The Lowry Academy
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Part of United Learning

Knowledge Organiser

2025-26

Year 8

Aspiration | Respect | Confidence | Creativity | Resilience

HT1 – Writing

Key Term	Definition
Subject	The subject of a sentence is the person, place, thing, or idea that performs the action or is being described in the sentence.
Abstract Noun	A noun that names an idea, feeling, or quality – something you can't touch. Example: Stillness, love, jealousy
Main Clause	Can stand alone as a sentence and contains a subject and a verb, and it expresses a complete thought.
Introductory Phrase	A group of words at the beginning of a sentence that provides background or context for the main part of the sentence. It is usually followed by a comma.
Pathetic Fallacy	Pathetic fallacy is a type of personification where human emotions are given to nature or the weather to reflect a character's mood or the atmosphere of a scene.
Noun	A word (not a pronoun) used to identify people, places, or things. Example: ***The peaks*** *were covered in thick white snow.*
Complete thought	The sentence must express a **clear and complete idea**. If it leaves you wondering what happens next, it's not complete. Example: The peaks **were covered** in thick white snow.
Simple sentences	A sentence with one independent clause. It needs one subject, one verb and it needs to be a complete thought. Example: *The air was crisp and warm.*
Compound sentences	A sentence with two or more independent clauses, joined by a coordinating conjunction (like and, but, or, so). Example: The snow fell quietly, and the wind howled through the trees.
Complex sentences	A **complex sentence** has **one independent clause** and **at least one dependent clause**, joined by a **subordinating conjunction** (like *because, although, since, when, if, while*). Example: *Although snow capped the mountains, the sun warmed the valley below.*
Verb Phrase	A group of words that includes a **main verb** and one or more **helping (auxiliary) verbs**. Example: She **has been studying** all night.
Conjunctions	Words that connect other words, phrases, or clauses in a sentence. Example: and, but, or, so, yet, for, nor

Key Term	Definition
Coordinating Conjunctions	Conjunctions that connect words or groups of words that are equal in structure. Example: and, but, or, nor, for, so, yet, therefore
Subordinating Conjunctions	Conjunctions that connect a dependent clause to an independent clause. Example: because, although, since, unless, while, if
Correlative Conjunctions	Connectives that work in pairs to connect equal elements. Example: either…or, neither…nor, not only….but also
Adjective	A word that describes or modifies a noun. Example: Golden.
Subordinate Clause	A group of words with a subject and a verb, but it does not express a complete thought and cannot stand alone as a sentence.
Predicate Verb	This tells what the subject **does** or **is**. It includes the **main verb** and any helping words. Example: *The peaks **were covered** in thick white snow.*
Adverb	Describes or modifies a verb, adjective, or another adverb. Example: The snow glistened brilliantly in the golden morning sun.
Preposition	A word that shows the relationship between a noun (or pronoun) and other words in a sentence, often describing position, direction, time, or manner. Example: In, under, over, beyond, within.
Subject	This is **who or what** the sentence is about. It's usually
Personification	Human qualities are given to animals, objects, or ideas. **Example:** *The towering peaks were silent guardians of the sky.*

HT1 – Writing

Questions

1. Write an example of a common noun.
2. What's the difference between a proper noun and an abstract noun?
3. Write an example of a proper noun.
4. What is a collective noun?
5. What is another name for a noun that you can see, hear, touch, smell or taste called?
6. What is a complete thought?
7. What is a simple sentence?
8. What type of sentence is this?
   Although snow capped the mountains, the sun warmed the valley below.
9. What type of sentence is this?
   The snow fell quietly, and the wind howled through the trees.
10. What is a group of words that includes a main verb and one or more helping (auxiliary) verbs?

Questions

1. Write three examples of conjunctions.
2. What type of conjunctions connect words or groups of words that are equal in structure?
3. What type of conjunctions are these?
   either…or, neither…nor, not only….but also
4. What type of conjunctions are these?
   because, although, since, unless, while, if
5. Which device has been used in this sentence? *The towering peaks were silent guardians of the sky.*
6. What type of adjective is this an example of? Well-known.
7. Which part of this sentence is the Predicate Verb?
   The peaks were covered in thick white snow.
8. Which word is an adverb in the below sentence?
   The snow glistened brilliantly in the golden morning sun.
9. Which is the preposition in this sentence?
   The sun shone over the beautiful, clear seascape.
10. Which is the subject of this sentence?
    The peaks were covered in thick white snow.

HT1 – Writing

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HT2 – Reading: Dracula

Term	Definition
Term	Definition
Foreboding	A feeling that something bad will happen; fearful apprehension.
Exposition	The insertion of background information within a story or narrative about a story's events, settings, characters etc.
Patriarchy	A system of society or government in which men hold the power and women are largely excluded from it.
Archetype	A very typical example of a certain person or thing.
Power	Possession of control, authority, or influence over others.
The New Woman	A term used to describe an independent feminist ideal that became popular in the late 19th century and influenced feminism in the 20th century.
The Angel in the House	The traditional Victorian woman who should be meek, pure and obedient.
Atmosphere	The tone or mood created in a piece of literature.
Symbolism	The use of symbols to express ideas or qualities.
Imagery	Visually descriptive or figurative language.
Ominous	Giving the worrying impression that something bad is going to happen.

Term	Definition
Physiognomy	A person's facial features or expression, especially when regarded as indicative of character or ethnic origin.
Grotesque	Comically or repulsively ugly or distorted.
Relentless	Continuing in a severe or extreme way.
Malevolent	Having or showing a wish to do evil to others.
Explicit characterisation	Something the author tells us directly about a character, e.g., age, appearance, job.
Implicit characterisation	Something that we have to infer about a character through their actions, dialogue, what others say etc.
Allegory	A story that can be interpreted to reveal a hidden meaning, typically a moral or political one.
Rising Action	The section of the plot leading up to the climax, where the tension grows.

HT2 – Reading: Dracula

Questions

1. Foreboding is a feeling that something ____ will happen; fearful apprehension.
2. An exposition is the insertion of _____ information within a story or narrative about a story's events, settings, characters etc.
3. What does a patriarchal society mean for the women in that society?
4. What kind of example is an archetype?
5. What do you posses if you have power?
6. When did the term New Woman become popular?
7. What kind of woman should be meek, pure and obedient?

Questions

1. _____ is the tone or mood created in a piece of literature.
2. What is the use of symbols to express ideas or qualities?
3. What do writers use imagery for?
4. How is the image representative of aa gothic fiction?
4. Physiognomy focuses on which elements of a character's features?
5. Which is another word for repulsively ugly?
6. A character who gives up easily can be described as relentless. True or false?
7. A villain who enjoys causing pain to others is malevolent. True or False?
8. "John was a tall man with grey hair and a serious expression." is an example of explicit characterisation. True or false?
9. "He always arrived early and helped others without being asked." suggests the character is responsible and kind.
True or false?
10. An allegory is a story that can be interpreted to reveal a hidden meaning. True or false?

HT3 – Narrative Writing: Someone

Term	Definition
Sentence Form	The grammatical arrangement of words in sentences and complete in meaning.
Simple sentences	A sentence with one independent clause. It needs one subject, one verb and it needs to be a complete thought. Example: *The air was crisp and warm.*
Compound sentences	A sentence with two or more independent clauses, joined by a coordinating conjunction (like and, but, or, so). Example: The snow fell quietly, and the wind howled through the trees.
Complex sentences	A complex sentence has one independent clause and at least one dependent clause, joined by a subordinating conjunction (like *because, although, since, when, if, while*). Example: *Although snow capped the mountains, the sun warmed the valley below.*
Main clause	A clause that can stand alone as a complete sentence because it expresses a complete thought.
Subordinate clause	A clause that cannot stand alone as a sentence and depends on a main clause to make sense.
Independent clause	A group of words that contains a subject and verb and expresses a complete thought. It can stand alone as a sentence.
Conjunction	A word used to connect clauses or sentences (e.g., *and, but, if, although*).
Simile	A figure of speech comparing two different things using *like* or *as*. Example: *The snow was as soft as a blanket.*
Metaphor	A figure of speech that describes something as if it were something else. Example: *The classroom was a zoo.*
Personification	Human qualities are given to animals, objects, or ideas. Example: *The towering peaks were silent guardians of the sky*.

Term	Definition
Explicit characterisation	Something the author tells us directly about a character, e.g., age, appearance, job.
Implicit characterisation	Something that we have to infer about a character through their actions, dialogue, what others say etc.
Preposition	A word that shows the relationship between a noun (or pronoun) and other words in a sentence (e.g., *in, on, at, by, with*).
Present participle	The -ing form of a verb used to form continuous tenses or as an adjective. Example: *running, singing*.
Past participle	The form of a verb typically ending in -ed (for regular verbs) used in perfect tenses or as an adjective. Example: *walked, broken*.
Adjective	A word that describes a noun or pronoun. Example: *blue, tall, happy*.
Adverb	A word that modifies a verb, adjective, or another adverb. It often tells how, when, where, or to what extent. Example: *quickly, very, yesterday*.

HT3 – Narrative Writing: Someone

Questions

1. What is the grammatical arrangement of words in sentences that is complete in meaning called?
2. What type of sentence contains only one independent clause?
3. What are the three essential components of a simple sentence?
4. What type of sentence contains two or more independent clauses joined by a coordinating conjunction?
5. Which conjunctions are commonly used in compound sentences?
6. What type of sentence includes one independent clause and at least one dependent clause?
7. What kind of conjunction is used to join clauses in a complex sentence?
8. Give an example of a subordinating conjunction.
9. What is a clause that can stand alone as a complete sentence called?
10. What is a clause that cannot stand alone and depends on another clause called?
11. What do we call a group of words that contains a subject and verb and expresses a complete thought?
12. What is the function of a conjunction in a sentence?

Questions

1. A _____ is a figure of speech comparing two different things using "like" or "as".
2. A _____ describes something as if it were something else, without using "like" or "as".
3. _____ is when human qualities are given to animals, objects, or ideas.
4. "The snow was as soft as a blanket" is an example of a _____.
5. "The classroom was a zoo" is an example of a _____.
6. "The towering peaks were silent guardians of the sky" is an example of _____.

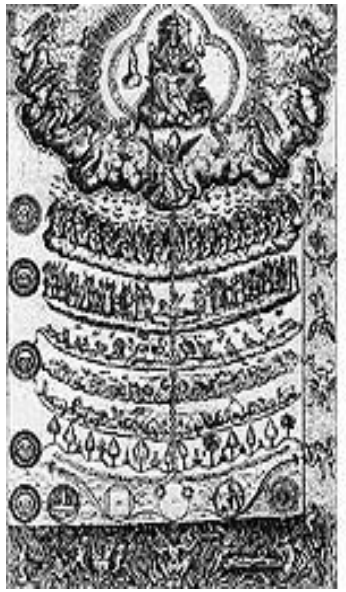
Questions

1. Explicit characterisation is when the author directly tells us about a character's age. **True/False?**
2. Implicit characterisation requires us to infer information about a character through their actions. **True/False?**
3. A preposition shows the relationship between a noun and other words in a sentence. **True/False?**
4. The present participle form of a verb ends in -ed. **True/False?**
5. The past participle form of regular verbs typically ends in -ing. **True/False?**
6. An adjective describes how, when, or where an action takes place. **True/False?**
7. An adverb modifies verbs, adjectives, or other adverbs and often tells how, when, where, or to what extent. **True/False?**

HT4 – Reading: Richard III

Term	Definition
Soliloquy	A speech or passage in a drama when a character on stage speaks to himself /herself or the audience, expressing their inner thoughts and feelings.
Supernatural	Manifestations or events considered to be some force beyond scientific understanding or the laws of nature.
Amoral	Lacking a moral sense; unconcerned with the rightness or wrongness of something.
Juxtaposition	The placement of two contrasting objects, images or ideas next to each other.
Restoration	The act or process of returning something to its earlier good condition or position.
Façade	A deceptive outward appearance.
Tyranny	A cruel and oppressive ruler.
Kingship	The state or position of being a king.
Corrupt	Having or showing a willingness to act dishonestly in return for money or personal gain.
Vengeance	Punishment inflicted or retribution exacted for an injury or wrong.
Divine	The word divine refers to something that is related to or comes from God, it often implies a sense of holiness and power.

Term	Definition
Hierarchy	Hierarchy is a system or organisation in which people, groups, or things are ranked one above the other according to status, authority, or importance.
Villainous	Wicked or criminal behaviour.
Usurp	To take a position of power or importance illegally or by force.
Power	The capability or ability to direct or influence the behaviour of others or the course of events.
Ambition	A strong desire to do or achieve something.
Deception	Hiding the truth, especially to get an advantage.
Patriarchy	A society where men hold the power.



HT4 – Reading: Richard III

Questions

True or False

1. A soliloquy is when a character speaks their thoughts aloud to the audience.
2. Corrupt means being honest and fair in all dealings.
3. Divine refers to something related to science and logic.
4. Patriarchy is a society where women hold the power.
5. Deception involves hiding the truth to gain an advantage.

1. Restoration refers to the act of destroying something permanently.

2. Hierarchy is a system where everyone is considered completely equal in status and authority.

3. Amoral means someone is unconcerned with whether something is right or wrong.

4. Kingship refers to the role or position of being a king.

5. The supernatural includes events that can be fully explained by science.

Questions

1. Complete each sentence with the correct missing word from the knowledge organiser.
2. R_____ is the act of returning something to its earlier good condition.
3. _____ refers to the state or position of being a king.
4. Someone who is _____ shows a willingness to act dishonestly for personal gain.
5. _____ is punishment inflicted for an injury or wrong.
6. _____ is the ability to influence the behaviour of others or events.
7. _____ means lacking a moral sense.
8. _____ is the placement of two contrasting ideas next to each other.
9. The word _____ refers to something related to or coming from God.

Write the correct key word that matches each definition.

1. A cruel and oppressive ruler → _____
2. A deceptive outward appearance → _____
3. A strong desire to do or achieve something → _____
4. To take power illegally or by force → _____
5. A speech where a character expresses inner thoughts aloud → _____
6. Wicked or criminal behaviour → _____
7. A society where men hold the power → _____
8. Hiding the truth to gain an advantage → _____
9. A system where people are ranked by status or authority → _____
10. Events beyond scientific understanding → _____

HT4 – Reading: Richard III

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4. To take power illegally or by force → _____
5. A speech where a character expresses inner thoughts aloud → _____
6. Wicked or criminal behaviour → _____
7. A society where men hold the power → _____
8. Hiding the truth to gain an advantage → _____
9. A system where people are ranked by status or authority → _____
10. Events beyond scientific understanding → _____

HT5 – Writing - Transactional

Term	Definition
Problem	Consider whether there are **big ideas** behind the statement e.g. politics, gender, morality, class, economics etc. Does this topic raise any big, global issues or discussion points? 'Imagine a world…' **Here we outlined our thoughts on if it was beneficial or detrimental to be ambitious.**
Argument One	Consider your **personal experiences** of the topic. Where have you encountered it? How have these encounters shaped your views? How do they correlate with wider ideas around the topic? Here we used **emotive language and anecdotes.**
Argument Two	Consider the topic expertly. What do experts say? What are case studies saying about this issue? **Here we included facts and statistics from experts.**
Future	Consider the **future** of the topic. Where is it headed next? It is cause for optimism or concern? Link this back to the opening paragraph. 'Now imagine a world…' **Here we returned to our initial ideas and used rhetorical devices to support the changes we wanted to happen.**
Tone	Tone indicates the writer's mood, voice and attitude.
Statistics	Factual, numerical evidence which are convincing.
Expert Opinion	A belief or judgment about something given by an expert on the subject.
Call to action	Asking people for concrete, realistic changes.
Inclusive Pronouns	A pronoun which includes the speaker and the audience, and possibly others· *This includes we, us, ours, ourselves.*

Term	Definition
Emotive language	Language used to evoke an emotion from an audience.
Anecdote	A short, often humorous story inserted into a wider narrative or conversation.
Empathy	The ability to understand and share the feelings of another.
Anaphora	Repetition of a word or phrase at the beginning of successive clauses.
Rhetorical Question	a question asked to create a dramatic effect or to make a point rather than to get an answer.
Direct Address	When a speaker or writer directly refers to the person or group they are communicating with, often using pronouns like "you" or names, to engage them in the message.
Stance	The attitude/standpoint of a person or organisation towards something.

HT5 – Writing Transactional

Questions

1. When a speaker uses “you” to engage the audience, they are using _____.
2. A person’s _____ shows their attitude or standpoint on an issue.
3. A writer might use _____ to make the audience feel personally involved in the message.
4. _____ can make a message more persuasive by appealing to the audience’s emotions.
5. A speaker might use _____ to repeat a phrase for emphasis at the beginning of several sentences.
6. A rhetorical question is not meant to be answered but to provoke thought or highlight a point.
7. When someone shares a personal story to support their argument, they are using an anecdote.
8. A writer’s tone can influence how their message is received by the audience.
9. Inclusive pronouns are used to show that the speaker is part of the group they are addressing.
10. A demonstration of empathy is used to show that the speaker understands and shares the audience’s feelings.

Questions

1. The writer’s _____ reveals their mood, voice, and attitude.
2. Using _____ provides factual, numerical evidence to support an argument.
3. An _____ is a belief or judgment given by someone with authority in a subject.
4. A _____ encourages the audience to make specific, realistic changes.
5. Words like “we,” “us,” and “ourselves” are examples of _____ pronouns.
6. _____ language is used to provoke strong feelings in the audience.
7. A short, often humorous story inserted into a wider narrative is called an _____.
8. Showing _____ means understanding and sharing another person’s feelings.
9. _____ is the repetition of a word or phrase at the beginning of successive clauses.
10. A _____ question is asked to make a point rather than to get an answer.

Which paragraph is this?	Consider whether there are **big ideas** behind the statement e.g. politics, gender, morality, class, economics etc. Does this topic raise any big, global issues or discussion points? ‘Imagine a world…’ **Here we outlined our thoughts on if it was beneficial or detrimental to be ambitious.**
Which paragraph is this?	Consider your **personal experiences** of the topic. Where have you encountered it? How have these encounters shaped your views? How do they correlate with wider ideas around the topic? Here we used **emotive language and anecdotes.**
Which paragraph is this?	Consider the topic expertly. What do experts say? What are case studies saying about this issue? **Here we included facts and statistics from experts.**
Which paragraph is this?	Consider the **next steps** of the topic. Where is it headed next? It is cause for optimism or concern? Link this back to the opening paragraph. ‘Now imagine a world…’ **Here we returned to our initial ideas and used rhetorical devices to support the changes we wanted to happen.**

HT5 – Writing Transactional

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HT6 – Reading

Term	Definition
Ignorance	A lack of knowledge, understanding, or information about something.
Identity	Who or what a person or thing is.
Collective Responsibility	Where everyone is responsible for each other.
Ideological	Based on or relating to a particular set of ideas of beliefs.
Intolerance	Unwillingness to accept views, beliefs, or behaviour that differ from one's own.
Representation	The fact of including different types of people, for example in literature, films, politics, or sport, so that all different groups are represented.
Refrain	A word, line or phrase that is repeated within in the lines or stanzas of the poem itself.
Juxtaposition	When two or more ideas, images, words etc. are placed side by side to develop comparisons and contrasts.
Extended Metaphor	A metaphor which is developed through the text.
Metaphor	A comparison in which one thing is said to be another.

Term	Definition
Simile	A comparison of two things using the words ***as*** or ***like.***
Oppression	A situation in which people are governed in a cruel and unjust way.
Authoritarian	Favouring or enforcing strict obedience to authority at the expense of personal freedom.
Empowered	To make someone stronger and more confident, especially in controlling their life and claiming their rights.
Freedom	•**Definition 1 (Freedom *TO*):** The power or right *to* act, speak, or think as one wants. •**Definition 2 (Freedom *FROM*):** Not being enslaved, imprisoned, or subject to or affected by something undesirable.
Symbolism	**The use of symbols to represent ideas or qualities**
Normalised	To make something normal or return it to its normal state.

