

Year 8 Computing Summer Term Knowledge Organiser Logic

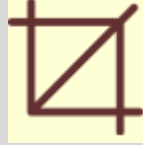
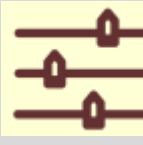
KEY VOCABULARY

1	Bitmap	Bitmap graphics are made up of pixels. Each pixel is stored on the computer as a series of 1s and 0s. When you take a photo with your smart phone it stores the digital image as a bitmap.	2	Vector	Vector graphics do not have any pixels. Instead they are made up of lines and shapes. When a vector is enlarged the lines and shapes are redrawn; making them great for resizing.
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FILES TYPES

3	JPG	A system used to express numbers
4	PNG	Bitmap format that does not compress digital images (bigger file size than JPG). Supports transparent background.
5	GIF	Bitmap format that compresses digital images. Supports transparent background, animation and web safe colours
6	TIFF	Bitmap format that does not compress digital images (file sizes tend to be bigger). Great for printing good quality images.
7	SVG	Vector format; not widely supported. SWF files can be viewed using a web browser, such as Internet Explorer.

EDITING TOOLS

8		ZOOM IN/OUT Allows you to enlarge an area of the graphic (zoom in) to see it more clearly. Zoom out to see the whole graphic.	12		BRIGHTNESS/CONTRAST Brightness will lighten/darken the image. Contrast makes the lights lighter and darks darker.
9		CROP Allows you to chop off parts of an image you don't want to see. This will also change the dimensions of the image.	13		ROTATE Allows you to turn your Images clockwise/anticlockwise by a certain degrees.
10		LAYERS Allows you to separate parts of a graphic into different layers, making it much easier to edit the graphic.	14		DESATURATE Desaturation turns colour photos black & white. Try 'colour splash' to enhance a desaturated photo.
11		RESIZE Allows you to change the dimensions of an image. You can also resize parts of the image if layers are used.	15		FILTERS You can apply different filters to your photo, such as Mosaic Tiles, Stained Glass and Chalk & Charcoal.

Year 8 Art and Design Summer Term Knowledge Organiser

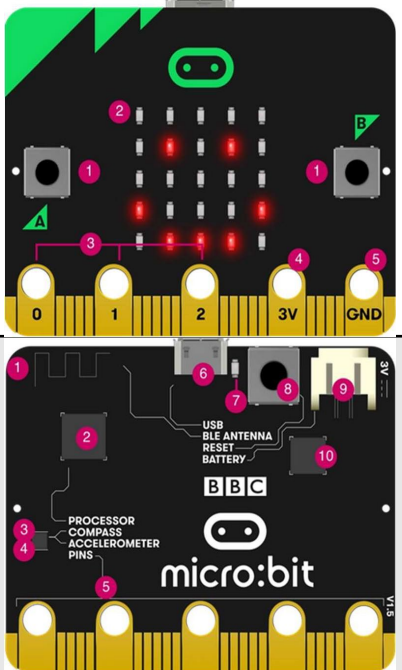
Key Vocabulary:

1	The Formal Elements of Art	The formal elements of art are used to make a piece of artwork. The art elements are line, tone, texture, shape, pattern and colour. They are often used together, and how they are organised in a piece of art determines what the finished piece will look like.
2	Line	A line is a mark or link between two points.
3	Mark	Mark making describes the different lines, dots, marks, patterns and textures to produce a work of art. Artists use gesture to express their feeling and emotions in response to something seen or something felt .
4	Tone	Tone refers to the light and dark values of an object when drawing. There are three different types of tone: shadows, mid tones and high lights. Value in art is essentially how light or dark something is on a scale and refers to tone.
5	Texture	The texture stimulates two different senses: sight and touch.
6	Shape	Shape is a flat, enclosed area such as a square or triangle.
7	Pattern	A repeated decorative design.

8	Shade	A colour, especially with regard to how light or dark it is.
9	Tertiary	A secondary and primary colour mixed together.
10	Tint	Tint is when a colour becomes lighter by adding white.
11	Harmonious colours	Colour harmony is achieved using colours that relate to one another in some way.
12	Form	A form can refer to a three-dimensional composition or object.
13	Balance	If a picture or piece of artwork has balance then each part of it works well together in a whole piece.
14	Composition	The arrangement of elements in a piece of art.
15	Mixed Media	Mixed media refers to a visual art form that combines a variety of media in a single artwork.

8.4 Summer Knowledge Organiser Computing

	Key vocab	
1	MICRO:BIT	A small computer designed by the BBC for use in computer education in the UK.
2	PROCESSOR	Receives inputs from the computer and produces outputs.
3	USB	The form of power supply used by the Micro:bit – power is transmitted from the computer via a micro-USB cable.
4	BUTTONS	Input devices used within the Micro:bit to control or alter programs whilst running.
5	LED (LIGHT EMITTING DIODES)	(LEDs) –used on the Micro:bit as a screen in a 5x5 grid to display information.
6	ACCELEROMETER	An input device within the Micro:bit to control or alter programs by tilting or moving the device.
7	MICROSOFT BLOCK EDITOR	The visual programming language used to create
8	ALGORITHM	A set of instructions to be followed to complete a given task or solve a problem.
9	PROGRAM	A sequence of instructions used by a computer.
10	SEQUENCE	The order which the computer will run code in, one line at a time.
11	SELECTION	A decision made by a computer, choosing what code should be run only when certain conditions are met.
12	CONDITION	Checking to see whether a statement or sum is true or false.
13	ITERATION	When a section of code is repeated several times –also known as looping.
14	VARIABLE	Something which can be changed in a computer. Made up of a name and some data to be saved.

https://makecode.microbit.org/	
15	Key features of the micro:bit
16	On-board motion detector or “accelerometer” that can detect movement and tell other devices you’re on the go. Featured actions include shake, tilt and freefall.
17	A built-in compass or “magnetometer” to sense which direction you’re facing, your movement in degrees, and where you are.
18	Bluetooth Smart Technology to connect to the internet and interact with the world around you.
19	Five Input and Output (I/O) rings to connect the micro:bit to devices or sensors using crocodile clips or 4mm banana plugs.
 20 - Buttons - LED display & light sensor - Pins - GPIO - Pin - 3 volt power - Pin – Ground 21 - Radio & Bluetooth antenna - Processor & temperature sensor - Compass - Accelerometer - Pins - Micro USB socket - Single LED - Reset button - Battery socket - USB interface chip	

Year 8 Drama Summer Term Knowledge Organiser

Key Vocabulary: Digital/Live Performance- Successful Actor study and review: ‘Wonder’ by R J Palacio:		
1	Creative Intentions	What was the director/ writer/ creator thinking about? Themes / issues / response to stimulus / style/genre / contextual influences / collaboration with other practitioners / influences by other practitioners.
2	Purpose	Why was it made? • to educate • to inform • to entertain • to provoke • to challenge viewpoints • to raise awareness • to celebrate...
3	Practitioners’ roles	Performance roles • actor • dancer • Singer • puppeteer • Non-performance roles Choreographer • set designer • director • writer
4	Processes used in development, rehearsal and performance	• Responding to stimulus to generate ideas for performance material. • Exploring and developing ideas to develop material • Discussion with performers. Setting tasks for performers . Sharing ideas and intentions.
5	Techniques and approaches used in performance	• Rehearsal of production • Technical rehearsal • Dress rehearsal • Performance • Post-performance • Evaluation review.
6	Evidence	• PowerPoint presentation • Written review • A3 spider/mind map To show your understanding

7	Responsibilities
What are the main ‘roles’ such as actors, directors expected to do in order that the performance goes ahead successfully: Actor: • Learn lines • Arrive to rehearsals on time • Work positively with the other cast members • Develop their character Director: • Know the script and what their intentions are. • What the target audience is • Work positively with the full team: Technical as well as actors • Have a clear schedule of rehearsals and deadlines	
8	Plot
• This is what the performance is about. • The moral or message it may be sharing. • The time period it may be in e.g. 2000s? 1980s • Whether it is naturalistic or stylised	
9	Reflective keywords
• Characterisation – Use of Voice and movement to create a role • Genre: How the performance makes you feel? Comedy, Action, romance • Theme: The topic of the performance • Naturalistic: Believably performed – real set and costume • Stylised: Use of techniques e.g Freeze Frame, monologues • Analysing and evaluating: taking examples from the piece to explain your thoughts and feelings about it.	

