarios
no comer chicle/comer en clase
no usar el móvil
no hablar cuando el profe habla
respetar a los demás
hacer los deberes
no llevar maquillaje
no correr por los pasillos
ser educado
tratar bien a los compañeros

Useful vocabulary



el/la alumno/a	pupil
la asamblea	assembly
las actividades extraescolares	extra-curricular activities
el recreo	break
la hora de comer	lunch hour
el horario	timetable
el/la compañera/a de clase	classmate
el/la profesora	teacher
el/la directora/a	headteacher
el uniforme (escolar)	school uniform
el estudiante	student
la vida escolar	school life
las reglas/las normas	rules
la rutina	routine