HT6 – Reading Social Justice

○ Favouring or enforcing strict obedience to authority at the expense of personal freedom.	❖ A situation in which people are governed in a cruel and unjust way.
	❖ Favouring or enforcing strict obedience to authority at the expense of personal freedom.
○ To make someone stronger and more confident, especially in controlling their life and claiming their rights.	❖ To make someone stronger and more confident, especially in controlling their life and claiming their rights.
	❖ **Definition 1 (Freedom *TO):*** The power or right *to* act, speak, or think as one wants. ❖ **Definition 2 (Freedom *FROM*):** Not being enslaved, imprisoned, or subject to or affected by something undesirable.
○ Based on or relating to a particular set of ideas of beliefs.	❖ **The use of symbols to represent ideas or qualities**
○ Unwillingness to accept views, beliefs, or behaviour that differ from one's own.	❖ To make something normal or return it to its normal state.

▪ A word, line or phrase that is repeated within in the lines or stanzas of the poem itself.	❑ A lack of knowledge, understanding, or information about something.
▪ When two or more ideas, images, words etc. are placed side by side to develop comparisons and contrasts.	❑ Who or what a person or thing is.
▪ A metaphor which is developed through the text.	❑ Where everyone is responsible for each other.
▪ A comparison in which one thing is said to be another.	❑ Based on or relating to a particular set of ideas of beliefs.
	❑ Unwillingness to accept views, beliefs, or behaviour that differ from one's own.
▪ A comparison of two things using the words ***as*** or ***like.***	❑ The fact of including different types of people, for example in literature, films, politics, or sport, so that all different groups are represented.

HT6 – Reading Social Justice

○ Favouring or enforcing strict obedience to authority at the expense of personal freedom.	❖ A situation in which people are governed in a cruel and unjust way.
	❖ Favouring or enforcing strict obedience to authority at the expense of personal freedom.
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○ Based on or relating to a particular set of ideas of beliefs.	❖ **The use of symbols to represent ideas or qualities**
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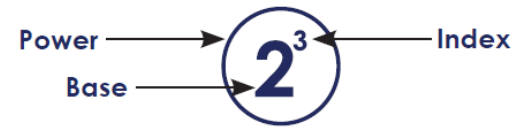
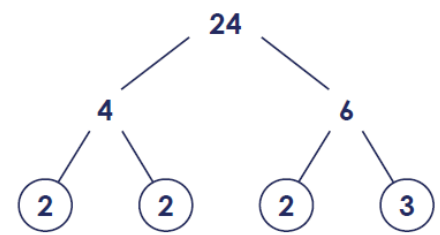
▪ A metaphor which is developed through the text.	❑ Where everyone is responsible for each other.
▪ A comparison in which one thing is said to be another.	❑ Based on or relating to a particular set of ideas of beliefs.
	❑ Unwillingness to accept views, beliefs, or behaviour that differ from one's own.
▪ A comparison of two things using the words ***as*** or ***like.***	❑ The fact of including different types of people, for example in literature, films, politics, or sport, so that all different groups are represented.

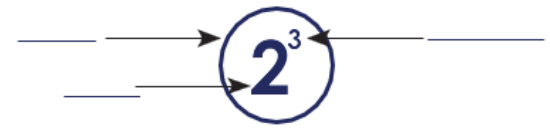
KPI 8.01 Powers and Roots

1) Square number	The result of multiplying a number by itself. It will always be positive. The first 12 square numbers are: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121,144.	**2) Square root**	The opposite of squaring a number to find the original factor. E.g. $\sqrt{64} = 8$ or -8 because $8^2 = 64$ and $(-8)^2 = 64$
3) Cube number	The result of multiplying a number by itself, then itself again. The first 10 cube numbers are: 1, 8, 27, 64, 125, 216, 343, 512, 729, 1000.	**4) Cube root**	The opposite of cubing a number to find the original factor. E.g. $\sqrt[3]{8} = 2$ because $2^3 = 8$ Note: $(-2)^3 = -8$ so $\sqrt[3]{8} \neq -2$
5) Index notation	**Example** $a \times a \times a \times a = a^4$. The number 4 is called the index (plural indices). This tells us how many times the "base" a has been multiplied by itself.		
6) Multiplying powers	$a^m \times a^n = a^{m+n}$ ADD the powers only if the bases are the same. E.g. $a^5 \times a^3 = a^{5+3} = a^8$	**7) Dividing powers**	$a^m \div a^n = a^{m-n}$ SUBTRACT the powers only if the bases are the same. E.g. $a^6 \div a^2 = a^{6-2} = a^4$
8) Indices with brackets	$(a^m)^n = a^{m \times n}$ MULTIPLY the powers. E.g. $(a^3)^5 = a^{3 \times 5} = a^{15}$	**9) Indices with brackets**	$(ab)^n = a^n \times b^n$ Raise each number or variable to the same power. E.g. $(2p)^4 = 2^4 \times p^4 = 16p^4$
10) Power of 0	$a^0 = 1$. Any number or variable to the power of zero equals 1.	**11) Power of $\frac{1}{2}$**	$a^{\frac{1}{2}} = \sqrt{a}$ E.g. $16^{\frac{1}{2}} = \sqrt{16} = 4$

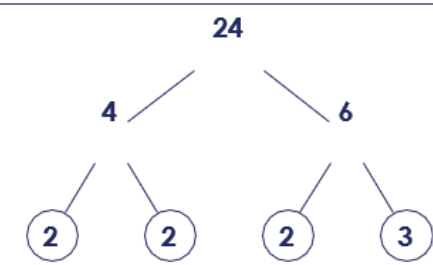
KPI 8.02 Prime Factorisation

1) Prime numbers	A prime number only has two distinct factors: 1 and itself. 2 is the only even prime number. 1 is not a prime number. Prime numbers between 1 and 100: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.		
2) Prime factor decomposition	The process of expressing a number as a product of its prime factors. $24 = 2 \times 2 \times 2 \times 3 \rightarrow 24 = 2^3 \times 3$	**3) Prime factor trees**	

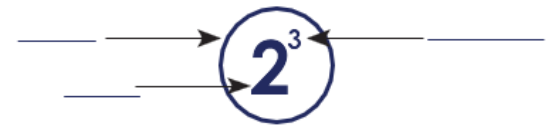
KPI 8.01 Powers and Roots

1) Square number	The result of _____. It will always be _____. The first 12 square numbers are: _____	**2) Square root**	The _____ of squaring a number to find the original _____. E.g. $\sqrt{64} = 8$ or -8 because $8^2 = 64$ and $(-8)^2 = 64$
3) Cube number	The result of _____. The first 10 cube numbers are: _____	**4) Cube root**	The _____ of cubing a number to find the original _____. E.g. $\sqrt[3]{8} = 2$ because $2^3 = 8$ Note: $(-2)^3 = -8$ so $\sqrt[3]{8} \neq -2$
5) Index notation	**Example** $a \times a \times a \times a = a^4$. The number 4 is called the _____ (plural _____). This tells us how many times the "_____" a has been multiplied by itself.		
6) Multiplying powers	$a^m \times a^n = a^{m+n}$ _____ the powers only if the bases are the same. E.g. $a^5 \times a^3 = a^{5+3} = a^8$	**7) Dividing powers**	$a^m \div a^n = a^{m-n}$ _____ the powers only if the bases are the same. E.g. $a^6 \div a^2 = a^{6-2} = a^4$
8) Indices with brackets	$(a^m)^n = a^{m \times n}$ _____ the powers. E.g. $(a^3)^5 = a^{3\times5} = a^{15}$	**9) Indices with brackets**	$(ab)^n = a^n \times b^n$ Raise each number or variable to the same _____. E.g. $(2p)^4 = 2^4 \times p^4 = 16p^4$
10) Power of 0	$a^0 =$ _____ Any number or variable to the power of zero equals _____	**11) Power of $\frac{1}{2}$**	$a^{\frac{1}{2}} = \sqrt{a}$ E.g. $16^{\frac{1}{2}} = \sqrt{16} = 4$

KPI 8.02 Prime Factorisation

1) Prime numbers	A prime number only has _____: 1 and itself. 2 is the only _____ prime number. 1 is not a prime number. Prime numbers between 1 and 100: __, __, __, __, __, __, __, __, __, __, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.		
2) Prime factor decomposition	The process of expressing a number as a _____ of its _____. $24 = 2 \times 2 \times 2 \times 3$ ➔ $24 =$ _____	**3) Prime factor trees**	

KPI 8.01 Powers and Roots

1) Square number	The result of _____. It will always be _____. The first 12 square numbers are: _____	**2) Square root**	The _____ of squaring a number to find the original _____. E.g. $\sqrt{64} = 8$ or -8 because $8^2 = 64$ and $(-8)^2 = 64$
3) Cube number	The result of _____. The first 10 cube numbers are: _____	**4) Cube root**	The _____ of cubing a number to find the original _____. E.g. $\sqrt[3]{8} = 2$ because $2^3 = 8$ Note: $(-2)^3 = -8$ so $\sqrt[3]{8} \neq -2$
5) Index notation	**Example** $a \times a \times a \times a = a^4$. The number 4 is called the _____ (plural _____). This tells us how many times the "_____" a has been multiplied by itself.		
6) Multiplying powers	$a^m \times a^n = a^{m+n}$ _____ the powers only if the bases are the same. E.g. $a^5 \times a^3 = a^{5+3} = a^8$	**7) Dividing powers**	$a^m \div a^n = a^{m-n}$ _____ the powers only if the bases are the same. E.g. $a^6 \div a^2 = a^{6-2} = a^4$
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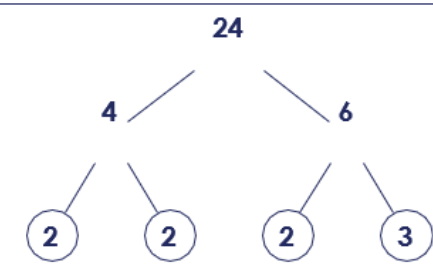
1) Prime numbers	A prime number only has _____: 1 and itself. 2 is the only _____ prime number. 1 is not a prime number. Prime numbers between 1 and 100: __, __, __, __, __, __, __, __, __, __, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.		
2) Prime factor decomposition	The process of expressing a number as a _____ of its _____. $24 = 2 \times 2 \times 2 \times 3$ ➔ $24 =$ _____	**3) Prime factor trees**	

KPI 8.03 Rounding

1) Significant figures

The total number of digits in a number, not counting zeros at the beginning of a number or at the end of a decimal number.
345 000 has 6 significant figures.
0.3047 has 4 significant figures.
10.500 has 3 significant figures.

2) Rounding to significant figures

Round to...	0.007638 to 3 sf	0.007638 to 2 sf	0.007638 to 1 sf	2.0507 to 3 sf	2.0507 to 2 sf	2.0507 to 1 sf
Answer	0.00764	0.0076	0.008	2.05	2.1	2

3) Estimate

Find a rough or approximate answer by calculating with numbers rounded to one significant figure.
e.g. $2.3 \times 18.4 \approx 2 \times 20 = 40$
$\approx$ "approximately equal to"

KPI 8.04 Fractions

1) Converting an improper fraction to a mixed number

$$\frac{15}{7} = 2\frac{1}{7}$$

2) Converting a mixed number to an improper fraction

$$3\frac{4}{5} = \frac{(3 \times 5) + 4}{5} = \frac{19}{5}$$

3) Adding and subtracting fractions

Make the denominators the same (find the LCM).
Use equivalent fractions to ensure fractions have a common denominator.
Add/subtract the numerators only.

$$\frac{2}{7} + \frac{2}{5} = \frac{10}{35} + \frac{14}{35} = \frac{24}{35}$$

4) Multiplying fractions

Multiply the numerators.
Multiply the denominators.
Simplify where possible.

$$\frac{4}{5} \times \frac{3}{8} = \frac{12}{40} = \frac{3}{10}$$

5) Dividing fractions

Keep the first fraction the same.
Change the second to its reciprocal.
Multiply the fractions.
Simplify or convert to a mixed number where possible.

$$\frac{4}{5} \div \frac{3}{8} = \frac{4}{5} \times \frac{8}{3} = \frac{32}{15} = 2\frac{2}{15}$$

KPI 8.03 Rounding

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Find a _____ answer by calculating with numbers rounded to _____.
e.g. $2.3 \times 18.4 \approx 2 \times 20 = 40$
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$3\frac{4}{5} = \frac{(3 \times 5) + 4}{5} = \frac{19}{5}$

3) Adding and subtracting fractions

Make the denominators the same (find the _____).
Use _____ fractions to ensure fractions have a _____ _____.
Add/subtract the _____ only.

$\frac{2}{7} + \frac{2}{5} = \frac{10}{35} + \frac{14}{35} - \frac{24}{35}$

4) Multiplying fractions

Multiply the _____.
Multiply the _____.
_____ where possible.

$\frac{4}{5} \times \frac{3}{8} = \frac{12}{40} = \frac{3}{10}$

5) Dividing fractions

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Change the second to its _____.
_____ the fractions.
_____ or convert to a _____ where possible.

$\frac{4}{5} \div \frac{3}{8} = \frac{4}{5} \times \frac{8}{3} = \frac{32}{15} = 2\frac{2}{15}$

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$\frac{2}{7} + \frac{2}{5} = \frac{10}{35} + \frac{14}{35} - \frac{24}{35}$

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Multiply the _____.
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$\frac{4}{5} \div \frac{3}{8} = \frac{4}{5} \times \frac{8}{3} = \frac{32}{15} = 2\frac{2}{15}$

KPI 8.05 Solving Equations 1

1) Inverse operations

Addition and Subtraction are inverse operations.
Multiplication and Division are inverse operations.
Squaring and taking the square root are inverse operations.

2) Variable

A letter used to represent any number.

3) Coefficient

The number to the left of the variable. This is the value that we multiply the variable by.
$4x$ ➔ The coefficient of x is 4.
x ➔ The coefficient of x is 1.

4) Term

A single number, variable or numbers and variables multiplied together.

5) Collecting like terms

Combining the like terms in an expression. $7x + 3y - 2x$ is simplified to $5x + 3y$.

6) Expression

A mathematical statement which contains one or more terms combined with addition and/or subtraction signs
E.g. $4x + 3y$.

7) Linear equation

Contains an equals sign (=) and has one unknown.
E.g. $5x - 2 = 2x + 7$.

8) Solve

Use inverse operations to find the solution of an equation.

E.g. 1. (One step)

$$\frac{x}{4} = 12$$
$$\times 4 \qquad \times 4$$
$$x = 48$$

E.g. 2. (Two step)

$$3p - 7 = 8$$
$$+7 \qquad +7$$
$$3p = 15$$
$$\div 3 \qquad \div 3$$
$$p = 5$$

E.g. 3. (Unknown on both sides)

$$2x + 10 = 19 - 9x$$
$$+9x \qquad +9x$$
$$11x + 10 = 19$$
$$-10 \qquad -10$$
$$11x = 9$$
$$\div 11 \qquad \div 11$$
$$x = \frac{9}{11}$$

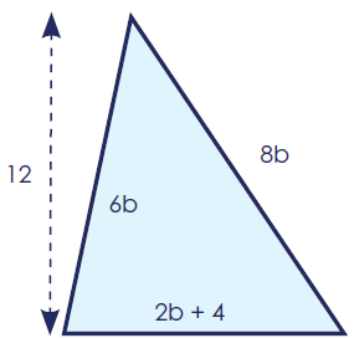
9) Form and solve a linear equation

E.g. 1
Jake is y years old. Lilly is 15. Kobe is 3 years younger than Jake. They have a total age of 36. Work out their individual ages.

$y + 15 + y - 3 = 36$
$2y + 12 = 36$
$2y = 24$
$y = 12$

Jake: 12, Lilly: 15, Kobe: 9

E.g. 2
The area of the triangle is 120 cm². Find the value of b.



$$\frac{12(2b + 4)}{2} = 120$$
$$\frac{24b + 48}{2} = 120$$
$$12b + 24 = 120$$
$$12b = 96$$
$$b = 8\text{cm}$$

KPI 8.05 Solving Equations 1

1) Inverse operations

Addition and _____ are inverse operations.
_____ and Division are inverse operations.
Squaring and taking the _____ are inverse operations.

2) Variable

A letter used to represent any _____.

3) Coefficient

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$4x$ → The _____ of x is 4.
x → The _____ of x is 1.

4) Term

A single number, variable or numbers and variables _____ together.

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_____ the like terms in an expression. $7x + 3y - 2x$ is simplified to $5x + 3y$.

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A mathematical statement which contains one or more terms combined with _____ and/or _____ signs
E.g. $4x + 3y$.

7) Linear equation

Contains an _____ and has _____.
E.g. $5x - 2 = 2x + 7$.

8) Solve

Use inverse operations to find the solution of an _____.

E.g. 1. (One step)

$\frac{x}{4} = 12$

x4 x4

$x = 48$

E.g. 2. (Two step)

$3p - 7 = 8$

+7 +7

$3p = 15$

÷3 ÷3

$p = 5$

E.g. 3. (Unknown on both sides)

$2x + 10 = 19 - 9x$

+9x +9x

$11x + 10 = 19$

-10 -10

$11x = 9$

÷11 ÷11

$x = \frac{9}{11}$

9) Form and solve a linear equation

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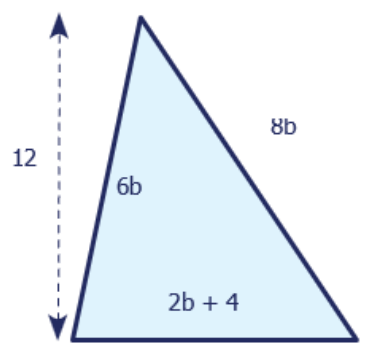

$\frac{12(2b + 4)}{2} = 120$

$\frac{24b + 48}{2} = 120$

$12b + 24 = 120$

$12b = 96$

$b = 8\text{cm}$

KPI 8.05 Solving Equations 1

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Addition and _____ are inverse operations.
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Squaring and taking the _____ are inverse operations.

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A letter used to represent any _____.

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The number to the left of the variable. This is the value that we multiply the variable by.
$4x$ → The _____ of x is 4.
x → The _____ of x is 1.

4) Term

A single number, variable or numbers and variables _____ together.

5) Collecting like terms

_____ the like terms in an expression. $7x + 3y - 2x$ is simplified to $5x + 3y$.

6) Expression

A mathematical statement which contains one or more terms combined with _____ and/or _____ signs
E.g. $4x + 3y$.

7) Linear equation

Contains an _____ and has _____.
E.g. $5x - 2 = 2x + 7$.

8) Solve

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E.g. 1. (One step)

$\frac{x}{4} = 12$

x4 x4

$x = 48$

E.g. 2. (Two step)

$3p - 7 = 8$

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$2x + 10 = 19 - 9x$

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9) Form and solve a linear equation

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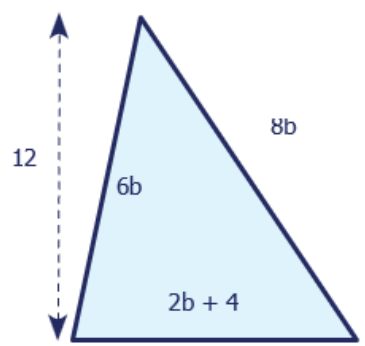


$\frac{12(2b + 4)}{2} = 120$

$\frac{24b + 48}{2} = 120$

$12b + 24 = 120$

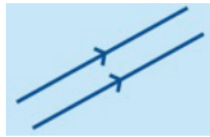
$12b = 96$

$b = 8cm$

KPI 8.06 Angles in Parallel Lines 1

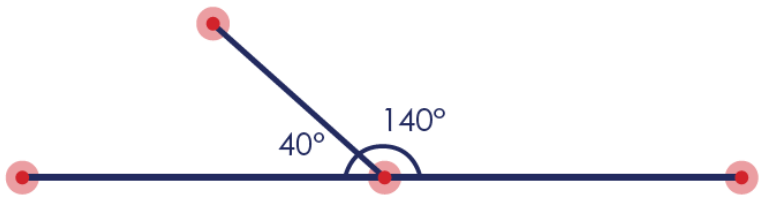
1) Parallel lines

Always equidistant.
Parallel lines have the same gradient.
They never meet however far they are extended.