Year 8 Blood Brothers Knowledge Organiser

Key Vocabulary:		
1	Proletariat	Working-class
2	Bourgeoisie	Middle-class
3	Poverty	Being extremely poor
4	Stereotypes	Widely held belief about something or someone
5	Social class divide	A large gap between social classes
6	Tone	How a character sounds in their dialogue
7	Dialect	Particular type of language spoken in a certain area
8	Colloquialism	Informal language
9	Sociolect	Language that is used by a specific social class
10	Stage directions	They explain the direction of a character on stage, facial expressions or any gestures they will make
11	Dramatic irony	The audience know more than the characters
12	Cyclical structure	The ending of a narrative is shown at the beginning

13	Plot Summary:
	At the beginning we see a preview of the play's final moments - Mickey and Edward both die. Mrs Johnstone sings about how she can't afford to feed them. Mrs Johnstone goes to clean at Mrs Lyons' house. Mrs Lyons reveals that she and her husband can't have children. Mrs Lyons persuades Mrs Johnston to give her one of the babies that she is pregnant with. Mrs Lyons takes one of the babies. Mrs Lyons fires Mrs Johnstone and tells her that both boys will die if they ever find out they are twins. When the twins are seven, Mickey and Edward meet. Mrs Johnstone is horrified when she realises who Mickey's new friend is. Mickey goes to see Edward but Mrs Lyons sends him away. Edward is angry and uses swear words he learnt from Mickey. Edward sneaks out to play with Mickey and Linda. Mrs Lyons tells her husband that they need to move away. Soon afterwards, a policeman catches Edward, Mickey and Linda misbehaving, which persuades Mr Lyons to move his family. Edward goes to Mrs Johnstone's house upset about moving and she gives him a locket. The Johnstone's find out that they're being moved too. When Edward is fourteen, he is suspended from his boarding school. Mickey and Linda are also suspended from their comprehensive school. Back home, Mickey and Edward meet again and recognise each other. Mrs Lyons sees the boys together and tries to bribe Mrs Johnstone to move away. When she refuses, Mrs Lyons tries to attack her. Edward leaves for university and Mickey and Linda get married. Unfortunately, Mickey loses his job and has to go on the dole. Edward comes home from university. Mickey resents him and they fall out. Mickey's sentenced to seven years in prison. He becomes depressed. Mickey is released early but he is still depressed. Linda begs him to stop taking the pills. Linda gets them a new house and a job for Mickey, but Mickey knows that Edward, who is now a local councillor, is responsible for both. Linda and Edward kiss. Mrs Lyons shows Mickey that Edward and Linda are together. Mickey takes Sammy's gun and goes to confront Edward at the Town Hall. Mrs Johnstone tells the boys they are brothers. Mickey loses control and accidentally shoots Edward. The police shoot and both Eddie and Mickey die.

Characters:	
14	Mrs Johnstone Mickey , Edward and Sammy's mother. She is working-class and gives up Edward so he'll have a better life.
15	Mickey Johnstone The twin Mrs Johnstone keeps. He's a friendly child but ends up unemployed and in trouble with the law.
16	Mrs Lyons A middle-class woman who longs for a child. She manipulates Mrs Johnstone into giving Edward to her.
17	Eddie Lyons The twin Mrs Lyons takes. He's well- educated and grows up to be a successful local councillor.

YEAR 8 HALF TERM 6 – FIELDWORK

Vocab	Definition
Primary Data	Data that you personally collect when doing fieldwork.
Secondary Data	Data that someone else has collected.
GIS	Geographical Information Systems – online maps and interactive maps that help represent data.
Quantitative Data	Data with a numerical value such as statistics.
Qualitative Data	Data that is words or images, usually containing views, opinions or feelings.
Analysis	Detailed examination of something usually data.
Conclusion	Drawing together results to reach an answer. In fieldwork drawing results from data to answer the enquiry question.
Evaluation	Weighing up the positives and negatives of something. In fieldwork it refers to considering how reliable and accurate the results are.
Accuracy	How limited errors have been, therefore making data more likely to give true results.
Reliability	How trustworthy data is based on it being a good representation of possible data to be collected.
Bias	When something is not done fairly as there is a preference given.
Correlation	When there is a link or relationship between two pieces of data.
Physical Fieldwork	Enquiry questions based around the natural environment and processes.
Human Fieldwork	Enquiry questions based around human interactions with the environment and man-made environments.

1. Types of Data

	Primary Data	Secondary Data
Quantitative	Cloud cover using the Okta Scale Wind Direction Wind Speed	Weather data ArcGIS Online
Qualitative	Environmental quality survey People counts Questionnaires and interviews Photographs Land use mapping	OS maps and maps of schools Satellite images

2. Risk Assessments

It is important to carry out a risk assessment in order to ensure that I stay safe. By identifying a risk in advance, I can put in measures to reduce the risk. For example, by wearing waterproof clothing I can avoid getting wet if it rains.

	Risk	Mitigation
General public	Wet weather is dangerous due to slippery groyne etc. Hot weather also poses the risk of dehydration.	Students advised to bring plenty of water and sun cream if the weather forecast is hot. If the weather forecast is wet, students are advised to bring appropriate clothing and footwear.
	Risk of verbal abuse from members of the public especially when carrying out questionnaires. Also risk of abduction.	Students told to walk around in pairs or more. Meeting point given to students to meet at regular times and a head count to be done. Students to be polite when asking questionnaires.

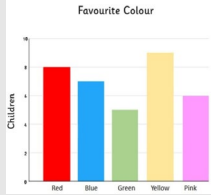
3. Fieldwork Techniques

Maps	There are many different types of maps. Maps display information and data that geographers may find useful when studying a particular place. OS maps show relief (height and shape of the land) and we can use four figure and six figure grid references to locate places.
Questionnaire	A questionnaire is designed and the investigator asks their chosen audience questions.
Field Sketch	Sketch of the area of investigation. Add detailed annotations on features that provide information for your investigation. You could describe processes shown within the field sketch and comment on the noticeable interactions which you find particularly important.
Photos	Photographs of areas within the investigation that present relevant aspects of the investigation, e.g. litter in a park or destroyed outdoor furniture.
Bipolar Survey	A survey where a chosen aspect is rated using polar opposite ratings (e.g. from -5 to +5) For example: On a scale of -5 (completely against) to +5 (completely for), what is your opinion of.....
Land Use Survey	Prior to the survey, choose a relevant area that will be representative of what is being investigated. Walk down your chosen area and note down (tallys are useful) how an area of land is being used (entertainment, public building, commercial, service, outdoor etc.)
Environmental Quality Survey	The area of a chosen environment is rated using a scale, for example 1-5. Different aspects of the environment are rated such as noise, building condition, greenery etc. Before conducting, investigation sites should be chosen and your survey should be made specific to your investigation purpose.

Presentation and Analysis: e.g. Bar Chart

Bar charts are used to show the number of things (or frequency) in several categories.

- Plot categories on the x-axis.
- Leave gaps between the bars as data is not continuous.



Analysis

What are the highest and lowest bars? Is there any data that surprises you? Use data to help support your points.

Presentation and Analysis: e.g. Line Graph

A line graph is used to show changes over time, for example, Changes in temperature through a day. More than one line can be plotted so that a comparison can be made over time.



- Both the x and y axis are numerical and continuous.
- If time is one of the variable, always plot it on the x-axis.

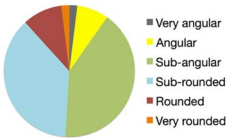
Analysis

Is the line going up or down? Is the line steep or does it go up or down slowly? Is the line smooth or does it zig-zag? Use data to help support your points.

Presentation and Analysis: e.g. Pie Chart

A pie chart is a circle divided into sections. Each section represents a percentage.

- Sectors can be shaded or coloured, and need labels or a key.



- Multiple pie charts can be used where the size of each circle shows ration.

Analysis

Which categories are the smallest or largest sections of the pie chart? Are the categories divided up equally? Use data to help support your points.

Conclusion and Evaluation

Refer back to your hypothesis, in two simple sentences try to provide an overview of your findings.

Did you disprove your hypothesis?

Ensure that your hypothesis is consistent with what you are saying in your analysis.

What were the strongest or most reliable sections of your investigation?

How could you develop your investigation? What else could you have investigated?

Were there any problems with your techniques?

Were there any limitations?

Year 8 History Summer Term Knowledge Organiser: Was it all mud, blood and poppycock?

Key Vocabulary:			Why did WW1 start?		What was it like to experience WW1?	
1	Nationalism	The belief that your country is better than anyone else's	11	Long term causes	14	weapons
2	alliances	A group of countries who agree to support each other when needed	• Militarism – e.g. naval race between Germany and Britain • Alliances - a number of alliances had been signed by countries between the years 1879 and 1914, notably the Triple Alliance and the Triple Entente. These were important because they meant that some countries had no option but to declare war if one of their allies declared war first. • Imperialism - the amount of lands 'owned' by Britain and France increased the rivalry with Germany who had entered the scramble to acquire colonies late and only had small areas of Africa. • Nationalism - means being a strong supporter of the rights and interests of one's country, this caused tension among large areas of both Austria-Hungary and Serbia were home to differing nationalist groups, all of whom wanted freedom from the states in which they lived.		• The early 20th century a number of technological innovations created entirely new classes of weapons. • These WW1 weapons were responsible for the staggering scale of death in the war. • These new weapons included; rifles, machine guns, gas (chlorine, mustard and phosgene), tanks, planes and torpedoes. Weapons were being developed to break the stalemate.	
3	Imperialism	The desire to take over and conquer other countries				
4	militarism	Building up of armed forces, navy and so on				
5	colony	A territory/country controlled by another country	12 Assassination of Archduke Franz Ferdinand 28th June 1914- Assassination of Archduke Franz Ferdinand A member of the Austrian royal family and heir to the throne was sent to Sarajevo-the capital of Bosnia- a country which Austria had just taken over. Assassinated by Gavrilo Princip – a member of the Black Hand Gang which opposed the Austrian takeover of Serbia. This led to the Austro-Hungarians declaring war on Serbia.		15 Trenches • Trench warfare occurred after the failure of the Schlieffen plan. • It is a form of warfare in which trenches are dug and soldiers are able to have some protection. • For the soldiers, conditions were terrible. Rain and cold were constant problems. Artillery fire destroyed the drains, so the battlefields became bogs of mud – often, men drowned in the mud. Sanitary arrangements were unsatisfactory, and disease killed as many men as the enemy.	
6	Arms race	A competition between two or more countries to have the best armed forces. This normally involves recruiting and training more soldiers and developing new, better weapons				
7	assassination	A murder of an important person by a sudden or secret attack of ten for political reasons				
8	conscription	Forcing men to join the army	13 Timeline to war 1. June 28 - Archduke Franz Ferdinand, prince to the Austria-Hungary throne, is assassinated 2. July 23 - Austria-Hungary demands Serbia pay for the assassination of Franz Ferdinand. 3. July 28 - Austria-Hungary declares war on Serbia. Russia begins mobilizing its troops. 4. Aug 1 - Germany declares war on Russia. 5. Aug 3 - Germany declares war on France 6. Aug 4 - Germany invades Belgium. Britain declares war on Germany.		16 Illness • Trench fever – transmitted by lice, it caused flu like symptoms. • Trench foot – soldiers stood in the mud and waterlogged trenches, which caused painful swelling in their feet. Later gangrene would set in and the foot would need amputating. • Shell-shock – caused by the stressful conditions of war, led to symptoms such as tiredness, nightmares, shaking and a mental breakdown. Around 80,000 British troops were effected.	
9	artillery	Large weapons which fired shells over large distances				
10	trenches	A long narrow corridor dug into the ground, the earth is used as a shelter from enemy attack or fire				
					17 Mud, Blood and Poppycock • The popular view of the First World War remains that of 'Blackadder': incompetent generals sending brave soldiers to their deaths. • Another popular view is that the soldiers spent all of their time in horrible muddy and disgusting trenches and slaughtered in their very dangerous front line trenches	

Year 8 Design and Technology Summer Term Knowledge Organiser

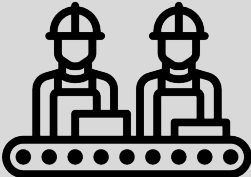
Key Vocabulary:

1	Natural	Existing in or derived from nature; not made or caused by humankind. For example, gold is naturally occurring but a gold bar or gold ring is man-made.
2	Environment	The natural environment or natural world encompasses all living and non-living things occurring naturally, meaning in this case not artificial. The term is most often applied to the Earth or some parts of Earth.
3	Sustainability	A societal goal with three dimensions: the environmental, economic and social dimension. Environmental sustainability occurs when natural resources are preserved.
4	Fossil Fuels	A fossil fuel is a hydrocarbon-containing material formed naturally in the earth's crust from the remains of dead plants and animals that is extracted and burned as a fuel. The main fossil fuels are coal, crude oil and natural gas.
5	CAD	Computer-aided design is the use of computers to aid in the creation, modification, analysis, or optimization of a design. This software is used to increase the productivity of the designer, improve the quality of design, improve communications through documentation, and to create a database for manufacturing.
6	CAM	Computer Aided Manufacturing is the use of software and computer-controlled machinery to automate a manufacturing process.

Sustainable Phone Holder

7	Coping Saw	A coping saw is a type of bow saw used to cut intricate external shapes and interior cut-outs in woodworking or carpentry.
8	File	File (tool), a tool used to remove fine amounts of material from a workpiece.
9	Glasspaper	Glasspaper and sandpaper are names used for a type of coated abrasive that consists of sheets of paper or cloth with abrasive material glued to one face.
10	Edge Treatment	The edge treatment can affect functionality and performance. Edging is done for safety, aesthetic, functionality, cleanliness, improved dimensional tolerance, and to prevent chipping. Edging is generally described as a grinding process used to remove the sharp or raw edge of cut wood.
11	Dimension	a measurable extent of a particular kind, such as length, breadth, depth, or height.
12	Diameter	A diameter of a circle is any straight line segment that passes through the centre of the circle and whose endpoints lie on the circle.
13	Radius	A radius of a circle or sphere is any of the line segments from its centre to its perimeter, and in more modern usage, it is also their length. The name comes from the Latin radius, meaning ray but also the spoke of a chariot wheel.

3D Design

13	Pine (softwood)
Pine wood is a relatively cheap wood used in the building trade and for furniture. It is pale in colour, quite easy to cut and shape. It has a wider grain making it somewhat weaker than other hardwoods.	
	
14	Mahogany (hardwood)
Mahogany is quite expensive and is used for good quality furniture and hardwood windows. It is light brown in colour and more difficult to cut and shape compared to a softwood such as pine. The closer grain makes it stronger.	
	
15	Manufacture - What is it?
Use specialist tools techniques processes equipment and machinery precisely and use a wider more complex range of materials components taking into account their properties.	
	
16	Evaluation
Designers evaluate their finished products to test whether they work well and if design can be corrected or improved. It is important to evaluate your work constantly during the project to see if it is on track so that improvements can be built-in throughout the design process, not just at the end.	

Year 8 Science Summer Term Knowledge Organiser - Light

Key Vocabulary:

1	Angle of incidence	The angle between the incident (incoming) ray and the normal.
2	Angle of reflection	The angle between the reflected (outgoing) ray and the normal.
3	Boundary	The edge of a material or medium.
4	Concave lens	A lens that spreads out rays of light.
5	Convex lens	A lens that brings rays of light to a focal point.
6	Cornea	The transparent layer at the front of the eye.
7	Dispersion	The splitting of white light into the colour spectrum.
8	Emit	Produce or give out.
9	Law of reflection	The angle of incidence is equal to the angle of reflection.
10	Lens	A piece of dense transparent material that causes light to refract.
11	Luminous	Something that gives off light.
12	Medium	The substance through which a wave travels.
13	Non-luminous	Something that does not give off light.
14	Normal	An imaginary line perpendicular (at right angles) to the surface of a medium, from where angles are measured.
15	Pupil	The round opening in the centre of the eye through which light passes.
16	Reflection	When light bounces back to the medium it came from when it hits a boundary between materials.
17	Refraction	The change in speed of light as it moves from one medium to another, causing it to change direction.
18	Retina	The layer at the back of the eye that is sensitive to light and passes signals to the brain via the optic nerve.
19	Spectrum	The colours that make up white light.

18

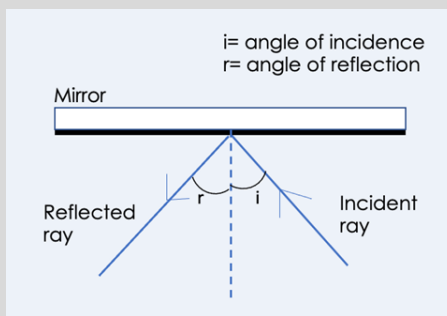
Understanding Light

- Light travels at 300 million metres per second (m/s).
- Light travels faster than sound.
- Light always travels in straight lines from a luminous object.
- Shadows form when light is blocked by an opaque object.
- Ray diagrams can show how light reflects off mirrors, forms images, and refracts.
- Ray diagrams are always drawn with a ruler and pencil.
- Angles are measured from the normal line with a protractor.
- The normal line is the dotted line from which angles are measured, at right angles (90°) to the surface.
- Arrows are used to show the direction the light is travelling in.
- Transparent: A material that allows most light to pass through it.
- Translucent: A material that allows some light to pass through it.
- Opaque: A material that allows no light to pass through it.

19

Reflection

- Reflection occurs when light hits a smooth surface (e.g. a mirror).
- The light hits the surface and is reflected into the eye.
- The angle of incidence is equal to the angle of reflection – this is the law of reflection.



20

Refraction

- Refraction is the change in the direction of light going from one material (medium) into another.
- This change in direction is because light changes speed when it moves from one medium to another.
- When light enters a more dense medium it bends towards the normal.
- When light enters a less dense medium it bends away from the normal.
- Refraction in water makes objects look as though they are nearer the surface than they actually are.



21

Lenses

- Lenses refract light.
- Convex lenses are thicker in the middle and refract light to a focal point. In the eye, the cornea and lens are both convex lenses and help to focus light onto the retina.
- Concave lenses are thinner in the middle and scatter the light (there is no focal point).



22

Drag Forces & Friction

- Prisms cause light to be dispersed, this is when white light to split into seven component colours called a spectrum.
- Spectrum: A band of colours produced by separation of the components of light because they are each refracted differently.
- The order of the colours is always the same ROYGBIV: red, orange, yellow, green, blue, indigo, violet.
- Red light is refracted the least and violet is refracted the most.
- Red, green and blue are called the primary colours of light.
- Yellow, magenta and cyan are the secondary colours of light, made from combinations of the primary colours.
- White light is produced from the combination of all the colours.
- Objects appear the colour that they reflect, e.g. a red apple appears red because it reflects red light and absorbs all other colours.
- White objects appear white because they reflect all colours.
- Black objects appear black because they absorb all colours.



Year 8 Music Summer Term Knowledge Organiser

Key Vocabulary:

1	Walking Bass	The bass part in the Blues 'walks' up or down the notes step by step.
2	12 Bar Blues	The 3 chords used over 12 bars.
3	Syncopation	Music that is played on the off-beat
4	Improvisation	Music that is created spontaneously/on the spot by a performer using a chord progression.
5	Swing Rhythm	When playing quavers, the first quaver is given a bit longer as it steals time from the second quaver to give the music a swinging feel.
6	Call and Response	A melodic question and answer made by different instruments.
7	Spiritual	Songs sung by slaves in the 19th century with themes of yearning for freedom, to be lifted out of suffering and the belief that a higher power will help a person persevere in tough times.

Historical context

8	The Blues
- The Blues started to become Popular in the Early 1900's - It comes from the Southern States of the USA – Louisiana and Mississippi	
9	Musical Context
- It is widely accepted that Blues music evolved from the African spirituals, chants, hymns, work songs and field hollers that were sung on the plantations - Over the years, African musical features such as Call & Response singing, blended with chords was the beginning of the Blues. - Blues lyrics often deal with personal adversity. The Blues is also about overcoming hard luck, saying what you feel, ridding yourself of frustration.	
10	Key Features of the music
12 bar blues - Improvisation - Call and response - Slow tempo	

11 Famous Blues Artists

Louis Armstrong – Trumpeter and singer (1901 – 1971) Known as the Satchmo. Started his career in 1919.