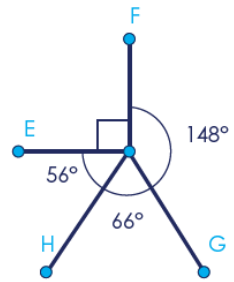
2) Angles on a straight line

Angles on a straight line sum to 180°



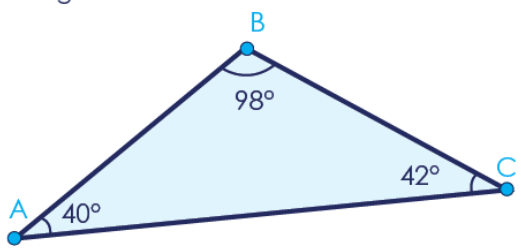
3) Angles around a point

Angles around a point sum to 360°



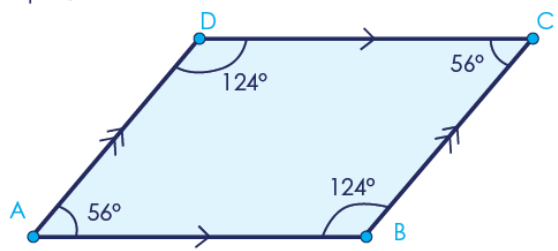
4) Angles in a triangle

Angles in a triangle sum to 180°



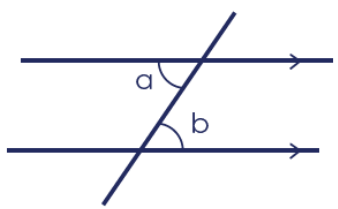
5) Angles in a quadrilateral

Angles in a quadrilateral sum to 360°



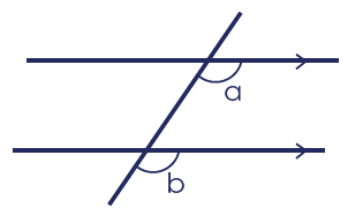
6) Alternate angles

Alternate angles are equal, so a = b



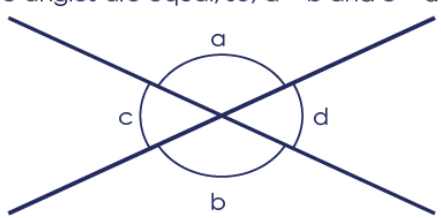
7) Corresponding angles

Corresponding angles are equal, so a = b



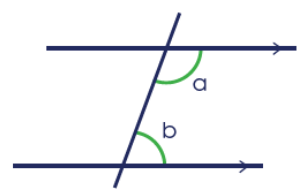
8) Vertically opposite angles

Vertically opposite angles are equal, so, a = b and c = d



9) Co-interior angles

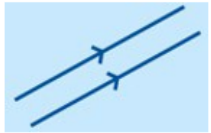
Co-interior angles sum to 180°, so a + b = 180°



KPI 8.06 Angles in Parallel Lines 1

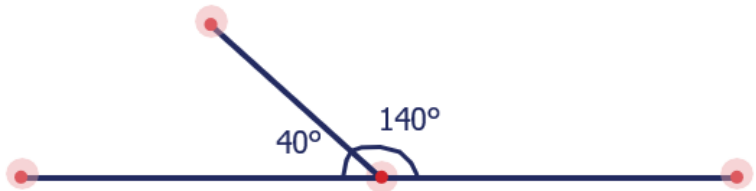
1) Parallel lines

Always _____.
Parallel lines have the same _____.
They never meet however far they are extended.



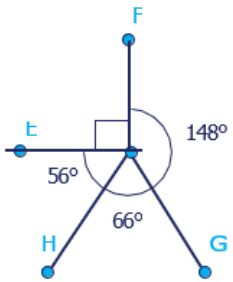
2) Angles on a straight line

Angles on a straight line sum to _____



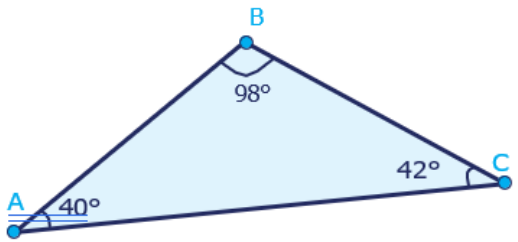
3) Angles around a point

Angles around a point sum to _____



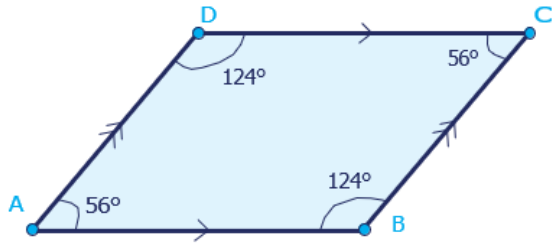
4) Angles in a triangle

Angles in a triangle sum to _____



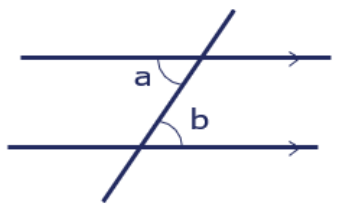
5) Angles in a quadrilateral

Angles in a quadrilateral sum to _____



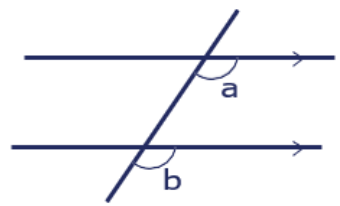
6) _____ angles

_____ angles are equal, so a = b



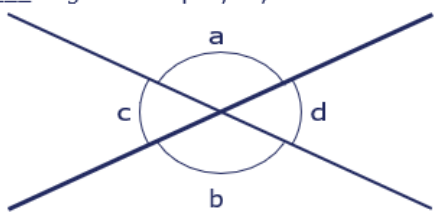
7) _____ angles

_____ angles are equal, so a = b



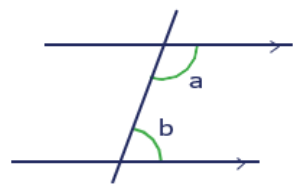
8) _____ angles

_____ angles are equal, so, a = b and c = d



9) _____ angles

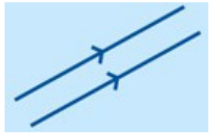
_____ angles sum to 180°, so a + b = 180°



KPI 8.06 Angles in Parallel Lines 1

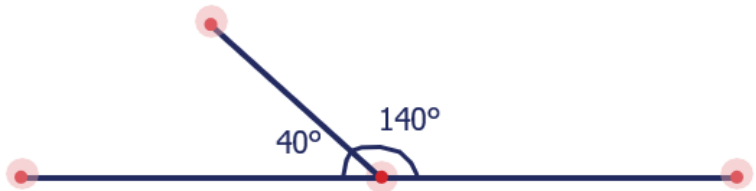
1) Parallel lines

Always _____.
Parallel lines have the same _____.
They never meet however far they are extended.



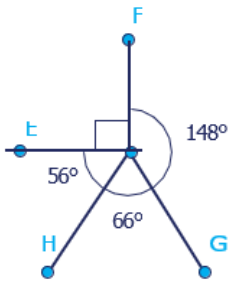
2) Angles on a straight line

Angles on a straight line sum to _____



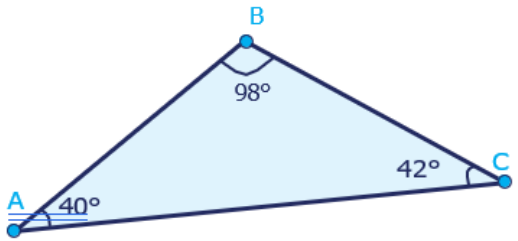
3) Angles around a point

Angles around a point sum to _____



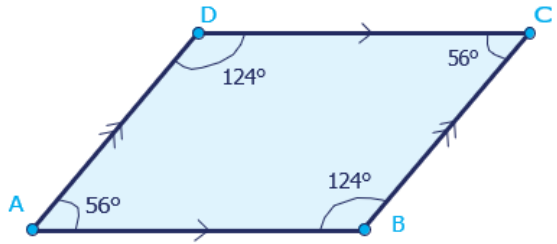
4) Angles in a triangle

Angles in a triangle sum to _____



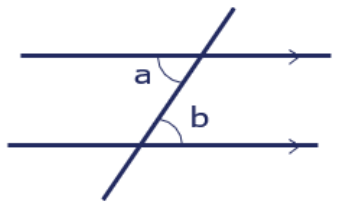
5) Angles in a quadrilateral

Angles in a quadrilateral sum to _____



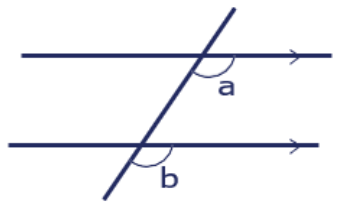
6) _____ angles

_____ angles are equal, so a = b



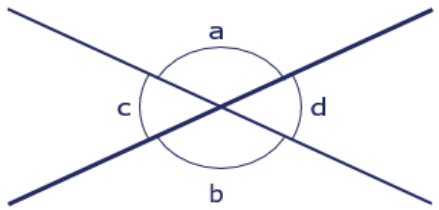
7) _____ angles

_____ angles are equal, so a = b



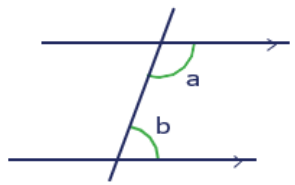
8) _____ angles

_____ angles are equal, so, a = b and c = d



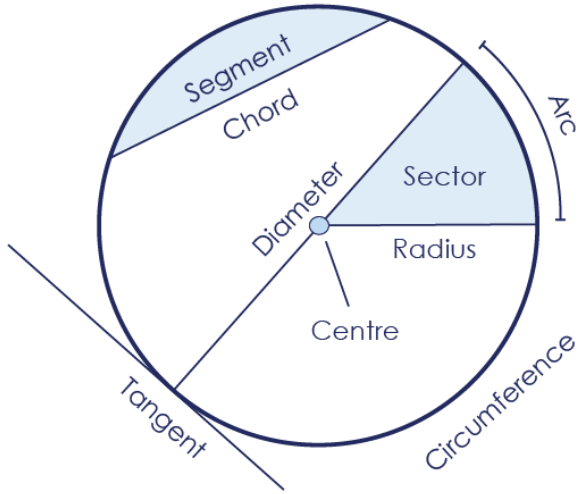
9) _____ angles

_____ angles sum to 180°, so a + b = 180°



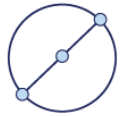
KPI 8.07 Circumference

1) Diameter	A straight line going straight through the centre of the circle and touching the circumference at each end.
2) Radius **Plural: radii**	A straight line joining the centre to the circumference.
3) Chord	A straight line joining any two parts of the circumference.
4) Tangent	A straight line that touches the circumference at a single point.
5) Arc	A section of the circumference.
6) Sector	The area bound by two radii and an arc.
7) Segment	The area bound by the circumference and a chord.



8) Circumference

The perimeter of the circle.
C = π ×diameter
C = π d



d = 5cm

c = πd
c = π x 5
c = 5π cm

c = 15.70796327cm
c = 15.7cm (3*sf*)

9) π (Pi)

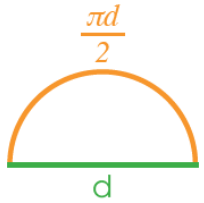
The ratio of a circle's circumference to its diameter.

It has an estimated value of $\frac{22}{7}$ or 3.14 rounded to 3 significant figures.

10) Revolution

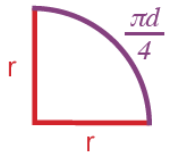
A revolution is a full turn of a circle.
The distance covered by one revolution is equal to the circumference of the circle.

13) Semi circle



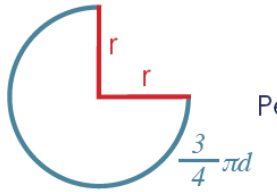
Perimeter $\frac{\pi d}{2}$ + d

12) Quarter- circle



Perimeter $\frac{\pi d}{4}$ + 2r

14) Three-quarter circle



Perimeter $\frac{3}{4}\pi d$ + 2r

KPI 8.07 Circumference

1) Diameter

A straight line going _____ of the circle and touching the _____ at each end.

2) Radius
Plural: radii

A straight line joining the _____ to the _____.

3) Chord

A straight line joining _____.

4) Tangent

A straight line that touches _____.

5) Arc

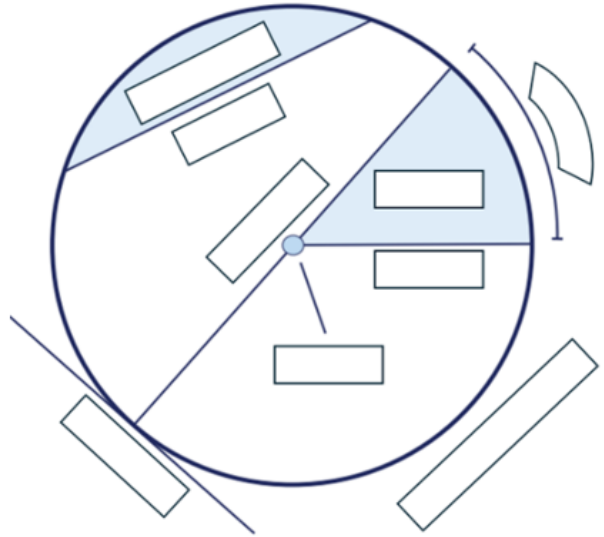
A _____ of the _____.

6) Sector

The area bound by _____ and _____.

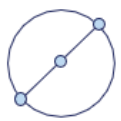
7) Segment

The area bound by _____ and _____.



8) Circumference

The _____ of the circle.
C = _____
C = _____



d = 5cm

c = πd
c = π x 5
c = 5π cm

c = 15.70796327cm
c = 15.7cm (3*sf*)

9) π (Pi)

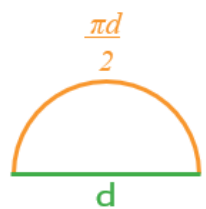
The ratio of a circle's _____ to its _____.

It has an estimated value of $\frac{22}{7}$ or 3.14 rounded to 3 significant figures.

10) Revolution

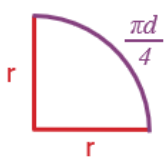
A revolution is a _____.
The distance covered by one revolution is equal to _____.

13) Semi circle



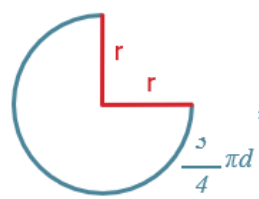
Perimeter $\frac{\pi d}{2}$ + d

12) Quarter- circle



Perimeter $\frac{\pi d}{4}$ + 2r

14) Three-quarter circle



Perimeter $\frac{3}{4}\pi d$ + 2r

KPI 8.07 Circumference

1) Diameter

A straight line going _____ of the circle and touching the _____ at each end.

2) Radius
Plural: radii

A straight line joining the _____ to the _____.

3) Chord

A straight line joining _____.

4) Tangent

A straight line that touches _____.

5) Arc

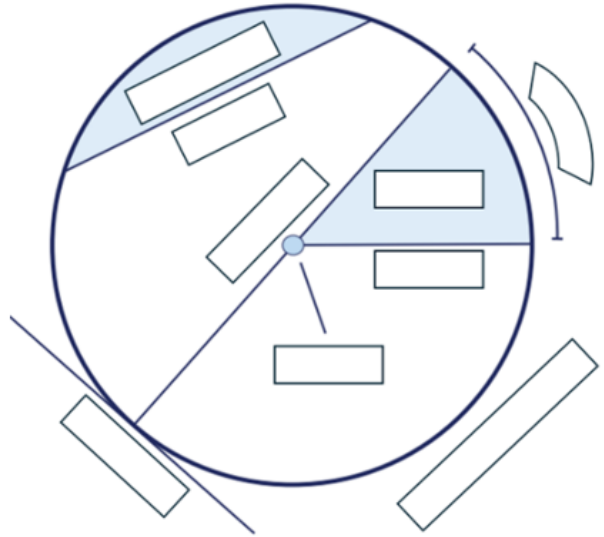
A _____ of the _____.

6) Sector

The area bound by _____ and _____.

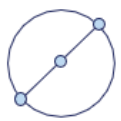
7) Segment

The area bound by _____ and _____.



8) Circumference

The _____ of the circle.
C = _____
C = _____



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c = πd
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c = 15.70796327cm
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9) π (Pi)

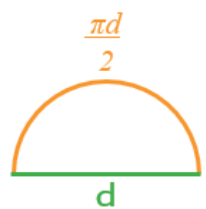
The ratio of a circle's _____ to its _____.

It has an estimated value of $\frac{22}{7}$ or 3.14 rounded to 3 significant figures.

10) Revolution

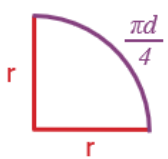
A revolution is a _____.
The distance covered by one revolution is equal to _____.

13) Semi circle



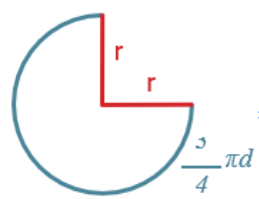
Perimeter $\frac{\pi d}{2}$ + d

12) Quarter- circle



Perimeter $\frac{\pi d}{4}$ + 2r

14) Three-quarter circle



Perimeter $\frac{3}{4}\pi d$ + 2r

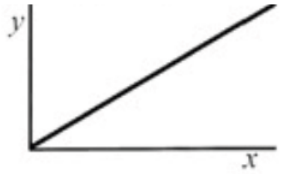
KPI 8.08 Direct Proportion

1) Proportion

A relationship between two quantities.

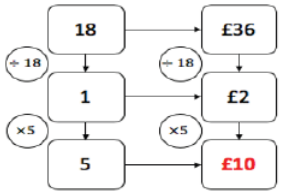
2) Direct proportion

A relationship between two variables where, as one increases, the other also increases.
The graphical representation of this relationship is a straight line through the origin.



3) Unitary method

To find the value of one unit first.



5) Best buy

Better value for money means that the cost is cheaper when buying an identical item or amount. Equal quantities must be compared.

4) Multiple intersections

6) Recipes

Option 1: Find the amount of ingredients needed for a specific number of people.
Option 2: Find how much of the recipe can be made with the quantities available in the question.

KPI 8.09 Fractions, Decimals and Percentages

1) Common conversions

Fraction	Decimal	Percentage
$\frac{1}{10}$	0.1	10%
$\frac{1}{8}$	0.125	12.5%
$\frac{1}{5}$	0.2	20%
$\frac{1}{4}$	0.25	25%
$\frac{1}{3}$	0.33333....	33.3% (1dp)
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%
$\frac{1}{1}$	1	100%

2) Fraction to decimal

Divide the numerator by the denominator.

$\frac{1}{5} \rightarrow 1 \div 5 \rightarrow 5\overline{)1.0}$ (0.2)

3) Decimal to percentage

Multiply by 100 and add the percentage symbol.

$0.09 \rightarrow 0.09 \times 100 = 9\%$

4) Percentage to fraction

Write the percentage as the numerator and make 100 the denominator. Simplify if possible.

$30\% \rightarrow \frac{30}{100} = \frac{3}{10}$

4) Percentage change

Percentage Increase or Decrease =

$\frac{\text{Change}}{\text{Original}} \times 100$

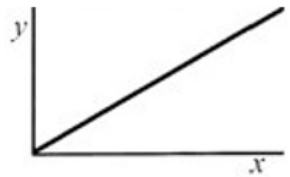
KPI 8.08 Direct Proportion

1) Proportion

A _____ between two quantities.

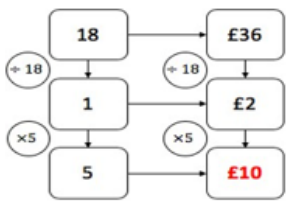
2) Direct proportion

A _____ between two variables where, as one increases, the other _____.
The graphical representation of this relationship is a straight line through the _____



3) Unitary method

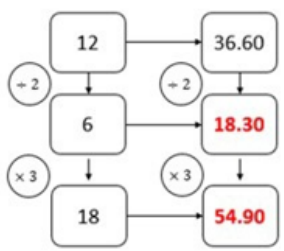
To find the value of _____.