Bessie Smith – The first famous Blues singer (1894 – 1937) Started her career in 1912



Billie Holiday – Famous for her Blues and Jazz scatting (1915-1959) Started her career in 1930



Robert Johnson – One of the first Blues Stars (1911 – 1938). His career lasted 8 months



12 Instruments in the Blues

Include:
piano, trumpet, double bass, drum kit, trombone, guitar and saxophone.



Year 8 Summer Term Spanish Knowledge Organiser – Operación verano

1	¿Qué casa prefieres?	(Which house do you prefer?)	1	¿Dónde está...?	(Where is...?)	1	La casa	(The house)	1	¿Qué se puede hacer...?	(What can you do in...?)
2.	Estacasa es...	This house is...	2.	la catedral	the cathedral	2.	Tiene...	It has...	2.	Se puede(n)...	You can...
3.	Este pisos es...	This flat is...	3.	la estación de tren	the railway station	3.	una cocina	a kitchen	3.	hacer actividades náuticas	do water sports
4.	amplio/a	spacious	4.	el minigolf	the minigolf	4.	un comedor	a dining room	4.	hacer artes marciales	do martial arts
5.	antiguo/a	old	5.	el parque de atracciones	the theme park	5.	un cuarto de baño	a bathroom	5.	hacer senderismo	go hiking
6.	bonito/a	nice/pretty	6.	el parque acuático	the water park	6.	un dormitorio	a bedroom	6.	ir a la bolera	go bowling
7.	cómodo/a	comfortable	7.	la pista de karting	the go-kart track	7.	un salón	a living room	7.	ir al cine	go to the cinema
8.	enorme	enormous	8.	el zoo	the zoo	8.	una chimenea	a fireplace	8.	ir de compras	go shopping
9.	feo/a	ugly	9.	Seguir todo recto	Keep straight on	9.	un jacuzzi	a hot tub	9.	ir de paseo en bicicleta	go on a bike ride
10.	grande	big	10.	Doblar a la derecha	Turn right	10.	un jardín	a garden	10.	ir a la playa	go to the beach
11.	maravilloso/a	marvellous	11.	Doblar a la izquierda	Turn left	11.	una piscina	a swimming pool	11.	ir al restaurante	go to the restaurant
12.	moderno/a	modern	12.	Toma la primera a la derecha	Take the first on the right	12.	una terraza	a balcony, a terrace	12.	jugar al golf	play golf
13.	pequeño/a	small	13.	Toma la segunda a la izquierda	Take the second on the left	13.	vistas al mar	views of the sea	13.	jugar al voleibol	play volleyball
14.	La casa/ El piso está...	The house/ The flat is...	14.	Cruzar la plaza	Cross the square	14.	La casa (The house)		14.	jugar al tenis	play tennis
15.	cerca de la playa	near the beach	15.	Está a la derecha	It's on the right	15.	Tiene...	It has...	15.	ver la catedral	see the cathedral
16.	en el centro	in the centre	16.	Está a la izquierda	It's on the left	16.	una cocina	a kitchen	16.	visitar un castillo	visit a castle

Year 8 RS Exploring Christianity – Summer Term Knowledge Organiser

Key Vocabulary:		
1	Creation	Creation refers to the origins of the universe. Christians believe that God was responsible for creating everything.
2	Trinity	Christianity is a monotheist religion, but God has three Persons: the Father, Son and Holy Spirit.
3	Denomination	Branches of the Church.
4	Rite of Passage	A ritual that marks a change in a person's religious identify. E.G. Baptism or funeral.
5	Pilgrimage	A journey to a sacred site, for religious reasons.
6	Incarnation	The idea that Jesus is God in human form. Literally means 'made flesh'.
7	Crucifixion	Jesus' death on the cross.
8	Resurrection	The idea that Jesus defeated death and came back to life after the crucifixion.

Christian Beliefs and Practices	
10	1. Creation Whilst all Christians agree that God created the world, there are different ideas on what the Genesis creation story means. Some Christians take it literally whilst others see it as a metaphor for God's power.
	2. The Trinity Christian creeds, or declarations of faith, state that God is one in three Persons. The Father, Son and Holy Spirit have different roles to play in the world, but are all manifestations of God.
	3. Branches of the Church Christianity has existed for two thousand years, and throughout history, there have been disagreements on how to practice the religion. We will look at the timeline of Christian denominations and explore why the disagreements came about.
	4. Rites of Passage There are many rites of passage in Christianity, which all mark different stages in a person's life. We will explore how baptism welcomes people into the Christian faith, what a marriage is meant to symbolize and how funerals demonstrate the Christian beliefs in life after death.

Life of Jesus	
	5. Birth of Jesus Christians believe that Jesus is the Son of God, as well as being God in human form. By looking at the story of the incarnation, where God literally becomes flesh, we can understand the Christian ideas of 'immaculate conception' and the importance of the Virgin Mary.
	6. Miracles Throughout his life, Jesus performed many miracles. These are events that break the laws of nature and go against what we expect to happen. We will look at some examples of miracles and decide if they really were miraculous events, or if there is another explanation.
	7. Parables Jesus' ministry, or his time as a teacher on earth, involved telling his followers lots of stories with hidden meanings. These became known as his parables. These stories were meant to teach his followers and his critics how to live a Christian life.
	8. & 9. Crucifixion and Resurrection The Christian message upset many people, and Jesus was killed through the crucifixion. He was nailed to the cross, and in dying, took on the sins of mankind so that humans can get to heaven. As he was God incarnate, Jesus was able to defeat death and returned to the world three days later as part of the resurrection.

Year 8 Science Summer Term Knowledge Organiser – Circuits and Resistance

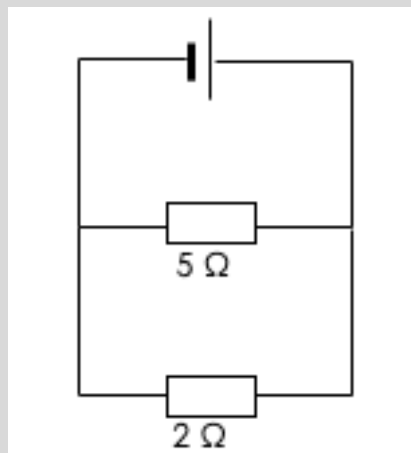
Key Vocabulary

1	Ammeter	A component used to measure current in electrical circuits, connected in series. Ammeters measure current in Amps.
2	Current	The rate of flow of charge. The current in a circuit is measured using an ammeter.
3	Electrical Conductor	A material that has a low resistance and allows current to flow through it easily. Metals are electrical conductors.
4	Series	A circuit in which there is only one branch through which current can flow. Current is the same at all points in a series circuit
5	Parallel	A circuit in which there is more than one branch through which current can flow. Current splits at branches in a parallel circuit.
6	Voltage	The amount of energy shifted from the power source to the moving charges or from the charges to the component. Adding another cell can increase the voltage in a circuit.

11 Resistance decreases current.

12 Resistance is measured in **ohms (Ω)**.

13 Resistance is added by **all components**.



15 Current through a component depends on both resistance of the component and voltage across the component. Increasing the voltage gives the charges a bigger push, which increases the current. Increasing the resistance makes it harder for the current to flow, which decreases the current.

16 Resistance is measured by measuring voltage and current and using $R = V/I$

17 A longer wire has a greater resistance.

18 Resistance of a wire is also affected by the type of metal the wire is made of.

19 Resistance in series is the sum of individual resistors.

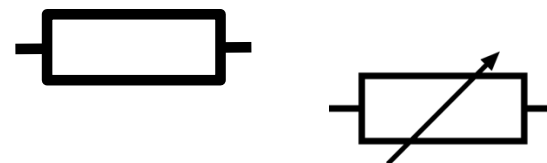
Resistance

21 The total resistance of this circuit is $10\ \Omega$.

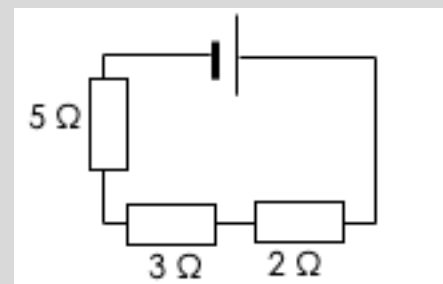
22 Resistance in parallel is less than the lowest resistance branch.

23 Electrical insulators have high resistance

24 Current transfers energy.



20



Year 8 Science Summer Term Knowledge Organiser – Earth

Key Vocabulary

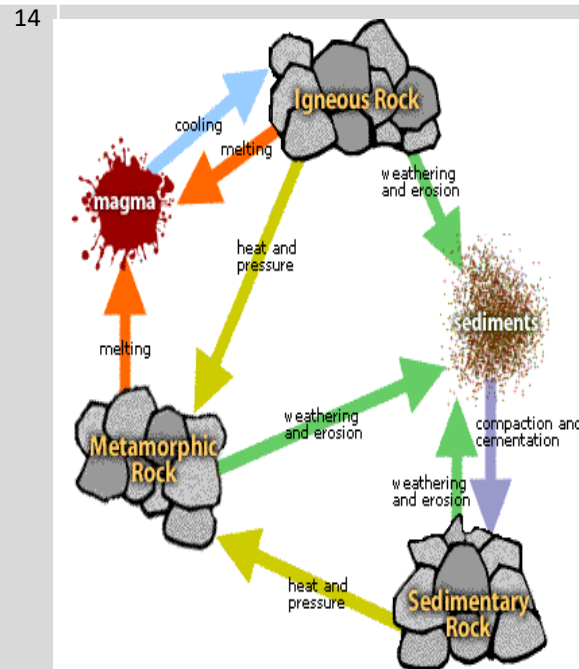
1	Magma	Molten rock underground
2	Lava	Molten rock above ground
3	Intrusive	Rocks that have cooled slowly and have large crystals
4	Extrusive	Rocks that have cooled quickly and have small crystals
5	Weathering	Breaks down rocks on the surface of the Earth; Biological, Chemical or Physical
6	Erosion	Movement of pieces of rock away from where they started
7	Sedimentation	Layers of sediment build in layers and the bottom layer becomes compressed
8	Cementation	Dissolved minerals fill any spaces and bind rock particles together
9	Precipitation	Where droplets in clouds are heavy, they fall back to earth as hail, rain, sleet or snow
10	Transpiration	Plants take water from the ground and move it to their leaves where it evaporates into the atmosphere

11 Magma and lava are molten (melted, very hot liquid) rock

12 When molten rock cools it solidifies to form igneous rocks

13 Igneous rocks formed from magma underground are intrusive rocks

The Rock Cycle



15

1. **Sedimentary** rocks can change into **metamorphic** rocks due to heat and pressure from the movements of the Earth.
2. Those metamorphic rocks can be weathered, eroded, and the pieces transported away.
3. The pieces of rock could be deposited in a lake or sea, eventually forming new **sedimentary** rock.