5) Best buy

Better value for money means that the cost is _____ when buying an identical item or amount. _____ must be compared.

4) Multiple intersections



6) Recipes

Option 1: Find the amount of _____ needed for a specific number of people.
Option 2: Find how much of the _____ with the quantities available in the question.

KPI 8.09 Fractions, Decimals and Percentages

1) Common conversions

Fraction	Decimal	Percentage
$\frac{1}{10}$	0.1	10%
$\frac{1}{8}$	0.125	12.5%
$\frac{1}{5}$	0.2	20%
$\frac{1}{4}$	0.25	25%
$\frac{1}{3}$	0.33333....	33.3% (1dp)
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%
$\frac{1}{1}$	1	100%

2) Fraction to decimal

Divide the _____ by the _____.

$\frac{1}{5} \rightarrow 1 \div 5 \rightarrow 0.2$

$5 \overline{)1.10}$

3) Decimal to percentage

_____ and add the percentage symbol.

$0.09 \rightarrow 0.09 \times 100 = 9\%$

4) Percentage to fraction

Write the percentage as the _____ and make 100 the _____. _____ if possible.

$30\% \rightarrow \frac{30}{100} = \frac{3}{10}$

4) Percentage change

Percentage Increase or Decrease =

_____

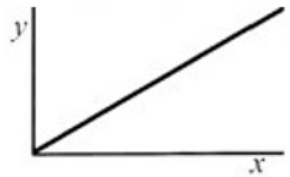
KPI 8.08 Direct Proportion

1) Proportion

A _____ between two quantities.

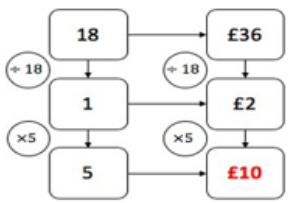
2) Direct proportion

A _____ between two variables where, as one increases, the other _____.
The graphical representation of this relationship is a straight line through the _____



3) Unitary method

To find the value of _____.



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Better value for money means that the cost is _____ when buying an identical item or amount. _____ must be compared.

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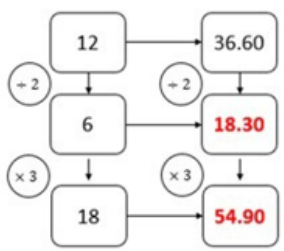


6) Recipes

Option 1: Find the amount of _____ needed for a specific number of people.
Option 2: Find how much of the _____ with the quantities available in the question.

KPI 8.09 Fractions, Decimals and Percentages

1) Common conversions

Fraction	Decimal	Percentage
$\frac{1}{10}$	0.1	10%
$\frac{1}{8}$	0.125	12.5%
$\frac{1}{5}$	0.2	20%
$\frac{1}{4}$	0.25	25%
$\frac{1}{3}$	0.33333....	33.3% (1dp)
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%
$\frac{1}{1}$	1	100%

2) Fraction to decimal

Divide the _____ by the _____.

$\frac{1}{5} \rightarrow 1 \div 5 \rightarrow 0.2$

$5 \overline{)1.0}$

3) Decimal to percentage

_____ and add the percentage symbol.

$0.09 \rightarrow 0.09 \times 100 = 9\%$

4) Percentage to fraction

Write the percentage as the _____ and make 100 the _____. _____ if possible.

$30\% \rightarrow \frac{30}{100} = \frac{3}{10}$

4) Percentage change

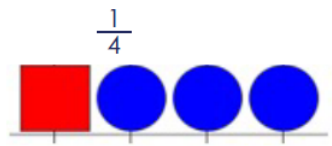
Percentage Increase or Decrease =

_____

KPI 8.10 Percentages Calculations

1) Multiplier	A percentage written as a decimal is the percentage multiplier.	**2) Percentage of an amount with a calculator**	The percentage multiplier multiplied by the amount.
3) Percentage change	$\frac{difference}{original}$ x 100	**4) Reverse percentages**	$original = \frac{new\ amount}{multiplier}$

KPI 8.11 Ratio 1

1) Ratio	A part-to-part comparison. The ratio of a to b is written a:b	**2) Ratio as a fraction**	Fraction of shapes which are squares:  $\frac{1}{4}$ Fraction of shapes which are circles: $\frac{3}{4}$
3) Equivalent ratios	Found by multiplying or dividing all parts of the ratio by the same number.		
4) Simplifying ratios	Ratios can be simplified by dividing each part of the ratio by the same number. ÷5 ↶ 25 : 15 ↷ ÷5 5 : 3	**5) Sharing into a given ratio**	Add the parts together. Divide the total by this. Multiply this by each part of the ratio. Share £18 in the ratio of 5:4 Add the part → 4 + 5 = 9 parts £18 ÷ 9 = £2 → 1 part = £2 5 parts: 5 x £2 = £10 4 parts: 4 x £2 = £8 £10: £8
6) Unitary Ratio	Write the ratio 5:3 in the form 1:n ÷5 ↶ 5 : 3 ↷ ÷5 1: $\frac{3}{5}$		

KPI 8.10 Percentages Calculations

1) Multiplier	A percentage written as a _____ is the percentage multiplier.	**2) Percentage of an amount with a calculator**	The percentage multiplier _____ by the amount.
3) Percentage change		**4) Reverse percentages**	

KPI 8.11 Ratio 1

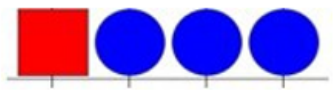
1) Ratio

A _____ comparison.
The ratio of a to b is written a:b

2) Ratio as a fraction

Fraction of shapes which are squares:

$\frac{1}{4}$



Fraction of shapes which are circles:

$\frac{3}{4}$

3) Equivalent ratios

Found by _____ or _____ all parts of the ratio by the same number.

4) Simplifying ratios

Ratios can be simplified by _____ each part of the ratio by the same number.

÷5 ↶ 25 : 15 / 5 : 3 ↷ ÷5

5) Sharing into a given ratio

_____ the parts together.
_____ the total by this.
_____ this by each part of the ratio.

Share £18 in the ratio of 5:4

Add the part → 4 + 5 = 9 parts
£18 ÷ 9 = £2 → 1 part = £2
5 parts: 5 x £2 = £10
4 parts: 4 x £2 = £8
£10: £8

6) Unitary Ratio

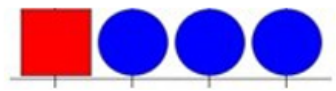
Write the ratio 5:3 in the form 1:n

÷5 ↶ 5 : 3 / 1 : $\frac{3}{5}$ ↷ ÷5

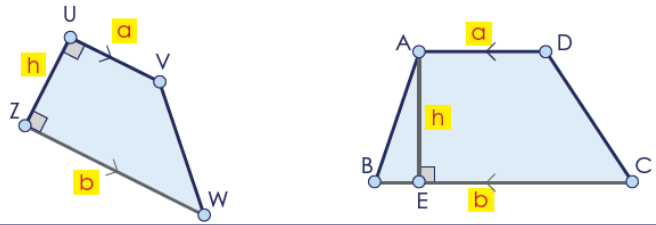
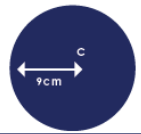
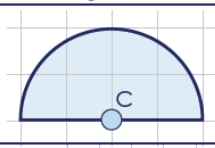
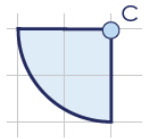
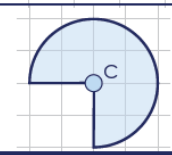
KPI 8.10 Percentages Calculations

1) Multiplier	A percentage written as a _____ is the percentage multiplier.	**2) Percentage of an amount with a calculator**	The percentage multiplier _____ by the amount.
3) Percentage change	.	**4) Reverse percentages**	

KPI 8.11 Ratio 1

1) Ratio	A _____ comparison. The ratio of a to b is written a:b	**2) Ratio as a fraction**	Fraction of shapes which are squares: $\frac{1}{4}$  Fraction of shapes which are circles: $\frac{3}{4}$
3) Equivalent ratios	Found by _____ or _____ all parts of the ratio by the same number.		
4) Simplifying ratios	Ratios can be simplified by _____ each part of the ratio by the same number. ÷5 ↶ 25 : 15 ↷ ÷5 5 : 3	**5) Sharing into a given ratio**	_____ the parts together. _____ the total by this. _____ this by each part of the ratio. Share £18 in the ratio of 5:4 Add the part → 4 + 5 = 9 parts £18 ÷ 9 = £2 → 1 part = £2 5 parts: 5 x £2 = £10 4 parts: 4 x £2 = £8 £10: £8
6) Unitary Ratio	Write the ratio 5:3 in the form 1:n ÷5 ↶ 5 : 3 ↷ ÷5 1 : $\frac{3}{5}$		

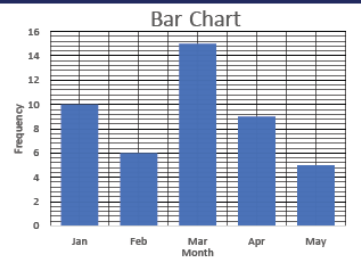
KPI 8.12 Area of Circles

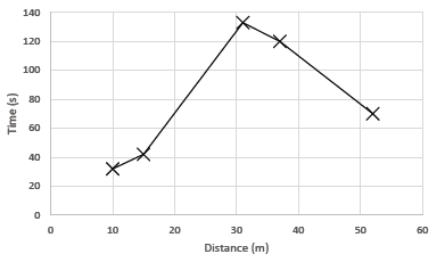
1) Trapezium	Quadrilateral with one pair of parallel sides.	**2) Isosceles trapezium**	Quadrilateral with one pair of parallel side and two right angles.
3) Area of trapezium	Sum of the parallel sides. Divide by 2. Multiply by the vertical height.	$A = \left(\frac{a+b}{2}\right) \times h$	
4) Area of a circle	$A = \pi r^2$ $A = \pi \times 9^2$ $A = 81\pi \text{ cm}^2$ 	**5) Area of a semi-circle**	$A = \frac{\pi r^2}{2}$ 
6) Area of a quarter-circle	$A = \frac{\pi r^2}{4}$ 	**7) Area of a three-quarter circle**	$A = \frac{3\pi r^2}{4}$ 

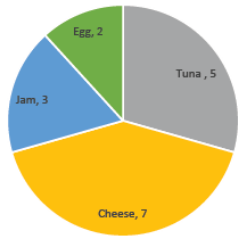
KPI 8.13 Statistics 1

1) Frequency table	A table showing how often (frequent) something occurs. Can include tally charts.	**2) Bar chart**	A way of displaying data, using horizontal or vertical bars which are the same width and have gaps between them. Data can also be presented in dual and composite bar charts in which case a key word would be used.
3) Line graph	Uses lines to join points on a graph to represent a data set.	**4) Pie chart**	Method of displaying proportional information by dividing a circle up into different-sized sectors.
5) Stem and Leaf diagrams	Presents data in a table where the place value columns are split. For example, the tens and the ones columns may be split where the tens become the "stem" and the ones become the "leaf". Stem and lead diagrams come with a key and must always be written in order.		

Score	Tally	Frequency *(f)*
1	||||	4
2	𝍸 ||||	9
3	𝍸 |	6
4	𝍸 |||	8
5	|||	3
6	|	1





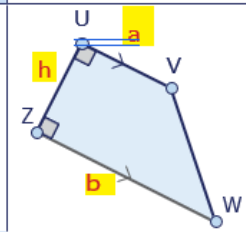
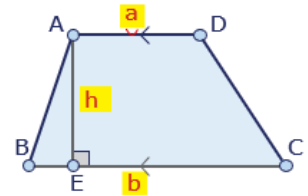
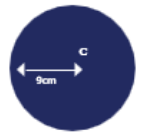
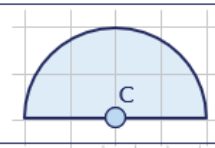
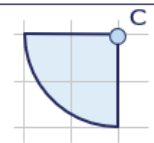
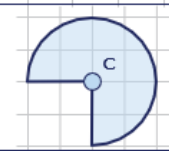


12	5
34	31
27	22
19	6
39	40

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

Key
2 \| 9 = 29

KPI 8.12 Area of Circles

1) Trapezium	Quadrilateral with one pair of parallel sides.	**2) Isosceles trapezium**	Quadrilateral with one pair of parallel side and two right angles.
3) Area of trapezium	_____ of the parallel sides. _____ by 2. _____ by the vertical height.		 
4) Area of a circle	A = _____ A = π × 9² A = 81π cm² 	**5) Area of a semi-circle**	A = $\frac{\pi r^2}{2}$ 
6) Area of a quarter-circle	A = $\frac{\pi r^2}{4}$ 	**7) Area of a three-quarter circle**	A = $\frac{3\pi r^2}{4}$ 

KPI 8.13 Statistics 1

1) Frequency table	A table showing _____ _____. Can include tally charts.		

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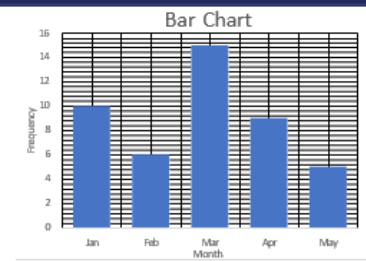
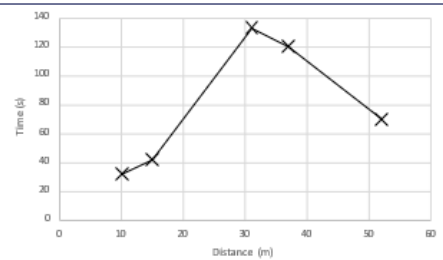
2) Bar chart	A way of displaying data, using _____ or _____ bars which are the same _____ and have _____ between them. Data can also be presented in _____ and _____ bar charts in which case a key word would be used.		
3) Line graph	Uses lines to join points on a graph to represent a data set.		
4) Pie chart	Method of displaying _____ information by dividing a circle up into different-sized _____.		
5) Stem and Leaf diagrams	Presents data in a table where the _____ are split. For example, the tens and the ones columns may be split where the tens become the "_____" and the ones become the "_____". Stem and leaf diagrams come with a _____ and must always be written in _____.		

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39	40

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4	0

Key
2 \| 9 = 29

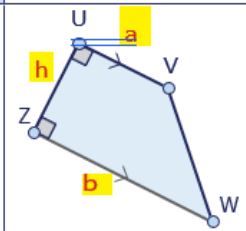
KPI 8.12 Area of Circles

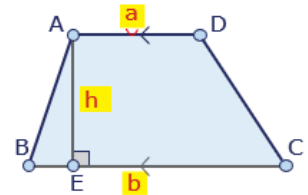
1) Trapezium

Quadrilateral with one pair of parallel sides.

2) Isosceles trapezium

Quadrilateral with one pair of parallel side and two right angles.





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_____ of the parallel sides.
_____ by 2.
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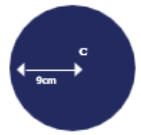
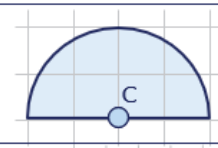
4) Area of a circle

A = _____
A = π × 9²
A = 81π cm²



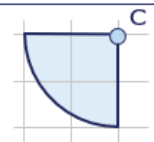
5) Area of a semi-circle

$A = \frac{\pi r^2}{2}$



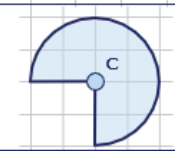
6) Area of a quarter-circle

$A = \frac{\pi r^2}{4}$



7) Area of a three-quarter circle

$A = \frac{3\pi r^2}{4}$



KPI 8.13 Statistics 1

1) Frequency table

A table showing _____
_____.
Can include tally charts.

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1	||||	4
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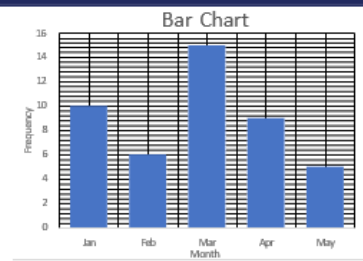
2) Bar chart

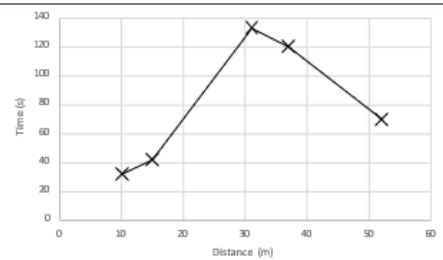
A way of displaying data, using _____ or _____ bars which are the same _____ and have _____ between them.

Data can also be presented in _____ and _____ bar charts in which case a key word would be used.



3) Line graph

Uses lines to join points on a graph to represent a data set.



4) Pie chart

Method of displaying _____ information by dividing a circle up into different-sized _____.

5) Stem and Leaf diagrams

Presents data in a table where the _____ are split.
For example, the tens and the ones columns may be split where the tens become the "_____" and the ones become the "_____". Stem and leaf diagrams come with a _____ and must always be written in _____.

12	5
34	31
27	22
19	6
39	40

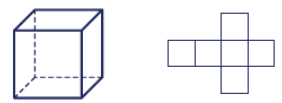
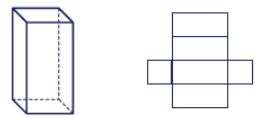
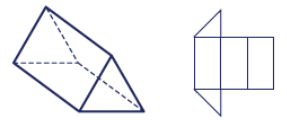
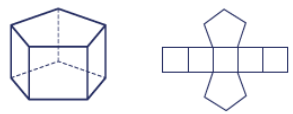
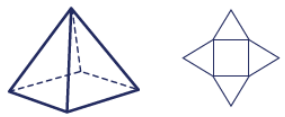
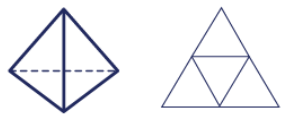
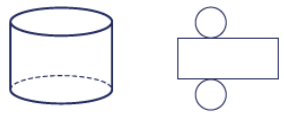
0	5 6
1	2 9
2	2 7
3	1 4 9
4	0

Key
2 | 9 = 29

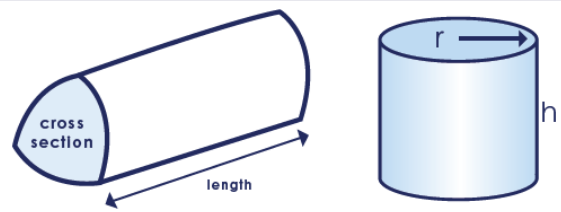
KPI 8.14 Averages and spread

1) Average	The central or typical value in a data set. There are three types of averages: mode, median and mean.	**2) Mode**	The most common/frequent value from a set of data. Mode of 3, 3, 6, **7, 7, 7**, 8, 9, 10 = 7
3) Median	The middle value when the data is in order. Median of 9, 5, 15, 6, 8 → 5, 6, **8**, 9, 15 = 8	**4) Mean**	Add up all the numbers and divide the total by how many numbers there are. Mean of 7, 8, 9: $\frac{7+8+9}{3} = \frac{24}{3} = 8$
5) Range	A measure of the spread of the data, = *Largest Value − Smallest Value*.		
6) Reversing the mean	If we have the mean but one of the data points is missing, we can find the missing value by: 1) Multiplying the 'mean' by the number of data points to get the total of the values; 2) Subtracting the sum of the known values from the total of all values.	E.g. The mean of three numbers is 5. Two of the numbers are 3 and 10. Find the third value. Total of the values: 5 x 3 = 15 15 – (3 + 10) = 2 The third value is 2	

KPI 8.15 3D Visualisation

1) Face	A face is a single flat surface.	**2) Edge**	An edge is a line segment between faces.	**3) Vertex**	A vertex is a corner.
4) Cube	6 faces 12 edges 8 vertices 	**5) Cuboid**	6 faces 12 edges 8 vertices 	**6) Triangular prism**	5 faces 9 edges 6 vertices 
7) Pentagonal prism	7 faces 15 edges 10 vertices 	**8) Square-based pyramid**	5 faces 8 edges 5 vertices 	**9) Triangular -based pyramid**	4 faces 6 edges 4 vertices 
10) Cylinder	3 faces 2 edges 0 vertices 	**11) Cone**	2 faces 1 edge 1 vertex 	**12) Sphere**	1 face 0 edges 0 vertices 

KPI 8.16 Volume

1) Volume	The volume of a solid body is the amount of 'space' it occupies. It is measured in cubic units e.g. cubic centimetres (cm^3).		
2) Volume of a prism	Volume of a prism = area of cross section × length Volume of cylinder = $\pi r^2 h$ 	**3) Units of capacity**	1 L = 1000 ml; 1 L = 1000 cm^3

KPI 8.14 Averages and spread

1) Average	The _____ or typical value in a data set. There are three types of averages: mode, median and mean.	**2) Mode**	The most _____ value from a set of data. Mode of 3, 3, 6, **7, 7, 7**, 8, 9, 10 = 7
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5) Range	A measure of the _____ of the data, = _____ *Value* – _____ *Value*.		
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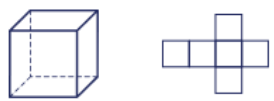
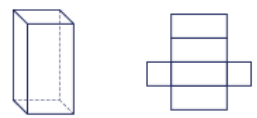
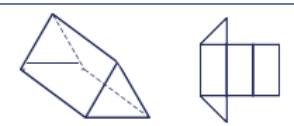
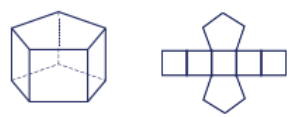
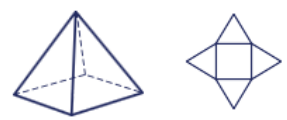
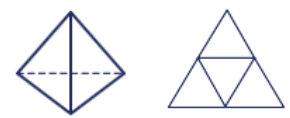
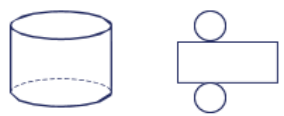
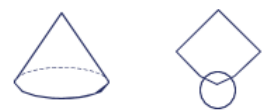
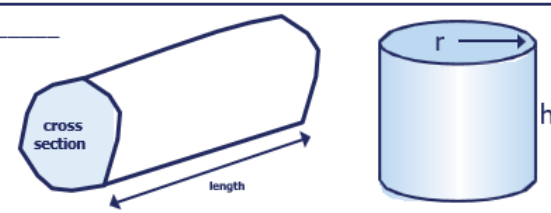
KPI 8.15 3D Visualisation

1) Face	A face is a single _____.	**2) Edge**	An edge is a _____ between faces.	**3) Vertex**	A vertex is a _____.
4) Cube	___ faces ___ edges ___ vertices 	**5) Cuboid**	___ faces ___ edges ___ vertices 	**6) Triangular prism**	___ faces ___ edges ___ vertices 
7) Pentagonal prism	___ faces ___ edges ___ vertices 	**8) Square-based pyramid**	___ faces ___ edges ___ vertices 	**9) Triangular -based pyramid**	___ faces ___ edges ___ vertices 
10) Cylinder	___ faces ___ edges ___ vertices 	**11) Cone**	___ faces ___ edge ___ vertex 	**12) Sphere**	___ face ___ edges ___ vertices 

KPI 8.16 Volume

1) Volume	The volume of a solid body is _____. It is measured in _____ units e.g. cubic centimetres (cm³).		
2) Volume of a prism	Volume of a prism = _____ Volume of cylinder = $\pi r^2 h$ 	**3) Units of capacity**	1 L = _____ ml; 1 L = _____ cm³

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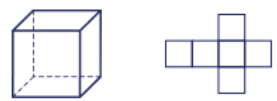
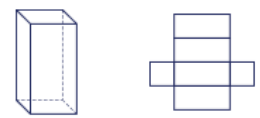
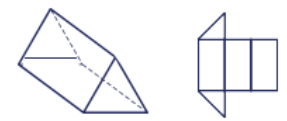
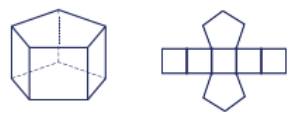
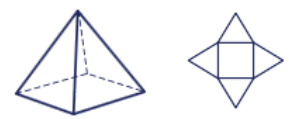
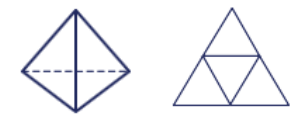
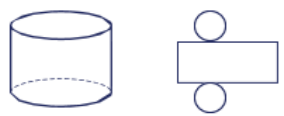
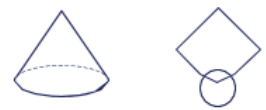
4) Cube	___ faces ___ edges ___ vertices 	**5) Cuboid**	___ faces ___ edges ___ vertices 	**6) Triangular prism**	___ faces ___ edges ___ vertices 
7) Pentagonal prism	___ faces ___ edges ___ vertices 	**8) Square-based pyramid**	___ faces ___ edges ___ vertices 	**9) Triangular -based pyramid**	___ faces ___ edges ___ vertices 
10) Cylinder	___ faces ___ edges ___ vertices 	**11) Cone**	___ faces ___ edge ___ vertex 	**12) Sphere**	___ face ___ edges ___ vertices 

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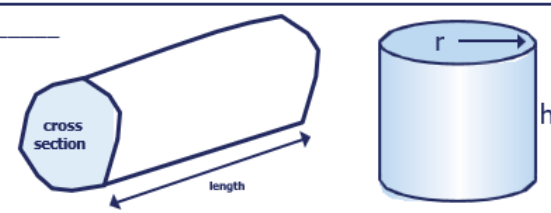
2) Volume of a prism	Volume of a prism = _____ Volume of cylinder = $\pi r^2 h$ 	**3) Units of capacity**	1 L = _____ ml; 1 L = _____ cm³

1. Food Chains

A **food chain** shows the different **species** of an organism in an **ecosystem**, and what eats what.

- A food chain always starts with a **producer**.
- A food chain ends with a **consumer**.

Here is an example of a simple food chain:

Tertiary consumer
Carnivore

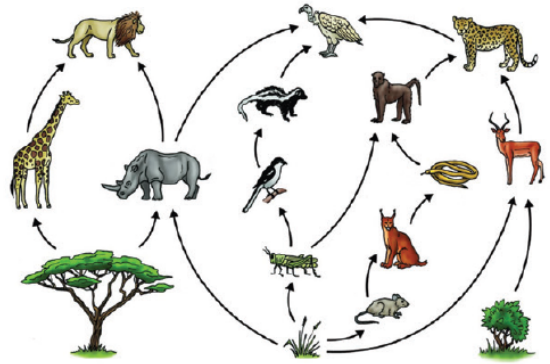
Secondary consumer
Carnivore

Primary consumer
Herbivore

Producer

2. Food Webs

When all the food chains in an ecosystem are joined up



Food webs are just several food chains joined together. Some of the food chains in this food web are:

- Tree > giraffe > lion
- Tree > rhino > lion
- Grass > rhino > eagle
- Grass > grass hopper > small bird > raccoon > eagle

4. Decomposers

Decay - when dead plant and animal materials are broken down by **decomposers**.

Decay releases the nutrients locked up in the dead material, back into the ground, so that it can be used for new plant growth.

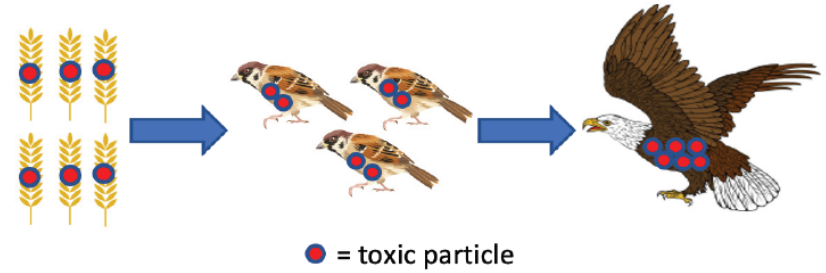
This is important because there is only a finite amount of nutrients on our planet. Decay means that the nutrients can be constantly recycled.

The ideal conditions for decay are:

1. Plenty of oxygen, so that decomposers can respire.
2. Warm temperatures so that decomposers are more active.
3. Some moisture as this allows important chemical reactions to take place.

3. Bioaccumulation

Bioaccumulation - the build up of toxic material through a food chain.



5. Adaptations

Adaptations - features helping organisms compete, and survive in their environment.
For example:

White coat > camouflage
Big feet > spread weight to reduce pressure on snow/ice
Thick layer of fat > insulation & food store
Greasy fur > water runs off easily after swimming

Hump that stores fat > reduce heat loss over rest of the body
Sandy colour > camouflage
Big feet > spread weight to reduce pressure on sand

Questions

1. What is always the starting point of a food chain?
2. What type of organism ends a food chain?
3. What do food webs show?
4. What is bioaccumulation?
5. What are decomposers?
6. Why is decay important?
7. Name three ideal conditions for decay.
8. What is an adaptation?
9. Give one example of an adaptation for cold climates.
10. Why do camels have humps?

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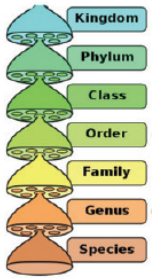
6. Natural Selection

1. Individuals in a species show a wide range of **genetic variation** due to **mutations**.
2. Individuals who are best adapted to the environment are **more likely to survive and reproduce.**
3. The **genes** that allow these individuals to be successful are **inherited** by their offspring.
4. Over many generations these small differences add up to the new evolution of species.

7. Classification Is The Sorting Out Of Organisms Into Groups Based On Their Similarities

- Today's classification system is designed by Carl Linnaeus
- Organisms were divided into kingdoms.
- Each kingdom was then sub-divided into smaller groups (phylum) and these into even smaller groups (e.g. class)
- Species are the smallest group.



Many organisms with few similar characteristics

One type of organism, with many similar characteristics

8. Extinction

Extinction – when an entire species is unable to compete successfully and reproduce it will lead to extinction, because changes in the environment may leave individuals less well adapted to compete for resources (e.g. food, water and mates).

Changes in the environment that can cause a species to become extinct:
- A new disease;
- A new predator;
- A change in the physical environment (e.g. climate change);
- Competition (from another species that is better adapted, including competition from humans).

9. Factors That Can Affect The Population Of Individual Organisms

Temperature (land/water)
Seasonal changes
Rainfall
Increased predation/hunting
Deforestation
pH of soil/water
Use of chemicals in farming
Disease
Pollution
New predators

Might lead to:
- A shortage of food
- Loss of habitat
- Lack of partners to reproduce with
- Less water

10. Estimating Populations

Method:
Count the numbers of a species within a small section of the area being sampled by:

1. Using a quadrat to make multiple random small samples.

2. A mean is then calculated and multiplied up to the whole area.

11. Biodiversity

Biodiversity - variety of living organisms on Earth.

Biodiversity is important because:
- Moral and cultural reasons;
- Some plant species might be identified for medicines;
- Reduces damage to food chains and food webs
- Protects future food supply.

Protecting biodiversity:
- **Seed banks** - a store of seeds so that new plants may be grown in the future.
- Seed banks are an example of a **gene bank**, which preserve genetic animals and plant material for the future.

Questions

1. Who designed the modern classification system?
2. What is the smallest group in classification?
3. What is natural selection?
4. What causes genetic variation in a species?
5. What is extinction?
6. Name one factor that could lead to extinction.
7. What does biodiversity mean?
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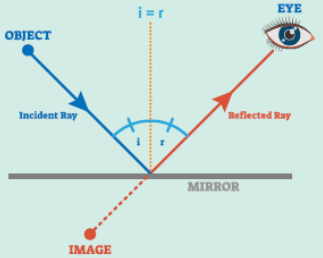
1. Reflection

A ray diagram shows how light travels, including what happens when it reaches a surface. In a ray diagram, you draw each ray as:
- A straight line;
- With an arrowhead pointing in the direction that the light travels;
- Always use a ruler and a sharp pencil.



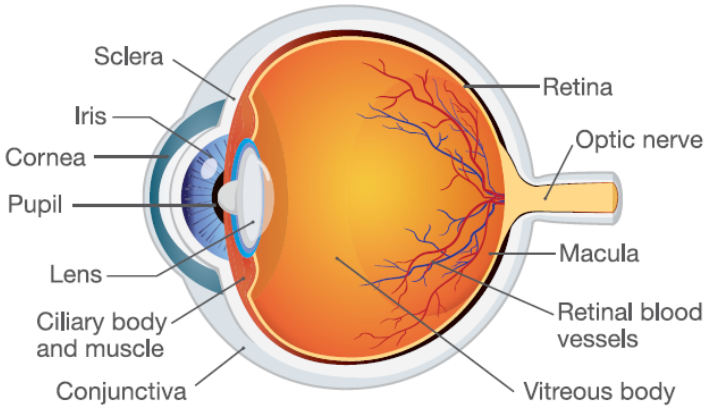
2. The law of reflection
When light reaches a mirror, it reflects off the surface of the mirror:
- **Incident ray** is the light going **towards the mirror**;
- **Reflected ray** is the light coming **away from the mirror.**

The law of reflection states:
- **The angle of incidence = the angle of reflection, i = r.**

3. Diffuse scattering
- If light meets a rough surface, each ray obeys the law of reflection;
- Different parts of the rough surface point in different directions;
- So the light is not all reflected in the same direction;
- The light is reflected in all directions.
- This is called **diffuse scattering**.

4. Ray diagram of reflection
- The hatched vertical line on the right represents the mirror;
- The dashed line is the **normal**, drawn 90° to the surface of the mirror;
- The **angle of incidence**, i, is the angle between the normal and incident ray;
- The **angle of reflection**, r, is the angle between the normal and reflected ray;
- The reflection of light from a flat surface such as a mirror is called **specular reflection** – light meeting the surface in one direction is all reflected in one direction.

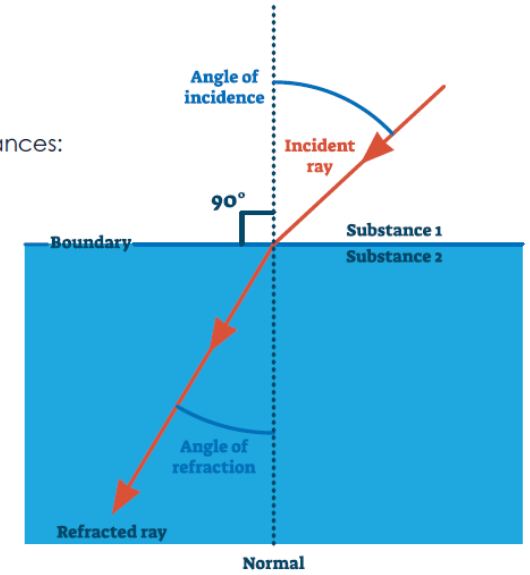
3. The Eye



2. Refraction

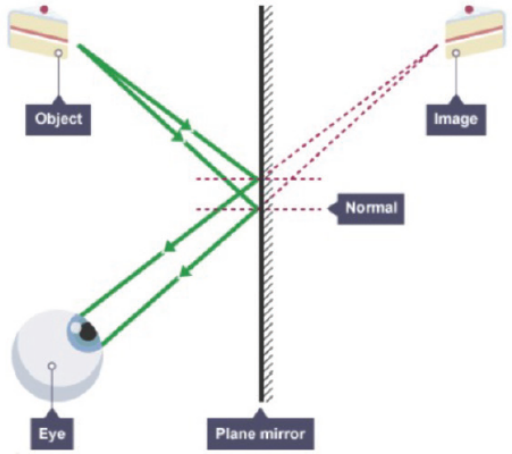
When light waves pass across a boundary between two substances with a different density, e.g. air and glass. They:
- Change speed;
- Causing them to change direction;
- This is called refraction.

At the boundary between two transparent substances:
- The light slows down going into a denser substance, and the ray bends towards the normal;
- The light speeds up going into a less dense substance, and the ray bends away from the normal.



4. Imaging In Mirrors

- A plane mirror is a flat mirror.
- When you look into a plane mirror, you see a reflected image of yourself. This image:
  - Appears to be behind the mirror
  - Is the right way up
  - Is 'laterally inverted' (letters and words look as if they have been written backwards)
- 'Real' rays, the ones leaving the object and the mirror, are shown as solid lines.
- 'Virtual' rays, the ones that appear to come from the image behind the mirror, are shown as dashed lines.
- Each incident ray will obey the law of reflection.



Questions

1. What is the incident ray?
2. What does the law of reflection state?
3. What is diffuse scattering?
4. What is specular reflection?
5. What causes light to refract?
6. What happens when light enters a denser medium?
7. What type of image does a plane mirror produce?
8. What is a ray diagram used for?
9. What is the normal line in ray diagrams?
10. What is meant by a 'virtual ray'?

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1. Colour

- White light is a mixture of many different colours;
- Each colour has a different frequency;
- White light can be split up into a **spectrum** using a prism, a triangular block of glass or Perspex;
- Light is refracted when it enters the prism;
- Each colour is refracted by a different amount;
- Light leaving the prism is spread out into different colours;
- This is called **dispersion**.

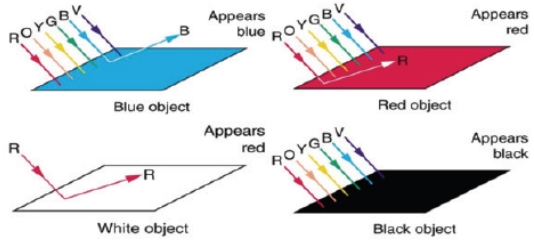
The spectrum

The seven colours of the spectrum listed in order of their frequency, from the lowest frequency (fewest waves per second) to the highest frequency (most waves per second):

- **R**ed **O**range **Y**ellow **G**reen **B**lue **I**ndigo **V**iolet
- 'Richard Of York Gave Battle In Vain'.

Coloured light

- There are three primary colours in light: red, green and blue;
- Light in these colours can be added together to make the secondary colours magenta, cyan and yellow.
- All three primary colours add together make white light;
- When light hits a surface, some of it is absorbed and some of it is reflected.
- The colour of an object is the colour of light it reflects;
- All other colours are absorbed.



5. Detecting Light

Cameras and eyes detect light. They both have:

- A material that is sensitive to light.
- A change that happens when this material absorbs light

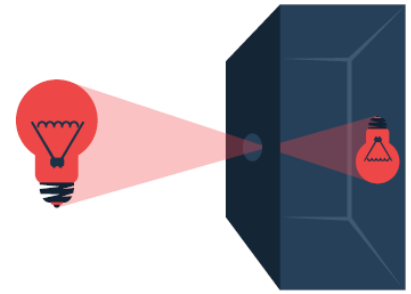
2. Focusing

- Light rays can be focused so that they meet at a single point;
- Focusing is important for getting clear images in our eye;
- Images that are not focused appear blurred.

3. The pinhole camera

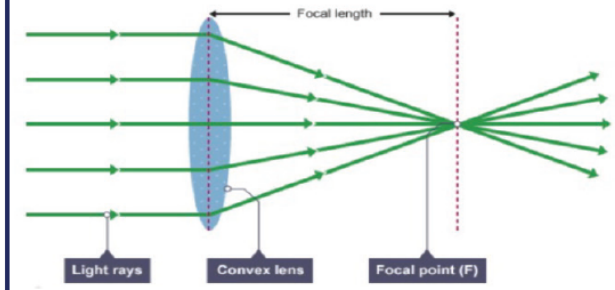
A pinhole camera consists:

- Of a box with a **translucent screen** at one end;
- A tiny hole (the pinhole) in the other end;
- Light enters the box through the pinhole;
- It is focused by the pinhole onto the screen;
- The image is inverted (upside down) and smaller than the object.



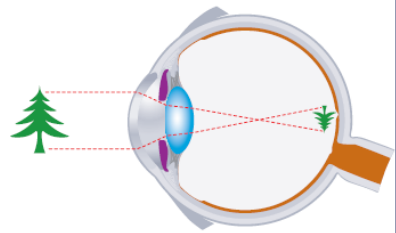
3. The Convex Lens

- A convex lens is made from a transparent material that bulges outwards in the middle on both sides.
- It can focus light so that appears to meet at a single point, called the focal point. Light is refracted as it passes into, then out of, the lens.
- Convex lenses are found in:
  - **Magnifying glasses**;
  - **Spectacles** for people with long-sight (who can see distant objects clearly but not nearby ones);
  - **Telescopes**.