16 If rocks are pushed deep underground they experience tremendous heat and pressure

17 Heat and pressure change the structure of igneous and sedimentary rocks to form metamorphic rocks (E.g. marble formed from chalk)

18 The formation of rocks is related to each other in the rock cycle

19 Sedimentation, compression, and cementation form sedimentary rocks. E.g., chalk or sandstone.

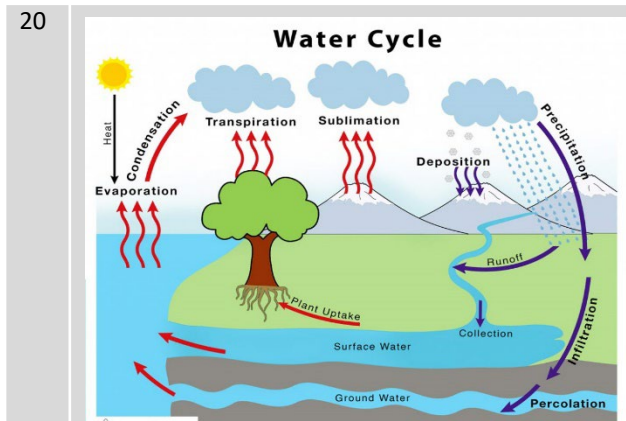
Water Cycle

21 Water constantly evaporates from land surface, rivers and the sea

22 As water vapour rises it condenses into droplets. Clouds are formed from **condensed** water droplets.

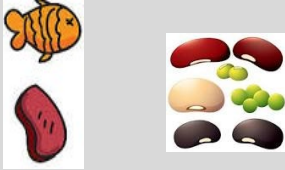
23 When droplets in clouds are heavy, they fall back to earth as **precipitation**. Precipitation is hail, rain, sleet, and snow.

24 Water that falls over the sea goes back into the sea. Water that falls over land goes into rivers or groundwater and makes its way back to the sea. This cycle is called the water cycle



Year 8 Food Technology Summer Term Knowledge Organiser

Key Vocabulary: The Eatwell Guide

1	The Eatwell Guide	
2	Fruit and vegetables.	
3	Potatoes, bread, rice, pasta or other starchy carbohydrates.	
4	Dairy and alternatives.	
5	Beans, pulses, fish, eggs, meat and other protein.	
6	Oil and spreads.	
7	Foods high fat, salt and sugar.	

Key Vocabulary: Nutrition

1	Energy	The power the body requires to stay alive and function.
2	Digestion	The process by which food is broken down in the digestive tract to release nutrients for absorption.
3	Macronutrients	Nutrients needed to provide energy and as the building blocks for growth and maintenance of the body.
4	Micronutrients	Nutrients which are needed in the diet in very small amounts.
5	Sedentary activity	Requires little energy expenditure and includes sitting or lying down to watch television, use the computer, read, work or study, and sitting when travelling to school or work.
6	Moderate activity	Food made with ingredients from more than one food group.
7	Vigorous activity	Makes you breathe hard and fast.
8	Stages of digestion	• Ingestion • Digestion • Absorption • Elimination

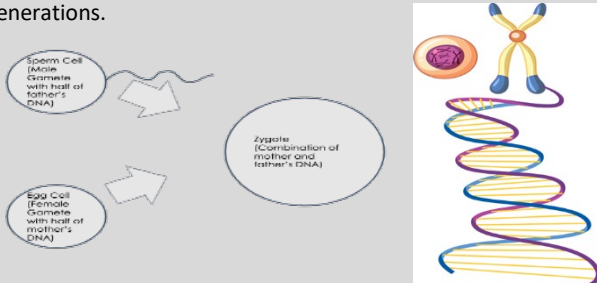
Key Vocabulary: Cooking

1	cut, slice and chop	
2	grate	
3	peel	
4	mix and combine	
5	use the grill	
6	use the hob	
7	use the oven	

Year 8 History Summer Term Knowledge Organiser Slavery

Key Vocabulary:			Africa and other countries around the world		Britain, life as a slave and abolition	
1	Slavery	the act of making a person the legal property of another.	8	What was Africa like before slavery? Some people believed.... "Africa is full of heathen cannibals ... A people of beastly living without God, law or love."	12	How did Britain benefit from the slave trade? Money and jobs: In 1700s Bristol slave ships made a profit of £8000 per trip and Bristol and Liverpool combined made a profit of £1 million a year Industry: The factories of Manchester depended on the cotton grown on the plantations in America Power: Ports such as Liverpool, Hull and Bristol grew into important and powerful cities
2	Industrial Revolution	a period of rapid change in the way people lived and worked.	9	What was Africa like before slavery? Malian Empire - Mali traded with many countries and traded products such as animal skins, grain, meat and copper. West Africa was also the leading supplier of gold to the world - Mali was very religious and one of their most impressive buildings was a mosque built from stone - Mali had 150-180 Qur'anic schools and the king had a great respect for learning - Houses were made from clay covered sticks with thatched roofs there were many shops in the town of Timbuktu	13	Life of an enslaved person: - Captured in West Africa and traded for guns or other items - Taken on the Middle Passage- this is the journey that took several weeks from Africa to either the Caribbean or the Americas. - Enslaved people were sold at an auction- to the highest bidder- a strong man would go for the most expensive price. - Enslaved people would live and work on a plantation these are the estates in America and the Caribbean where slaves would grow sugar and cotton to be sold.
3	Trade	buying and selling goods and services.	10	Reasons for lack of development - East-West Axis of the continent= this affects the rate at which crops, animals, and inventions spread around the continent - A small number of domesticable plants and animals= The big five animals that have been domesticated are: cow, sheep, pig, goat and horse. These are not originally from Africa - Societies too small and not sedentary= A sedentary lifestyle means humans can keep and own possessions that don't need to be carried anywhere, they can live in towns and cities and focus on inventing or developing different things.	14	Why was slavery abolished: - Passive resistance of slaves such as acting 'slow', keeping up culture and traditions - Actions of white abolitionists such as Granville Sharp and William Wilberforce who formed the Society for the Abolition of the Slave Trade in 1787 and collected evidence about how horrible the slave trade - Active resistance of slaves such as revolts by men such as Nat Turner and events such as in 1791, the slaves on Haiti rebelled, killed many plantation owners and set fire to the sugar cane fields. This revolt was led by Toussaint L'Ouverture, - Money- demand for slavery decreased as it became less profitable- 1770s, the price of sugar dropped so in 1771, plantation owners in Barbados (in the West Indies) bought 2728 slaves from Africa, the next year they bought none. - Actions of Black abolitionists such as Olaudah Equiano who eventually was able to buy his freedom and he moved to Britain permanently and wrote his life story. This was a bestseller and turned many people against slavery. and Solomon Northrup
4	Plantation	an estate where crops such as sugar, tobacco and cotton are grown usually by enslaved people.	11	Triangular trade: The Triangular trade between Britain, West Africa and America and the Caribbean 		
5	Abolition	the act of getting rid of a system or practice such as slavery.				
6	Civilisation	the stage of human existence that is considered the most advanced.				
7	Barriers to development	geographical factors which make it difficult for communities to advance.				