4. The Eye

- The eye is like the camera:
  The eye focuses light from an object;
- Onto the photo-sensitive retina;
- The **retina** contains cells sensitive to light;
- They produce electrical impulses when they absorb light;
- These impulses are passed along the **optic nerve** to the **brain**;
- Which interprets them as vision.



6. The Camera

Cameras focus light onto a photo-sensitive material using a lens.

In old cameras, the photo-sensitive material was camera film;

- The film absorbs light;
- A chemical change produces an image, called the 'negative';
- This was used to produce a photograph on photo-sensitive paper.

In a modern camera or the camera in a mobile phone:

- The photo-sensitive material produces electrical impulses;
- Which are used to produce an image file;
- This can be viewed on the screen.

Questions

1. What causes white light to split into different colours?
2. Name the seven colours of the visible spectrum in order.
3. What are the three primary colours of light?
4. What colours are made by mixing two primary colours of light?
5. What happens to light when it hits a coloured object?
6. What is the colour of an object based on?
7. What does a convex lens do to light?
8. Name one use of a convex lens.
9. What is focusing in terms of light?
10. What happens when light is not focused properly?

Questions

1. What causes white light to split into different colours?
2. Name the seven colours of the visible spectrum in order.
3. What are the three primary colours of light?
4. What colours are made by mixing two primary colours of light?
5. What happens to light when it hits a coloured object?
6. What is the colour of an object based on?
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Questions

1. What is the retina?
2. What happens when light hits the retina?
3. What role does the optic nerve play in vision?
4. What does a pinhole camera produce?
5. What material do cameras focus light onto?
6. How is an image formed in old cameras?
7. What type of image does a pinhole camera create?
8. How do modern cameras capture images?
9. What do both the eye and camera have in common?
10. What does “photo-sensitive” mean?

Questions

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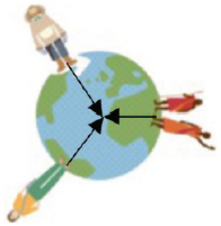
1. Gravity

Gravity is a force that attracts objects towards each other.



The greater the mass, the greater its force of gravity:
- Gravity between Earth and Moon keeps Moon in orbit around Earth;
- Gravity between Sun and Earth keeps Earth in orbit around Sun.

Gravity only becomes noticeable when there is a really massive object like a moon, planet or star.
We are pulled down towards the ground because of gravity.
The gravitational force pulls in the direction towards the centre of any object.

2. Mass, Weight And Gravitational Forces

Mass - is the **amount of matter** or 'stuff' it contains.
It is measured in kilograms, **kg**.
An object's mass stays the same wherever it is, E.g. a 5 kg mass on Earth has a 5 kg mass on the Moon.

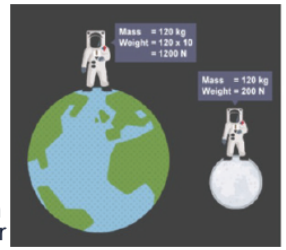
Weight is a force that acts upon a mass.
it is measured in newtons, **N**.
The weight of an object is the gravitational force between the object and the Earth.
The weight of an object depends upon its mass and the **gravitational field strength**.

Gravitational field strength is given the symbol g (Do not confuse this with g for grams).
You can use this equation to calculate the weight of an object:

weight (N)= mass (kg) × gravitational field strength (N/kg)

On Earth, g is about 10 N/kg. This means that a 1 kg object on the Earth's surface has a weight of 10 N (1kg × 10 N/kg = 10 N).

Mass and weight
- The mass of an object stays the same wherever it is.
- Weight can change if the object goes where the gravitational field strength is different from the gravitational field strength on Earth, e.g. into space or another planet.
- The Moon is smaller and has less mass than the Earth, so its gravitational field strength is only about one-sixth of the Earth's. So, for example, a 120kg astronaut weighs 1200 N on Earth but only 200 N on the Moon. Remember that their mass would still be 120kg.



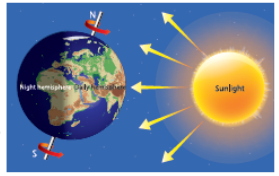
3. The Speed Of Light

- Light travels extremely quickly.
- Its maximum speed is 300,000,000 m/s ($3x10^8$ m/s) when it travels through a vacuum.

The speed of light is much faster than the speed of sound in air (343 m/s). This explains why you:
- See lightning before you hear it;
- See a firework explode before you hear it.

4. Days And Nights

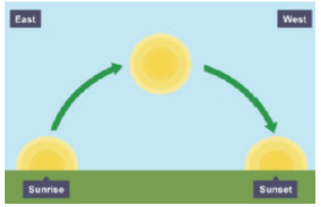
- A planet spins on its axis as it orbits the Sun;
- A day is the time it takes for a planet to turn once on its axis;
- An Earth day is 24 hours long;
- The Sun lights up one half of the Earth, and the other half is in shadow;



5. Path of the Sun

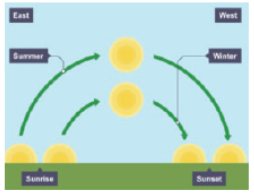
- During the day, the Sun appears to move through the sky;
- This happens because the Earth is spinning on its axis;
- The Sun appears to move from east to west. This is because the Earth turns from west to east.

The Sun appears to:
- Rise in the east;
- Set in the west;
- Be due south at midday;
- One way to remember which way the Earth turns is
  - 'We spin'….**we** (the Earth) spins from **w**est to **e**ast.



6. Path of the Sun at different times of the year

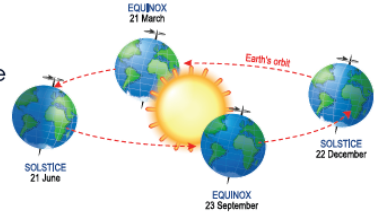
- A planet spins on its axis as it orbits the Sun;
- A day is the time it takes for a planet to turn once on its axis;
- An Earth day is 24 hours long;
- The Sun lights up one half of the Earth, and the other half is in shadow;



7. Years And Seasons

- A year is the time it takes to make one complete orbit around the Sun;
- The Earth goes once round the Sun in one Earth year, which takes 365 Earth days;
- The further a planet is from the sun, the longer its year.

Seasons
The Earth's axis is tilted slightly (23.4° from vertical).We get different seasons because the Earth's axis is tilted:
- It is summer in the UK when the Northern Hemisphere is tilted towards the Sun.
- It is winter in the UK when the northern hemisphere is tilted away from the Sun.



8. Stars And Galaxies

- Our Sun is a star.
- It seems much bigger than other stars in the sky because it is much closer to Earth;
- Stars form immense groups called **galaxies**.
- A galaxy can contain **many millions of stars**, held together by gravity.
- Our Sun is in a spiral galaxy called the **Milky Way**.

The light year is the distance travelled by light in one year.

1. The 7 nutrients

Nutrient	Use in the body	Good sources
Carbohydrate	To provide energy	Cereals, bread, pasta, rice and potatoes
Protein	For growth and repair	Fish, meat, eggs, beans, pulses and dairy products
Lipids (fats and oils)	To provide energy. Also to store energy in the body and insulate it against the cold	Butter, oil and nuts
Minerals	Needed in small amounts to maintain health	Salt, milk (for calcium) and liver (for iron)
Vitamins	Needed in small amounts to maintain health	Fruit, vegetables, dairy foods
Fibre	To provide roughage to help to keep the food moving through the gut	Vegetables, bran
Water	Needed for cells and body fluids	Water, fruit juice, milk

2. Chemical Food Tests

Nutrient	Use in the body	Good sources
Starch	Iodine solution	Iodine solution turns from orange/brown → blue black
Sugar	Benedict's solution & heat	Benedict's solution turns from: blue → green /yellow/brick red
Fat	Ethanol & shake, then water & shake	Ethanol turns cloudy white
Protein	Biuret reagent	Biuret reagent changes from blue to purple

3. Respiration

A chemical reaction that takes place in all living cells to release the energy in food:

Sugar + oxygen → carbon dioxide + water

4. Using Energy

Energy released from food is used for things like:
- Muscle contraction
- Keeping warm
- Making new cells

Each person needs a different amount of energy depending on factors such as:

- 'Biological sex' (male or female)
- Age
- Amount of daily activity

Energy in food is measured in **kilojoules**, kJ.

5. Balanced Diet

Balanced diet - contains the right energy intake **and** the correct amounts of necessary nutrients.

Imbalanced diet - contains too much or too little of a particular nutrient and/or energy.

6. Nutrient Deficiency Diseases:

Mineral deficiency diseases -
Caused when your diet is lacking in a particular mineral:
- **Iron** deficiency causes **anaemia**, where there are too few red blood cells;
- **Iodine** deficiency can cause a swelling in the neck called **goitre**.

Vitamin deficiency diseases -
caused when your diet lacks a particular vitamin:
- **Vitamin A** deficiency can cause **blindness**;
- **Vitamin C** deficiency causes **scurvy**, which makes the gums bleed;
- **Vitamin D** deficiency causes **rickets**, which makes the legs bow outwards in growing children.

Questions

1. What are the seven nutrients needed by the body?

2. What is the main use of carbohydrates?

3. Which nutrient is used for growth and repair?

4. What is the function of lipids (fats and oils)?

5. Why is fibre important in the diet?

6. Name a source of vitamin C.

7. What does a balanced diet mean?

8. What can cause scurvy?

9. What condition is caused by iron deficiency?

10. What happens with an imbalanced diet?

Questions

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7. What does a balanced diet mean?
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10. What happens with an imbalanced diet?

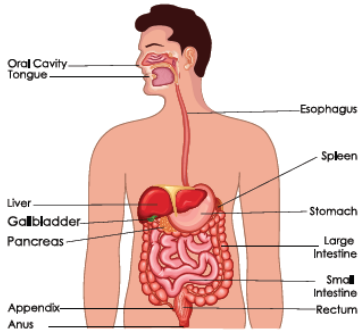
7. Energy Imbalances In Diets

If the amount of energy you get from your food is different from the amount of energy you use, your diet will be imbalanced:
- Too little food/ energy can make you underweight
- Too much food/ energy can make you overweight

Imbalanced energy intake diseases:
Starvation - if you eat so little food that your body becomes very underweight. This can eventually cause death.
Obesity - when you eat so much food that your body becomes very overweight. Diseases linked with obesity include heart disease, diabetes, arthritis and stroke.

8. Stages of digestion

1. Digestion starts in the **mouth**, where teeth **mechanically digest** food during chewing. **Chemical digestion** begins here when the food mixes with saliva.
2. Food is swallowed as passes down the **oesophagus**.
3. When food reaches the **stomach**, the food continues to be **mechanically digested** when the stomach muscles contract to churn food. **Chemical digestion** also continues when the food mixes with acid and enzymes inside the stomach.
4. Most **digestion** happens inside the **small intestine** when the food mixes with **enzymes** and bile **(chemical digestion)**, and is moved along the canal by **muscle contractions (mechanical digestion).**
5. Digested food is **absorbed** into the bloodstream, by diffusion from the small intestine. Water is reabsorbed into the body in the small intestine.
6. Undigested food passes out of the anus as faeces.



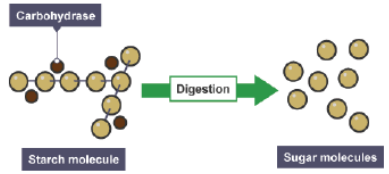
The role of liver and pancreas
- The liver produces **bile**, which helps the digestion of lipids (fats and oil).
- The pancreas produces biological **catalysts** called digestive **enzymes** which speed up the digestive reactions.

9. Digestion

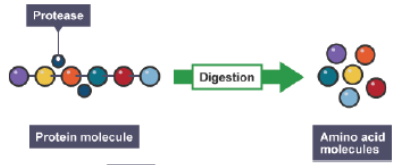
Digestion - when large **insoluble** food particles are broken down into small **soluble** particles so that they can be absorbed into our bloodstream.
This is carried out by **enzymes** - special proteins that can break large molecules into small molecules.

Different enzymes can break down different nutrients:

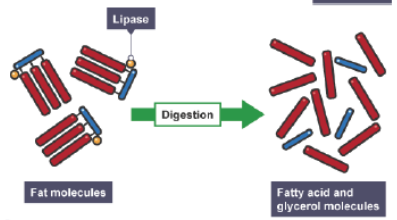
- **Carbohydrates** (e.g. starch) are broken down into **sugar** - by **carbohydrase** enzymes



- **Proteins** are broken down into **amino acids** - by **protease** enzymes;



- **Lipids** (i.e. fats and oils) are broken down into **fatty acids** and **glycerol** - by **lipase** enzymes.

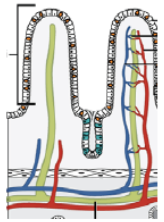


At very high temperatures, these enzymes will be **denatured**.

Digestive enzymes cannot break down dietary fibre, which is why the body cannot absorb it. Minerals, vitamins and water are not digested, as they are already small enough to be absorbed.

10. Villi

Absorption by diffusion across a surface happens efficiently if:
- The surface is thin;
- Its area is large.



The inner wall of the small intestine is adapted. It has:
- A thin wall, just one cell thick;
- Many tiny **villi** to give a really big **surface area**.

The villi contain blood **capillaries** to carry away the absorbed food molecules.

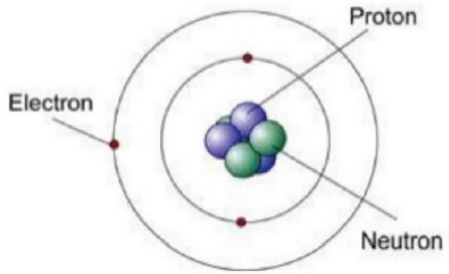
11. Role Of Bacteria

Bacteria in the digestive system are important because they:
- Can digest certain substances humans cannot digest;
- Reduce chance of harmful bacteria multiplying, causing disease;
- Produce vitamins that humans need e.g. vitamins B & K.

1. Atoms

Atoms are tiny particles that everything is made of. They are made of smaller particles called:

- **Protons** (+ positive)
- **Neutrons** (neutral)
- **Electrons** (- negative)

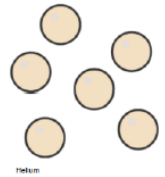


2. Elements

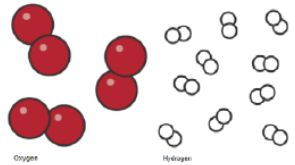
There are over a hundred different elements. Atoms have the same number of protons as each other.

Atoms of differing elements have a different number of protons.

The atoms of some elements do not join together, but instead they stay as separate atoms, e.g. helium.



The atoms of other elements join together to make **molecules**, e.g. oxygen and hydrogen.

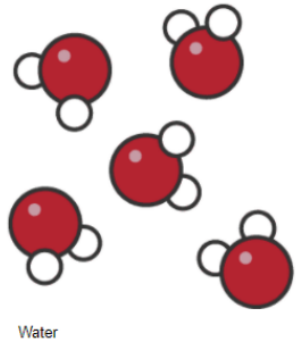


3. Compounds

A compound contains atoms of **two or more different elements**, and these atoms are **chemically joined together**.

For example, water is a compound of hydrogen and oxygen.

Each of its molecules contains two hydrogen atoms and one oxygen atom.



4. Chemical Formulae

Remember that we use chemical symbols to stand for the elements. For example, **C stands for carbon, O stands for oxygen, S stands for sulfur and Na stands for sodium**.

For a molecule, we use the chemical symbols of the atoms it contains to write down its formula. For example, the formula for **carbon monoxide is CO**.

It tells you that each molecule of carbon monoxide is made of one carbon atom joined to one oxygen atom.

Be careful about when to use capital letters. For example, CO means a molecule of carbon monoxide but **Co is the symbol for cobalt** (an element).

5. Chemical Symbols

Each element is given its own chemical symbol, like **H for hydrogen** or **O for oxygen**.

Chemical symbols are usually one or two letters long.

Every chemical symbol **starts with a capital letter, with the second letter written in lower case**. For example, Mg is the correct symbol for magnesium, but mg, mG and MG are wrong.

Mg	mg	mG	MG
✓	✗	✗	✗

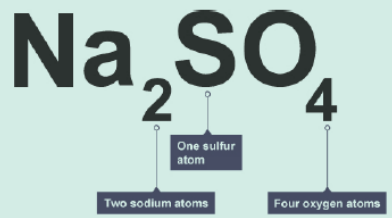
6. Numbers In Formulae

We use numbers to show when a molecule contains more than one atom of an element. The numbers are written **below** the element symbol. For example, CO_2 is the formula for carbon dioxide.

It tells you that each molecule has **one carbon atom** and **two oxygen atoms**.

The **small numbers go at the bottom**.

For example:
CO_2 is correct;
CO^2 and CO2 are wrong.

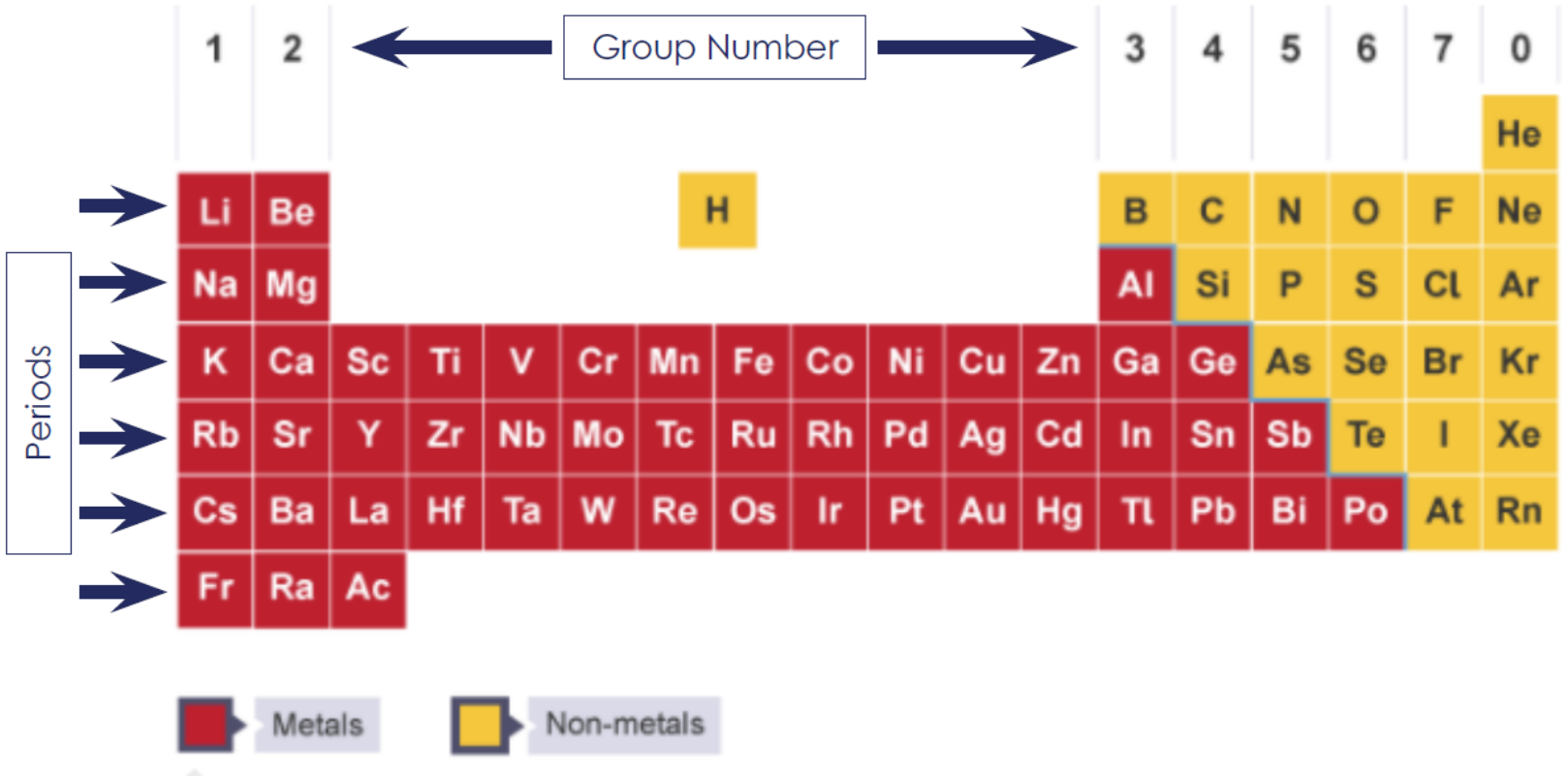


Some formulae are more complicated. For example, the formula for sodium sulfate is Na_2SO_4. It tells you that sodium sulfate contains two sodium atoms (Na x 2), one sulfur atom (S) and four oxygen atoms (O x 4).