Year 8 Science Summer Term Knowledge Organiser Life Diversity

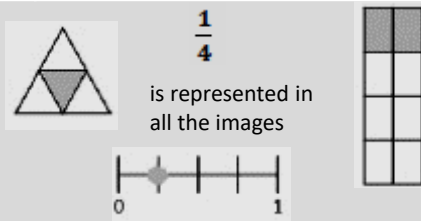
Key Vocabulary:			9.	Variation	11.	Natural Selection		
1	Abiotic	Something that is not to do with a living thing. <i>Light, temperature and water availability are all abiotic factors.</i>	Variation is the different characteristics between individual organisms. There is variation between populations of different species. There is also variation within a species. Examples of variation within humans include hair colour, eye colour, height, weight, skin colour, nose shape and finger length. Variation can be caused by inherited (genetic) factors, environmental factors or a combination of the two. Characteristics can be physical, behavioural, and physiological. Characteristics are inherited from parents through reproduction. Inherited variation is caused by the fusing of gametes in sexual reproduction and by random mutations in DNA. The DNA inherited that causes a characteristic is called the genotype. The phenotype is the physical characteristic resulting from the genotype. DNA that is passed to offspring can be randomly mutated and result in new phenotypes that were not present in previous generations. 	Within a community, organisms compete for biotic and abiotic factors to survive and reproduce.	Adaptations are characteristics that allow an organism to survive and reproduce in its habitat.	Adaptations can be physical structures, behavioural or functional.	Natural selection is when variation in the population makes some organisms better suited to live and reproduce in a particular environment.	
2	Adaptation	A characteristic that allows an organism to survive and reproduce in its habitat. <i>Some prey animals camouflage to their surroundings, which is an adaptation.</i>		Evolution can cause the formation of a new species.	If two populations cannot interbreed to form fertile offspring, then they are different species.	The Theory of Evolution by Natural Selection states that all life has evolved from simple organisms more than three billion years ago.		
3	Biotic	Something to do with a living thing. <i>Food availability, disease and predators are all biotic factors.</i>		Evolution is a change in the inherited characteristics of a population over time, caused by natural selection.	Extinction is when there are no living individuals of a species left in the wild and in captivity.	Extinction can be caused by changes to habitats, new predators or competitors, or new diseases.	Extremophiles are organisms that live in extreme conditions of temperature, pH, salt or pressure.	This is an extreme example of how environmental pressures result in species specifically suited to thriving in that environment.
4	DNA	The molecule that contains all the genetic information (code) for each organism. <i>We inherit half our DNA from each parent.</i>		Evolution can cause the formation of a new species.	Extinction is when there are no living individuals of a species left in the wild and in captivity.	Extinction can be caused by changes to habitats, new predators or competitors, or new diseases.	Extremophiles are organisms that live in extreme conditions of temperature, pH, salt or pressure.	This is an extreme example of how environmental pressures result in species specifically suited to thriving in that environment.
5	Evolution	The change in inherited characteristics of a population over time caused by natural selection. <i>Charles Darwin proposed the theory of Evolution.</i>		Evolution is a change in the inherited characteristics of a population over time, caused by natural selection.	Extinction is when there are no living individuals of a species left in the wild and in captivity.	Extinction can be caused by changes to habitats, new predators or competitors, or new diseases.	Extremophiles are organisms that live in extreme conditions of temperature, pH, salt or pressure.	This is an extreme example of how environmental pressures result in species specifically suited to thriving in that environment.
6	Extinction	When there are no living individuals of a species left in the wild and/or in captivity. <i>Global warming is putting many different species at risk of extinction.</i>		Evolution can cause the formation of a new species.	Extinction is when there are no living individuals of a species left in the wild and in captivity.	Extinction can be caused by changes to habitats, new predators or competitors, or new diseases.	Extremophiles are organisms that live in extreme conditions of temperature, pH, salt or pressure.	This is an extreme example of how environmental pressures result in species specifically suited to thriving in that environment.
7	Extremophile	Organisms that live in extreme conditions of temperature, pH, salt or pressure. <i>Some extremophile fish are able to live under great pressure deep in the sea.</i>		Evolution can cause the formation of a new species.	Extinction is when there are no living individuals of a species left in the wild and in captivity.	Extinction can be caused by changes to habitats, new predators or competitors, or new diseases.	Extremophiles are organisms that live in extreme conditions of temperature, pH, salt or pressure.	This is an extreme example of how environmental pressures result in species specifically suited to thriving in that environment.
8.	Genotype	The DNA inherited that causes a characteristic. <i>The girl's genotype is having DNA that codes for brown hair.</i>		Evolution can cause the formation of a new species.	Extinction is when there are no living individuals of a species left in the wild and in captivity.	Extinction can be caused by changes to habitats, new predators or competitors, or new diseases.	Extremophiles are organisms that live in extreme conditions of temperature, pH, salt or pressure.	This is an extreme example of how environmental pressures result in species specifically suited to thriving in that environment.
			10.	Artificial Selection				
			Crops and domesticated animals are the result of artificial selection (selective breeding). Selective breeding is when humans choose plants or animals with particular characteristics to breed. Selective breeding is continued over many generations until the desired characteristic in the offspring are present. These characteristics are chosen for appearance or for their usefulness to humans. Examples of selective breeding are pet dogs, crops resistance to disease, cows that make a lot of milk. Selective breeding can cause inbreeding if closely related individuals are used so that offspring have inherited disease					

Year 8 Maths Summer Term Knowledge Organiser - Addition & Subtraction of Fractions

Key Vocabulary:

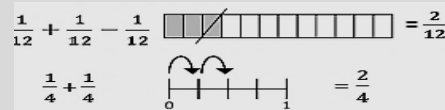
1	Denominator	The number below the line on a fraction. The number represent the total number of parts
2	Numerator	The number above the line on a fraction. The top number. Represents how many parts are taken.
3	Divide	To separate into parts
4	Greater than	To be more than or have more value than another number
5	Less than	To be smaller than or have a smaller value than another number.
6	Mixed number:	A number with an integer and a proper fraction
7	Improper fractions	A fraction where the numerator is greater than the denominator.
8	Unit fraction	A fraction where the numerator is one
9	Whole	An integer or when the numerator is the same value as the denominator.
10	Equivalent	Something that is essentially the same or equal to something else, but might have a difference in how it is represented.

11 Representing Fractions



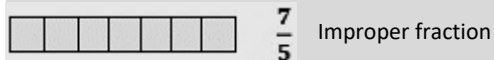
12 Add/Subtract unit fractions

With the same denominator ONLY the numerator is added or subtracted



13 Mixed numbers and fractions

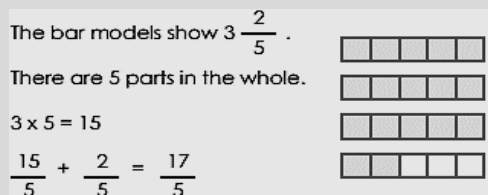
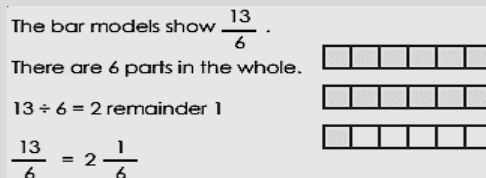
An improper fraction has a numerator which is greater than the denominator. For example:



A mixed number is made up of an integer and a proper fraction. For example:



To convert between improper fractions and mixed numbers, we need to look at how many parts make up the whole.



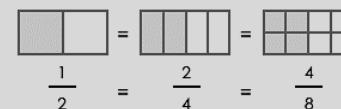
14 Adding or Subtracting Fractions

Find the LCM of the denominators to find a common denominator. Use equivalent fractions to change each fraction to the common denominator. Then just add or subtract the numerators and keep the denominator the same

$$\begin{aligned} & \frac{2}{3} + \frac{4}{5} \\ \text{Multiples of 3: } & 3, 6, 9, 12, 15.. \\ \text{Multiples of 5: } & 5, 10, 15.. \\ \text{LCM of 3 and 5} & = 15 \\ & \frac{2}{3} = \frac{10}{15} \\ & \frac{4}{5} = \frac{12}{15} \\ & \frac{10}{15} + \frac{12}{15} = \frac{22}{15} = 1\frac{7}{15} \end{aligned}$$

15 Understand and use equivalent fractions.

Equivalent fractions have different numerators and denominators but share the same value.



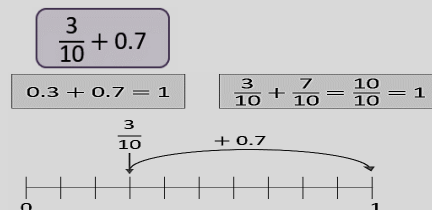
16 Add and subtract proper fractions and mixed numbers.

Use the bar models to help you work out the calculation.

$$\begin{aligned} 1\frac{1}{4} + \frac{3}{8} &= 1\frac{2}{8} + \frac{3}{8} = 1 + \frac{5}{8} = 1\frac{5}{8} \\ 1\frac{1}{4} + \frac{3}{8} &= \frac{5}{4} + \frac{3}{8} = \frac{10}{8} + \frac{3}{8} = \frac{13}{8} = 1\frac{5}{8} \end{aligned}$$

17 Use equivalence to add and subtract decimals and fractions

Example: Convert decimal to equivalent fraction 0.7 to 7/10 then add these fraction together.



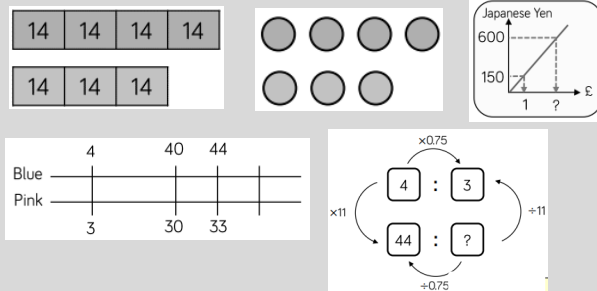
Year 8 Mathematics Knowledge Organiser – Ratio and Scale

Key Vocabulary:

1	Ratio	Used to compare values; says how much of thing there is, compared to another thing.
2	Proportion	When two ratios or fractions are equal to each other.
3	Multiplier	The number that we are multiplying by.
4	Placeholder	Something that holds a place in a number, e.g. zero.
5	Factors	Numbers that we can multiply together to get another number. Numbers that go into another number.
6	Equivalent	Having the same value.
7	Scale	The relationship/ratio between two sets of measurements.
8	Circumference	The perimeter (the distance around the outside) of a circle.
9	Diameter	The distance from one point on a circle to another point on a circle, through the centre. The longest distance across the circle.

10 Representing Ratios

Ratios can be represented in many different ways:



11 Ratio Notation

Ratios are represented as numbers with colons in between, for example 3:1.

The order of the numbers in the ratio is always important; this tells us what the information is about.

Most ratios have two parts, but ratios can have more than two parts, for example 2:3:1.

12 Solving Problems in the Ratio 1:n

The ratio 1:n means any ratio beginning with 1, followed by any number, for example 1:1, 1:4, 1:200 etc.
n can be any number, including decimals, but for this topic, n will always be an **integer** (a whole number).

13 Dividing Values into Given Ratios

We can use a bar model to help us understand how to divide values into a given ratio.

Example

Share £56 in the ratio 2:5.



There are 7 parts altogether, so we can share the £56 into these 7 parts by doing $56 \div 7 = 8$.

Now we know that 1 part = £8, we can work out how much 2 parts are ($2 \times 8 = £16$) and how much 5 parts are ($5 \times 8 = £40$).

We can check our answer is correct by adding together our amounts and seeing if we get our original value: $16 + 40 = 56$, so we are correct.

14 Expressing Ratios in Simplest Form

We can simplify ratios by finding **factors** in all parts of the ratio.

Example

Simplify the ratio 12:18.

We know the highest **factor** of both 12 and 18 is 6, so we can divide both numbers by 6.

$$12 \div 6 = 2$$

$$18 \div 6 = 3$$

So, the simplified ratio is 2:3.

(Remember, the order is important, this shouldn't change!)

15 Comparing Ratios and Fractions

We can use representations (like those in section 8) to help us compare ratios and fractions.

Example



16 Understanding π as a Ratio

π is a number that represents the ratio of the **circumference** of a circle to the **diameter** of a circle, so $\pi = \frac{C}{d}$.

This can be rearranged to find the formula for the **circumference** of a circle: $C = \pi \times d$.

We can substitute values of the **diameter** into this formula to calculate the **circumference** of any circle.

Example

The radius of a circle is 8m. Find the circumference.

$$C = \pi \times 8 = 25.132... \text{ m}^2$$

17 Understanding Gradient as a Ratio

Gradient (or slope) describes how steep a line is.

We can calculate the gradient of a line using the ratio of width : height of a triangle.

Once we make the width equal 1, the height tells us the gradient of the line.

Example

Here the width : height ratio is 2:4.

This can be simplified to 1:2.

The width is 1, and the height is 2, so the gradient is 2.



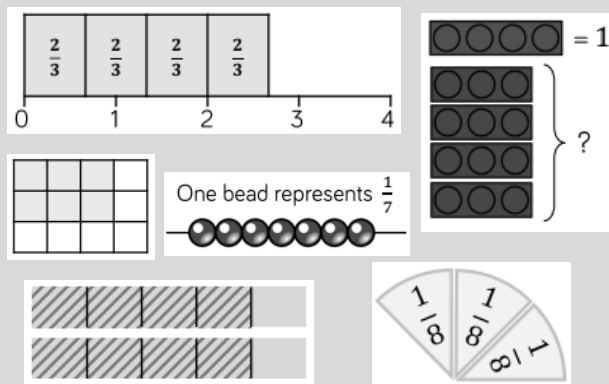
Year 8 Summer Term KS3 Mathematics Knowledge Organiser – Multiplying and Dividing Fractions

Key Vocabulary:

1	Unit Fraction	A fraction with 1 as its numerator, and an integer (whole number) as its denominator. E.g. $\frac{1}{4}$
2	Numerator	The top number in a fraction.
3	Denominator	The bottom number in a fraction.
4	Product	The answer when two or more values are multiplied together.
5	Whole	All of something. A thing that is complete in itself.
6	Non-unit Fraction	A fraction where the numerator is greater than 1. E.g. $\frac{3}{4}$
7	Commutative	An operation is commutative when you can change the order of the calculation and still get the same answer. Both addition and multiplication are commutative.
8	Quotient	The answer we get after we divide one number by another.
9	Reciprocal	The reciprocal of a number is always 1 divided by the number. E.g. the reciprocal of 2 is $\frac{1}{2}$. When we multiply a number by its reciprocal, we get 1. E.g. $2 \times \frac{1}{2} = 1$.

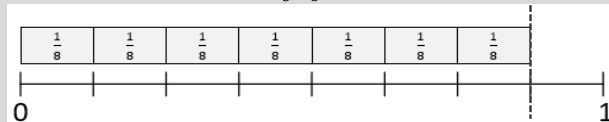
10 Representing Fraction Multiplication

Fraction multiplication can be represented in many different ways, using the idea of repeated addition as well as pictures/physical objects and bar models.



11 Multiplying a Fraction by an Integer

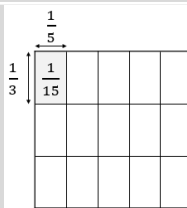
We can use a number line to understand how to multiply a fraction by an integer. For example: $7 \times \frac{1}{8} = \frac{7}{8}$.



12 Finding the Product of Unit Fractions

We can use a grid to understand how to find the product of a pair of unit fractions. Remember, each side of the original grid has a unit length of 1.

For example: $\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$

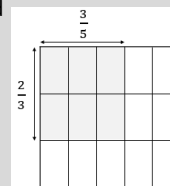


13 Finding the Product of Any Fractions

We can continue to use a grid to understand how to find the product of any fractions. We should remember to simplify if possible.

For example: $\frac{3}{5} \times \frac{2}{3} = \frac{6}{15} = \frac{2}{5}$

One way to quickly multiply fractions is to multiply the numerators and multiply the denominators.

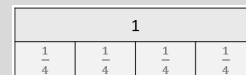


14 Dividing an Integer by a Fraction

We can use bar models to understand how to divide an integer by a fraction, e.g. $1 \div \frac{1}{4} = 4$.

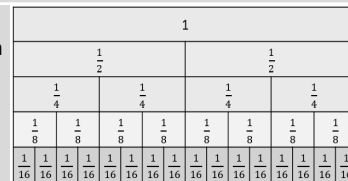
We can link dividing by a fraction with multiplying by an integer to help us understand the relationship between the two.

For example: $3 \div \frac{1}{4} = 12$ and $3 \times 4 = 12$.



15 Dividing a Fraction by a Unit Fraction

We can use a fraction wall to help us divide a fraction by a unit fraction. Think about how many unit fractions we would need to make the original fraction. E.g. $\frac{1}{2} \div \frac{1}{4} = 2$.



16 Understanding and Using the Reciprocal

We need to know that:

- ☐ The reciprocal of a number is always 1 divided by the number.
- ☐ Division is the same as multiplying by the reciprocal.
- ☐ A number multiplied by its reciprocal is always 1.

For example: $7 \div \frac{1}{5} = 35$ and $7 \times 5 = 35$.

17 Dividing any Pair of Fractions

Now that we know dividing by a number is the same as multiplying by it's reciprocal, we can apply this to divide any pair of fractions.

For example:

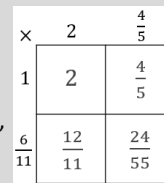
$$5 \div \frac{2}{3} = 5 \times \frac{3}{2} = \frac{15}{2} = 7\frac{1}{2}$$

$$\frac{5}{9} \div \frac{2}{3} = \frac{5}{9} \times \frac{3}{2} = \frac{15}{18} = \frac{5}{6}$$

18 Multiplying and Dividing Improper and Mixed Fractions

When multiplying mixed numbers, we can convert them into improper fractions first before multiplying the numerators and denominators, then simplifying.

Another way would be to use a grid method, splitting up the mixed number into integers and fractions, e.g. $2\frac{4}{5} \times 1\frac{6}{11}$



19 Multiplying and Dividing Algebraic Fractions

Although we are using algebra, multiplying and dividing algebraic fractions follow the same rules as numerical fractions.

Year 8 Science Summer Term Knowledge Organiser – Nutrition

Key Vocabulary

1	Acidic	Having a pH lower than 7. The stomach is acidic.
2	Alkaline	Having a pH greater than 7. Bile is alkaline.
3	Amylase	An enzyme that speeds up the breakdown of starch into glucose.
4	Diffusion	The net movement of particles from an area of high concentration to an area of low concentration.
5	Enzyme	Substances that speed up chemical reactions in the body.
6	Lipid	A nutrient found in butter, oils and other fatty foods, that provides energy and insulation.
7	Muscle	A type of tissue that can contract and relax.
8	Organ	A group of tissues working together in an organism which performs a specific function.
9	Pancreas	An organ which produces enzymes.
10	Protein	A nutrient found in fish, meat, eggs, nuts and pulses that is important for growth and repair.