7. Properties of elements in the same group (1 and 7)

Group 7	Melting point	Density	Reactivity
Fluorine	Increases down the group ↓	Increases down the group ↓	Decreases down the group ↓
Chlorine			
Bromine			
Iodine			

Group 1	Melting point	Density	Reactivity
Lithium	Decreases down the group ↓	Increases down the group ↓	Increases down the group ↓
Sodium			
Potassium			
Rubidium			



8. Metals

Metals have properties in common. They are:
- **Shiny**, especially when they are freshly cut.
- **Good conductors** of heat and electricity.
- **Malleable** (they can be bent and shaped without breaking).

9. Properties of metals

Most metals also have other properties in common. They are:
- **Solid** at room temperature, except mercury.
- **Hard** and **strong.**
- They have a **high density.**

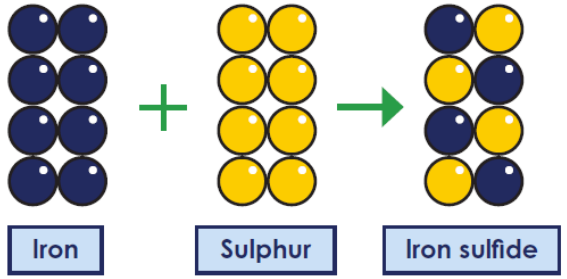
10. Periodic Table

The elements are arranged in a chart called the periodic table. A Russian scientist, Mendeleev, produced the first periodic table in the 19th century.

The modern periodic table is based closely on the ideas he used:
- The elements are arranged in order of increasing atomic number (number of protons).
- The **horizontal** rows are called **periods.**
- The **vertical** columns are called **groups.**
- Elements in the same group have the same number of electrons in their outside shell.

1. Chemical Reactions

When chemicals react, the atoms are rearranged. For example, iron reacts with sulfur to make iron sulfide.



Iron sulfide, the compound formed in this reaction, has different properties to the elements from which it is made.

	Iron	Sulfur	Iron sulfide
Type of substance	Element	Element	Compound
Colour	Silvery grey	Yellow	Black
Is it attracted to a magnet?	Yes	No	No
Reaction with hydrochloric acid	Hydrogen formed	No reaction	Hydrogen sulfide formed, which smells of rotten eggs

- The atoms in a compound are joined together by forces called **bonds.**
- The properties of a compound are different from the elements it contains.
- You can only separate its elements using another chemical reaction.
- Separation methods like filtration and distillation will not do this.

2. Chemical Equations

We summarise chemical reactions using equations:

Reactants → products

- **Reactants** are shown on the **left** of the arrow;
- **Products** are shown on the **right** of the arrow.

Do not write an equals sign instead of an arrow.

If there is more than one reactant or product, they are separated by a + sign. For example:

Copper + oxygen → copper oxide

Reactants: copper **and** oxygen
Products: copper oxide

A **word equation** shows the names of each substance involved in a reaction, and **must not include any chemical symbols or formulae**.

4. Conservation Of Mass

When atoms are rearranged in a chemical reaction, they are not destroyed or created.

- **Reactants** - the substances that react together
- **Products** - the substances that are formed in the reaction
- **Mass is conserved** in a chemical reaction, this means…
- Total mass of the reactants = total mass of the products

3. Symbol equations

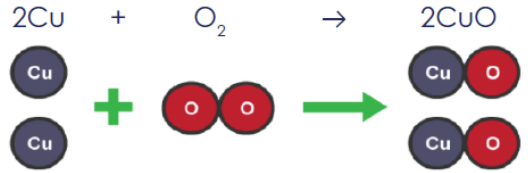
A balanced **symbol** equation includes the **symbols** and **formulae** of the substances involved.
For example:

Word equation:
Copper + Oxygen → Copper Oxide

Symbol equation (unbalanced):
$Cu + O_2 \rightarrow CuO$

There is one copper atom on each side of the arrow, but two oxygen atoms on the left and only one on the right. This is **unbalanced**.

A **balanced** equation has the **same number of each type of atom on each side of the arrow**. Here is the balanced symbol equation:



Some more examples of balanced symbol equations

- $C + O_2 \rightarrow CO_2$
- $2H_2 + O_2 \rightarrow 2H_2O$
- $2Mg + O_2 \rightarrow 2MgO$
- $CuCO_3 \rightarrow CuO + CO_2$
- $Mg + 2HCl \rightarrow MgCl_2 + H_2$

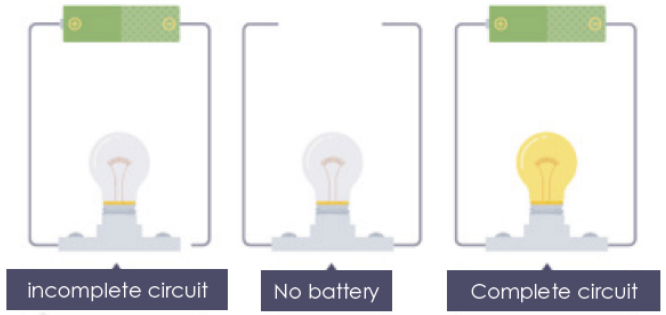
Take care when writing formula –
e.g. for carbon dioxide:
CO_2 NOT CO^2 or $Co2$

1. Electric charge

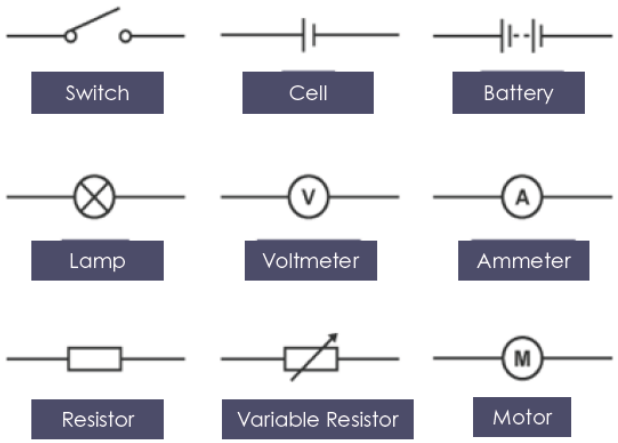
Some particles carry an electric **charge.**
In electric wires these particles are **electrons.**

Electric current
An electric current is a flow of charge, and in a wire this will be a flow of electrons.

We need two things for an electric current to flow:
- Something to transfer energy to the electrons, such as a battery or power pack.
- A complete circuit for the electrons to flow through.



2. Circuit Symbols



3. Conductors And Insulators Of Electricity

Different materials have different resistances:
- An electrical **conductor** has a **low resistance**;
- An electrical **insulator** has a **high resistance**.

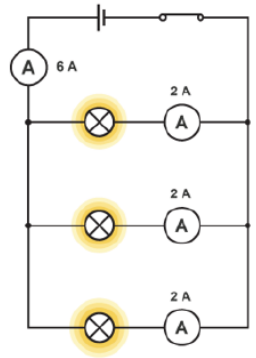
Conductors	Insulators
Metal elements	Most non-metal elements, e.g. sulfur, oxygen
Graphite (a form of carbon, a non-metal element)	Diamond (a form of carbon, a non-metal element)
Mixtures or metals, e.g. brass, solder	Plastic
Salt solution	Wood
Liquid calcium chloride	Rock

4. Parallel circuits

In a parallel circuit, the components are connected on different branches of the wire.

When components are connected in parallel, the current is **shared** between the components.

If a bulb breaks in a parallel circuit, the other bulb will remain lit.



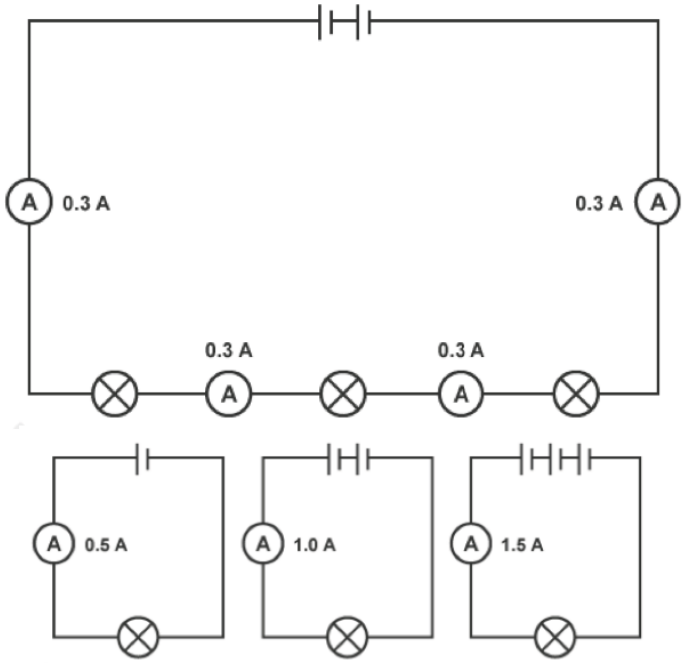
5. Series circuits

In a series circuit, the components are connected in series (one after the other) on a single loop of wires.

The current is **the same** everywhere in the circuit.

Current is **not** used up by the components.

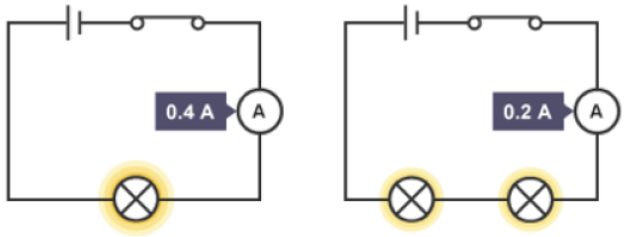
Adding cells, increases the current.



6. Resistance

Wires and the components in a circuit reduce the flow of charge. This is called **resistance.**
The unit of resistance is the ohm (Ω).

Adding components
The resistance increases when you add more components in series.



7. Calculating Resistance

To find the resistance of a component, you need to measure:
- The potential difference across it;
- The current flowing through it.

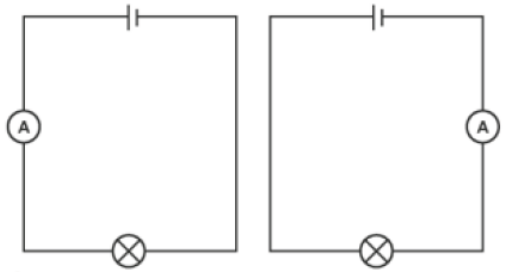
The resistance is the ratio of potential difference to current. We use this equation to calculate resistance:

Resistance = potential difference ÷ current

8. Current

The more charge that flows, the bigger the current.
Current is measured in **amperes (A).**
This can be shortened to **amps.**

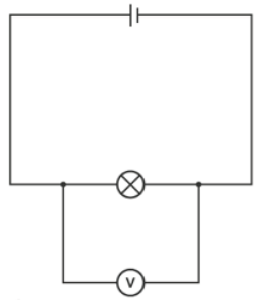
Measuring current
We measure current using an **ammeter.**
It is connected in **series.**



9. Potential Difference

Potential difference is a measure of the difference in energy between two parts of a circuit. The bigger the difference in energy, the bigger the potential difference.
Potential difference is measured in **volts (V).**
It is sometimes called **voltage.**

Measuring potential difference
Potential difference is measured using a device called a voltmeter. It is connected in **parallel.**



	Current	Potential difference
Unit	ampere. A	volt. V
Measuring device	Ammeter in series	Voltmeter in parallel
Circuit symbol of measuring device		

1. Bar Magnets

Most materials are not magnetic.
A magnetic material can be **magnetised** or will be attracted to a magnet.
Not all metals are magnetic.
These metals are magnetic:
- Iron
- Cobalt
- Nickel
- Steel (because it contains iron).

A bar magnet is a **permanent magnet** - its magnetism cannot be turned on or off.

A bar magnet has two magnetic poles:
- North pole (or north-seeking pole)
- South pole (or south-seeking pole)

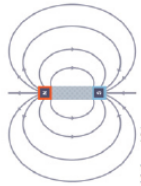
Attract and repel
Opposite poles will attract, and like poles will repel.

Testing for magnets
You can only show that an object is a magnet if it repels a known magnet.

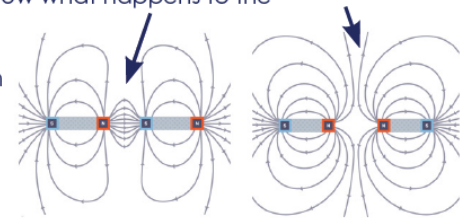
2. Magnetic Fields

A magnet creates a magnetic field around it (you cannot see a magnetic field)
A **non-contact force** is exerted on a magnetic material brought into a magnetic field. It is **non-contact force** because the magnet and the material do not have to touch each other.

We represent magnetic fields using diagrams
- Each field line has an arrow from **north to south;**
- The field lines are more concentrated at the poles;
- The magnetic field is strongest at the poles.

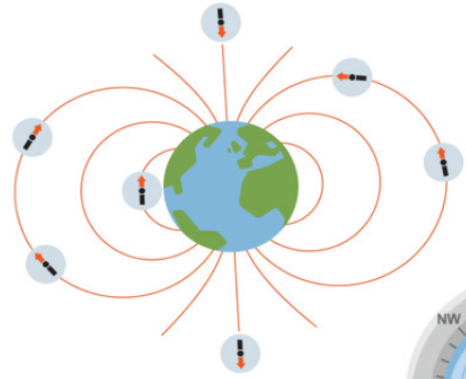


Field lines also show what happens to the magnetic fields of two magnets during attraction or repulsion.



3. The Earth's Magnetism

The Earth behaves as if it contains a giant bar magnet.
Its magnetic field lines are most concentrated at the poles.
This magnetic field can be detected using magnetic materials or magnets.



The compass
A compass comprises:
- A magnetic needle mounted on a pivot (so it can turn freely).
- A dial to show the direction.

If the needle points to the N on the dial, you know that the compass is pointing north.

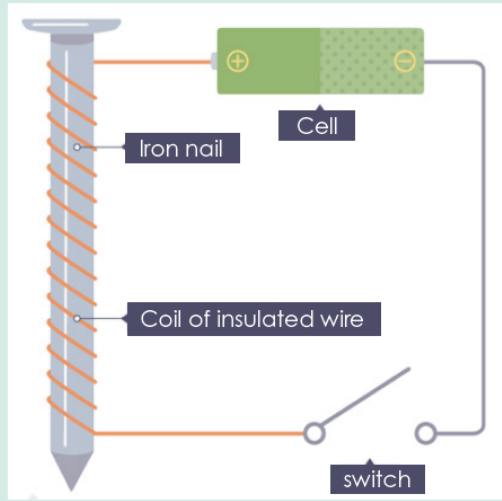
4. Electromagnets

When an electric current flows in a wire, it creates a magnetic field around the wire.
The magnetic field around an electromagnet is the same as around a bar magnet.

We can make the electromagnet stronger by:
- Wrapping the coil around a piece of iron (such as an iron nail)
- Adding more turns to the coil
- Increasing the current flowing through the coil

Too much current can cause heating.

Advantages of electromagnets:
- They can be turned on and off
- The strength of the magnetic field can be varied
- Reversing the current (turning the battery around), reverses the direction of the field (swaps the poles)



5. Uses Of Electromagnets

Electric bells and DC motors contain electromagnets.

DC motors
Passing an electric current through a wire in a field will make the wire move.
This is called the **motor effect.**

The diagram shows a simple electric motor:
- There is an electric current in the coil of wire;
- This generates a magnetic field;
- Which interacts with the fixed magnets;
- This makes the coil rotate.

The speed of the motor can be increased by:
- Increasing the **strength of the magnetic field;**
- **Increasing the current** flowing through the coil.

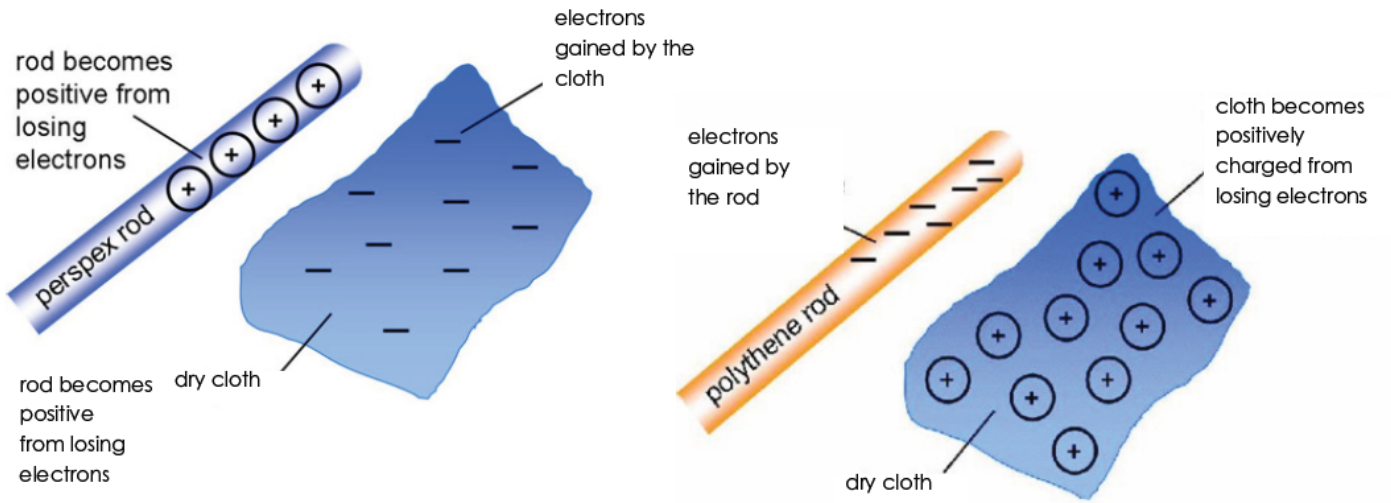
6. Atoms And Electrons

All substances are made of **atoms.**
These are often called **particles.**
An atom has no overall electrical charge **(electrically neutral)**;
Each atom contains even smaller particles called **electrons.**
Each electron has a negative charge.
- Atom **gains** an electron, it becomes **negatively charged.**
- Atom **loses** an electron, it becomes **positively charged.**

Electrons can move from one substance to another when objects are rubbed together.

7. Moving Charges

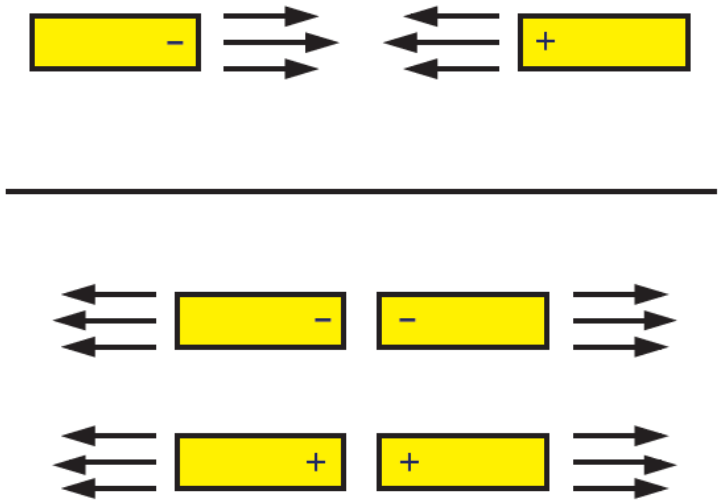
When you rub two different materials against each other, they become electrically charged. This only works for electrically insulated objects and not with materials like metals, which conduct and the duster becomes positively charged.