- 11 The contents of a healthy human diet include carbohydrates, lipids (fats and oils), protein, vitamins, minerals, dietary fibre and water
- 12 A balanced diet includes all the nutrients our body needs in the right quantities
- 13 Calcium is an example of a mineral used in making bones and teeth

- 14 Carbohydrates are important to provide energy. Carbohydrates are found in foods such as bread, potatoes, rice and pasta

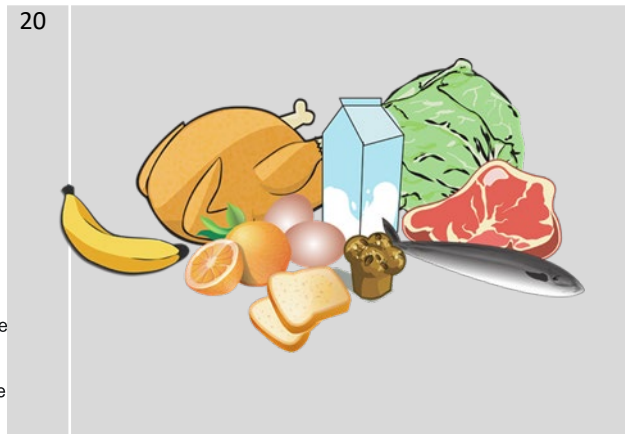
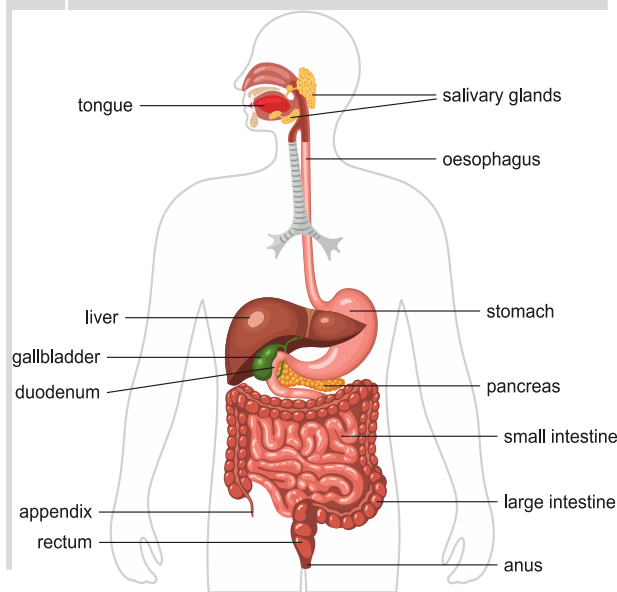
Lipids (fats) are important for providing energy and insulation. Lipids are found in foods such as nuts, dairy products, meat, oils and sweets

Proteins are important for growth and repair of cells and tissues. Proteins are found in foods such as eggs, pulses, fish, meat, nuts and dairy products

- 16 The oesophagus moves food into the stomach
- 17 In the stomach, mechanical and chemical digestion occur
- 18 The stomach contains acid
- 19 Water is absorbed into the bloodstream from the large intestine

Food test

- 21 Iodine solution changes colour from brown to black in the presence of starch
- 22 Benedict's reagent changes colour from blue to orange/red when heated in the presence of simple sugars such as glucose
- 23 Biuret reagent changes colour from blue to purple in the presence of protein



Year 8 Summer Term Mathematics Knowledge Organiser – Multiplicative Change

Key Vocabulary:

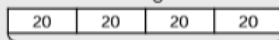
1	Proportion	When two ratios or fractions are equal to each other.
2	Ratio	Used to compare values; says how much of thing there is, compared to another thing.
3	Variable	A symbol for a value we do not know yet, usually a letter like x or y. E.g. in $x + 2 = 6$, x is the variable.
4	Conversion	Changing a value or expression from one form to another.
5	Approximation	A result that is not exact, but close enough to be used.
6	Estimation	Finding a value that is close enough to the right answer, usually with some thought or calculation involved.
7	Exchange rate	Tells us the value of one currency (type of money in a particular country) in terms of another currency.
8	Corresponding	Referring to two (or more) things that appear in the same place, in two similar situations.
9	Similar	Two shapes are similar when one can become the other after a resize, flip, slide or turn.
10	Scale factor	The ratio between corresponding measurements of an object and a representation of that object.

11 Direct Proportion

Two things are directly proportional if: as one amount increases (or decreases), the other amount increases (or decreases) at the same rate.
We can use lots of different methods to solve problems with direct proportion, such as bar models, ratios, fractions and the unitary method (finding the value of one).

Carina is making 50 muffins.
 $50 = '2 \text{ and a half lots of } 20'$
 $2.5 \times 250 = 625 \text{ g of sugar}$

Emma is making 80 muffins.



8 eggs

Zaib is making 12 muffins
 $20 : 250 \text{ ml}$
 $1 : 12.5 \text{ ml}$
 $12 : 150 \text{ ml}$
150 ml of milk

Daniel is making 5 muffins.

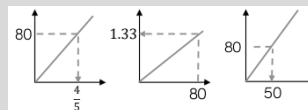
$$20 \div 5 = 4$$

"I need 4 times less than the recipe
I will use 100g of flour".

12 Conversion Graphs

Conversion graphs can be used to convert between many different things, for example: currency, temperature, weights, distances, time, numbers etc.

It is important to label the axes on a conversion graph and to make sure the scale is going up in equal amounts.

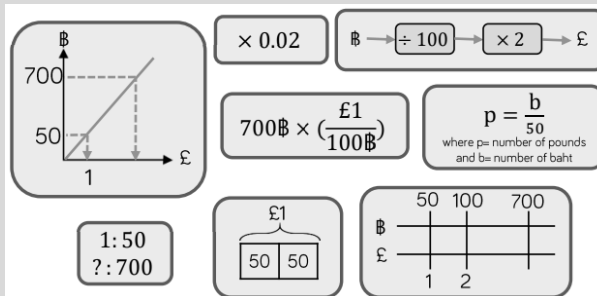


13 Converting between Currencies

We can convert between currencies using lots of different methods.

Example

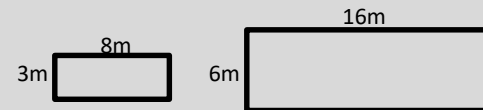
1 British pound (£) is approximately 50 Thai Baht (฿). Convert 700฿ into pounds.



14 Ratio between Similar Shapes

Corresponding lengths on similar shapes are always in the same ratio.

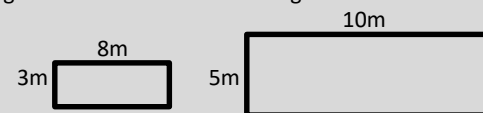
Example



3m : 6m

8m : 16m

These lengths are in ratio so the rectangles are similar.



3m : 5m

8m : 10m

These lengths are not in ratio, so the rectangles are not similar.

15 Understanding Scale Factors

A scale factor tells us the ratio between corresponding measurements of an actual object and a copy of the object.
If the scale factor is bigger than 1, the copy will be larger.
If the scale factor is less than 1 (e.g. $\frac{1}{2}$), the copy will be smaller.

16 Drawing and Interpreting Scale Diagrams

Scale diagrams (or drawings) are used to represent a smaller or larger object, shape or image.

The scale used will depend on the reduction or enlargement of the object.

Some common scale ratios that are used:

- A medium sized wall map of the World (1:30,000,000 which represents 1cm to 300km)
- A road map for motorists (1:250,000 which represents 1cm to 2.5km)
- An Ordnance survey map for walkers or hikers (1:25,000 which represents 1cm to 250m)
- An architects drawing (1:100 which represents 1cm to 1m)

17 Interpreting Maps with Scale Factors

We can use scale factors to interpret maps.

Example

If the scale is 1:25,000, this means 1cm on the map is 25,000cm in real life.

Year 8 Summer Term Spanish Knowledge Organiser – ¿Qué hacemos?

Invitations	
1.	¿Te gustaría...? – would you like... Me gustaría... - I would like venir a mi casa – to come to my house ir a la bolera – to go bowling ir a la cafetería – to go to the café ir a la pista de hielo – to go to the ice rink ir al centro comercial – to go to the shopping centre ir al museo – to go to the museum ir al parque – to go to the park ir al polideportivo – to go to the sports centre ir al cine – to go to the cinema ir al restaurante – to go to the restaurant

I have to...	
2.	Tengo que... - I have to cuidar a mi hermano – look after my brother hacer los deberes – do my homework lavarme el pelo – wash my hair ordenar mi dormitorio – tidy my room pasear al perro – walk the dog salir con mis padres – go out with my parents No quiero – I don't want to No tengo dinero – I don't have any money No puedo salir - I can't go out

Daily Routine	
Verbs that start with 'me' are called reflexive verbs	

3.	Me baño – I have a bath Me ducho – I have a shower Me lavo la cara – I wash my face Me lavo los dientes – I brush my teeth Me visto – I get dressed Me maquillo – I put on makeup Me peino – I comb my hair Me aliso el pelo – I straighten my hair Me pongo gominas – I put gel on my hair
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Prepositions	
4.	¿Dónde quedamos? – Where shall we meet? Quedamos – let's meet enfrente del polideportivo – in front of the sports centre al lado de la bolera – next to the bowling alley delante de la cafetería – in front of the café detrás del centro comercial – behind the shopping centre en tu casa – at your house

Clothes	
5.	Una camisa – a shirt Una camiseta – a t-shirt Un jersey – a jumper Una sudadera – a sweatshirt Una falda – a skirt Un vestido – a dress Una gorra – a cap Unos pantalones – some trousers Unos vaqueros – some jeans Unas botas – some boots Unos zapatos – some shoes Unas zapatillas de deporte – some trainers

Model dialogue	
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6.	María: "Te gustaría ir a la bolera?" Diego: "No puedo. Tengo que cuidar a mi hermano. Te gustaría ir al cine mañana?" María: "No tengo dinero y ir al cine cuesta un ojo de la cara. Me gustaría ir al parque. Te gustaría ir al parque?" Diego: "Sí. ¿Dónde quedamos?" María: "Quedamos enfrente del parque a las diez." Diego: Vale. ¡Hasta mañana!
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7. Parallel Text:		
1	Normalmente llevo unos vaqueros azules .	Normally I wear blue jeans .
2	una camiseta y	a t-shirt and
3	unas zapatillas de deporte blancas	some white trainers
4	porque son muy cómodos	because they're very comfy
5	y prácticos .	and practical .
6	Sin embargo, acabo de ir a un restaurante	However I've just been to a restaurant
7	y llevé un vestido rojo	and I wore a red dress
8	y unas zapatos negros	and some black shoes
9	ya que son muy elegantes	because they're very smart .
10	El fin de semana me gustaría	At the weekend I would like
11	ir a la bolera con mis amigos.	to go bowling with my friends.
12	Pienso que voy a llevar	I think I'm going to wear
13	una falda negra con medias	a black skirt with tights
14	y un jersey azul .	and a blue jumper .
15	Va a ser muy divertido .	It's going to be really fun .