8. Atoms And Electrons

A charged object creates an **electric field** (you cannot see an electric field).
If another charged object is moved into the electric field, a force acts on it.
The force is a non-contact force because the charged objects do not have to touch for the force to be exerted.

opposite charges attract

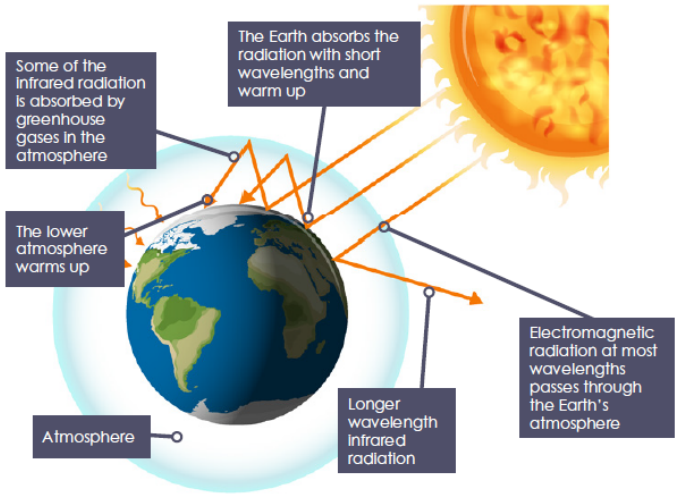


like charges repel

Electric fields
We represent electric fields using diagrams (just like with magnetic fields):
- Each field line has an arrow from **positive to negative;**
- The field lines are more concentrated where the field is strongest.

1. The Greenhouse Effect

- Thermal energy from the Earth's surface escapes into space.
- If too much thermal energy escaped, the planet would be very cold.
- Greenhouse gases in the atmosphere trap escaping thermal energy.
- This causes some of the thermal energy to pass back to the surface.
- This is called the greenhouse effect, and it keeps our planet warm.
- Carbon dioxide is an important greenhouse gas.

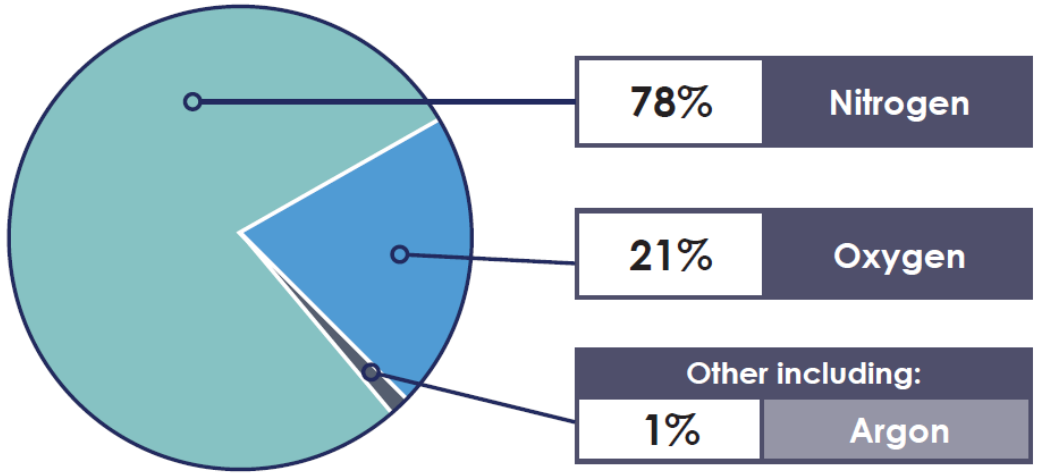


- Humans burn fossil fuels which releases carbon dioxide, increasing the greenhouse effect.
- More thermal energy is trapped by the atmosphere, causing the planet to become warmer than it would be naturally. This increase in the Earth's temperature is called **global warming**.

Climate change and its effects as a result of global warming includes:

- Ice melting faster than it can be replaced in the Arctic and Antarctic.
- The oceans warming up – their water is expanding and causing sea levels to rise.
- Changes in where different species of plants and animals can live.

2. The Earth's Atmosphere

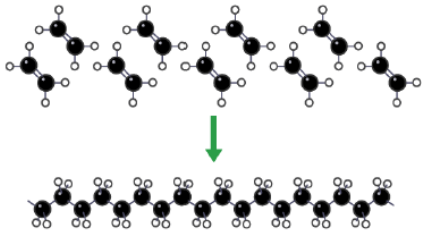


3. Ceramic Materials

- Solids made by baking a starting material in a very hot oven or kiln
- Are hard and tough
- Have very many different uses
- Examples: brick and pottery

4. Polymers

Polymers are made by joining lots of small molecules together to make long molecules.



Properties of polymers:

- Chemically unreactive
- Solids at room temperature
- Plastic – they can be moulded into shape
- Electrical insulators
- Strong and hard-wearing
- usually chemically unreactive

Advantage: plastic bottles will not react with their contents.
Disadvantage: they do not rot quickly and they can cause litter problems.

5. Composites

Composite materials are made from two or more different types of material.
E.g. MDF is made from wood fibres and glue; fibreglass is made from glass fibres and a tough polymer.

Reinforced concrete is a composite material made from steel and concrete. When the concrete sets, the material is:

- Strong when stretched (because of the steel)
- Strong when squashed (because of the concrete)

6. Sedimentary Rocks

Sedimentary rocks are formed from the broken remains of other rocks that become joined together.

Transport → deposition → sedimentation → compaction → cementation

- **Transport:** A river carries pieces of broken rock as it flows along.
- **Deposit:** When the river reaches a lake/sea, it settles at the bottom.
- **Sedimentation:** The deposited rocks build up in layers, called sediments.
- **Compaction:** Weight of sediments on top squashes sediments at bottom.
- **Cementation:** Water is squeezed out from between pieces of rock and crystals of different salts form. The crystals stick the pieces of rock together.

7. Igneous Rocks

Igneous rocks are formed molten rock that has cooled and solidified.
Molten (liquid) rock is called magma. If it:

- Cools **slowly**, it will form rock with **large** crystals
- Cools **quickly**, it will form rock with **small** crystals

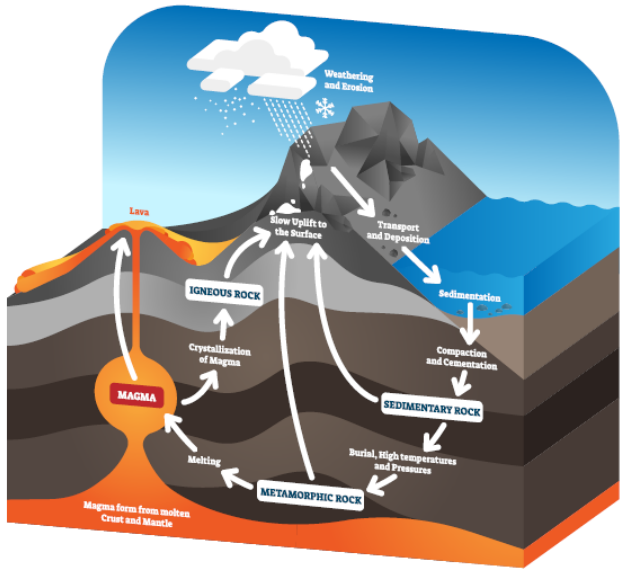
	Extrusive	Intrusive
Where the magma cooled	On the surface	Underground
How fast the magma cooled	Quickly	Slowly
Size of crystals	Small	Large
Examples	Obsidian and basalt	Granite and gabbro

8. Metamorphic Rocks

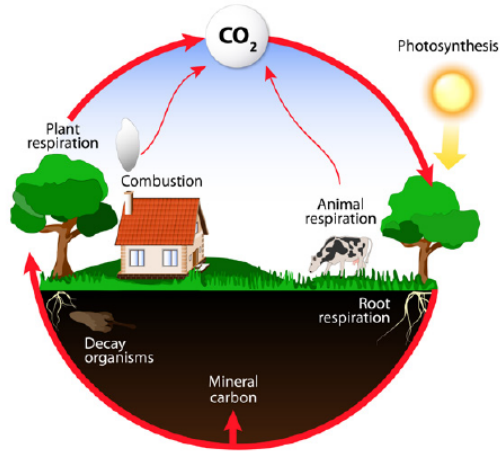
Metamorphic rocks are formed from other rocks that are changed because of heat or pressure.

- Earth movements can cause rocks to be deeply buried or squeezed.
- These rocks are heated and put under great pressure.
- They do not melt, but the minerals they contain are changed chemically, forming metamorphic rocks.
- Metamorphic rocks rarely contain fossils. Any that were present in the original sedimentary rock will not normally survive the heat and pressure.

9. The Rock Cycle



10. The Carbon Cycle



11. Recycling

The Earth's resources are limited. We can recycle many resources, including:

- **Glass:** It can be melted and remoulded to make new objects.
- **Metal:** It takes less energy to melt and remould metals than it does to extract new metals from their ores.
- **Paper:** It is broken up into small pieces and reformed to make new sheets of paper.
- **Plastic:** Recycling means that we use less crude oil, the raw material needed for making plastics.

8.01: The Tudors

Key Vocabulary

1	**annulment**	(n) to declare that a marriage never actually existed
2	**armada**	(n) fleet of Spanish warships
3	**counter-reformation**	(n) the Catholic fights against the spread of Protestantism
4	**dissolution**	(n) the ending of an organisation
5	**heretic**	(n) someone with religious views that disagree with official Church teaching
6	**indulgences**	(n) a payment to the Catholic Church to forgive a person's sins
7	**papal bull**	(n) an official order from the Pope
8	**plot**	(n) secret plan or scheme, often to do something harmful or illegal
9	**reformation**	(n) a movement which led to a break with the Catholic Church and the beginning of the Protestant Church
10	**vestments**	(n) robes worn by priests

Key Individuals

Henry VII	founder of the Tudor dynasty
Henry VIII	Tudor King 1509–47 who started the Protestant Reformation
Katherine of Aragon	first wife of Henry VIII and mother of Mary I
Mary I	Catholic Queen of England 1553–1558
Anne Boleyn	second wife of Henry VIII and mother of Elizabeth I
Edward VI	Protestant successor of Henry VIII 1547–1553
Elizabeth I	Protestant Queen of England 1558–1603
Mary Queen of Scots	Catholic cousin of Elizabeth I executed in 1587
Francis Drake	first Englishman to circumnavigate the globe
Walter Raleigh	established the first English colony of Roanoke
Walsingham	Elizabeth I 'spymaster'

Power	Identity	Connectivity
The control a person or group has in a country. For example, Henry VIII disliked the power of the pope and his refusal to grant an annulment. *This includes threads such as succession.*	The qualities and characteristics that make a person who they are and what they value as important. For example, Mary I was a devout Catholic. *This includes threads such as the role of women.*	The act of joining or being linked to somewhere, someone or something else. For example, we have evidence of African Tudors in the court of Henry VIII. *This includes threads such medicine.*

Questions

1. Who founded the Tudor dynasty?
2. What was Henry VIII's first wife's name?
3. Which queen ruled England from 1553 to 1558?
4. Who was the mother of Elizabeth I?
5. What religion was Edward VI?
6. Who was executed in 1587?
7. Who was Elizabeth I's spymaster?
8. What fleet of ships attacked England in 1588?
9. What movement led to the Protestant Church?
10. What is the term for ending an organisation?

Questions

1. What is a papal order called?
2. What is a payment to forgive sins?
3. What is a robe worn by priests?
4. What is a person with unorthodox religious views called?
5. What was the name of the Catholic response to Protestantism?
6. Who was the first Englishman to circumnavigate the globe?
7. Who established the colony of Roanoke?
8. What is the term for declaring a marriage invalid?
9. What is a secret harmful plan called?
10. What is the name for the official clothing of clergy?

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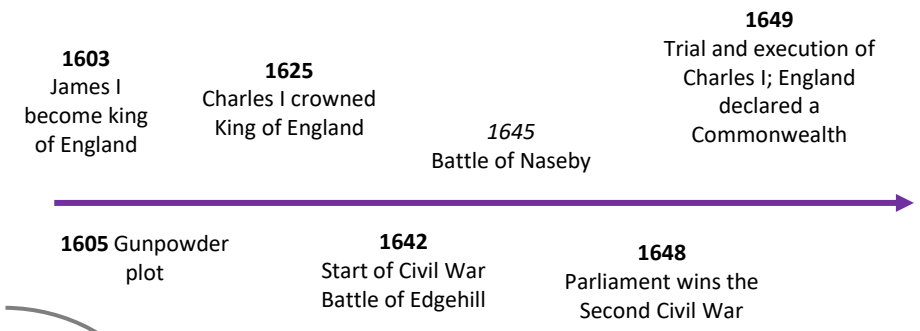
8.03 English Civil War

Key Vocabulary

1	**Artillery**	**(n) large guns that can fire across long distances.**
2	**Cavalier**	(n) Royalist soldier.
3	**Civil War**	(n) a war between sides in the same country.
4	**Commonwealth**	(n) a group of people organised under a single government.
5	**Mercenary**	(n) a professional soldier paid to serve in a foreign army.
6	**New Model Army**	(n) England's first national professional paid army.
7	**Regicide**	(n) the deliberate killing of a monarch.
8	**Republic**	(n) a form of government where power is held by elected individuals and not a monarch.
9	**Roundhead**	(n) Parliamentarian Soldier.
10	**Treason**	(n) a crime against the monarch or state.

Chronology



Key Individuals

Charles I	King of England 1625-1649 executed for treason.
Oliver Cromwell	Leader of the New Model Army who became Lord Protector in 1653.
Thomas Fairfax	Commander of the New Model Army
Prince Rupert	Nephew of Charles I who led the Cavalier cavalry.
Richard Cromwell	Son of Oliver Cromwell who succeeded his father as Lord Protector in 1658.
Charles II	Eldest son of Charles II and heir to the throne.

Themes and Threads

Power

The control a person or group has in a country.

For example, a cause of the Civil War was the struggle for power between Parliament and the king Charles I.

This includes threads such as warfare and protest.

Identity

The qualities and characteristics that make a person who they are and what they value as important.

The gunpowder plotters disliked the attitude of James I towards Catholics..

This includes threads such as the role of women.

Questions

1. Who was executed for treason in 1649?
2. Who led the New Model Army?
3. What type of soldier was a Royalist?
4. What type of soldier supported Parliament?
5. What battle occurred in 1645?
6. What was the name of England’s first professional army?
7. What crime involves betrayal of the monarch?
8. What is the term for killing a monarch?
9. What year did the Civil War begin?
10. What was declared in England after Charles I’s execution?

Questions

1.What is a war within the same country called?

2.What is a government without a monarch called?

3.Who became Lord Protector in 1653?

4.Who led the Cavalier cavalry?

5.What year did the Gunpowder Plot occur?

6.What is a professional soldier paid to fight called?

7.What large weapon fires over long distances?

8.Who succeeded Oliver Cromwell?

9.Who was crowned king in 1625?

10.Who was heir to the throne after Charles I?

Questions

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8.03 Transatlantic Slave Trade

Key Vocabulary & Definitions

- **Slave**: A person who is legally owned by another and forced to work without pay.
- **Slavery**: A system in which people are treated as property and denied freedom.
- **Triangular Trade**: A three-part trade route between Europe, Africa, and the Americas.
- **Middle Passage**: The brutal sea journey endured by enslaved Africans from Africa to the Americas.
- **Plantation**: A large farm in the Americas where enslaved people were forced to grow crops like sugar and cotton.
- **Abolition**: The movement to end the slave trade and slavery.
- **Resistance**: Actions taken by enslaved people to fight against their enslavement.
- **Chattel Slavery**: A form of slavery where people are treated as personal property to be bought and sold.
- **Colonialism**: The control and exploitation of one country by another, often involving settlement and economic dominance.
- **Diaspora**: The forced scattering of African people across the Americas due to slavery.
- **Manumission**: The act of a slave owner freeing an enslaved person.
- **Indentured Servant**: A person who works for a set time in exchange for passage to a new land, different from slavery.
- **Slave Auction**: A public sale where enslaved people were sold to the highest bidder.
- **Slave Codes**: Laws that defined the status of enslaved people and the rights of slave owners.
- **Emancipation**: The act of freeing enslaved people.
- **Rebellion**: An organized resistance or uprising, often by enslaved people against their oppressors.
- **Human Trafficking**: The illegal trade of humans for forced labour or exploitation—modern-day slavery.

Key Concepts

- **Human Cost:** Millions of Africans were forcibly taken, with many dying during the Middle Passage.
- **Economic Impact**: The trade enriched European nations and funded industrial growth.
- **Resistance**: Enslaved people resisted through rebellion, escape, and maintaining cultural identity.
- **Abolition**: Campaigners like Olaudah Equiano and William Wilberforce fought to end slavery.

Key People

- **Olaudah Equiano:** Former enslaved African who wrote about his experiences and campaigned for abolition
- **William Wilberforce**: British MP and leader of the abolition movement.
- **Toussaint Louverture**: Leader of the Haitian Revolution against slavery.

Questions

1.What is an organized uprising by enslaved people called?

2.What is the modern illegal trade of humans called?

3.Who wrote about his experience as an enslaved African?

4.Who was a British MP who led the abolition movement?

5.Who led the Haitian Revolution?

6.What was the three-part trade route called?

7.What system treats people as property and denies freedom?

8.What term describes actions taken by enslaved people to fight back?

9.What concept refers to the millions who died during the slave trade?

10.What concept refers to the wealth gained by European nations?

Questions

1.What is the name of the sea journey from Africa to the Americas?

2.What type of farm used enslaved labour in the Americas?

3.What movement aimed to end slavery?

4.What term describes treating people as property?

5.What is the forced scattering of African people called?

6.What is the act of freeing an enslaved person called?

7.What is a person who works for passage to a new land called?

8.What was a public sale of enslaved people called?

9.What laws defined the status of enslaved people?

10.What is the act of freeing enslaved people called?

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8.04 Industrial Revolution

Theme	Details
Causes	Access to coal and iron, stable government, and investment in innovation.
Technology	Inventions like the spinning jenny, steam engine, and power loom revolutionised production.
Factories	Replaced cottage industries; centralised production and increased output.
Transport	Canals, railways, and steamships improved movement of goods and people.
Urbanisation	Rapid growth of cities led to overcrowding and poor living conditions.
Child Labour	Children worked long hours in dangerous conditions for low pay.
Reform	Campaigns for better working conditions led to laws protecting workers.
Urbanisation	The growth of towns and cities due to people moving from rural areas.
Factory	A building where goods are manufactured using machines.
Steam Engine	A machine that uses steam to generate power, crucial to industrialisation.
Textile	A type of cloth or woven fabric, central to early industrial production.
Canal	A man-made waterway used for transporting goods.
Enclosure	The process of consolidating small landholdings into larger farms.
Child Labour	The use of children in industry or business, especially when illegal or exploitative.
Luddite	A person opposed to new technology or ways of working, originally textile workers who destroyed machinery.
Industrialisation	The development of industries in a country or region on a wide scale.
Reform	Changes made to improve social, political, or economic conditions.

Key Concepts	
Industrialisation	The development of industries in a country or region.
Factory	A building where goods are manufactured in large quantities.
Steam Engine	A machine that uses steam to generate power.
Urbanisation	The growth of towns and cities.
Child Labour	The use of children for work that is harmful or exploitative.
Reform	Changes made to improve a system or institution.
Inventor	A person who creates new devices or processes.
Textile	Cloth or fabric, especially woven or knitted.
Coal	A fossil fuel used to power steam engines and factories.
Canal	A man-made waterway used for transport.

Key People & Events

- **James Watt** – Improved the steam engine.
- **Richard Arkwright** – Invented the water frame for spinning.
- **George Stephenson** – Built the first public railway line.
- **Factory Acts** – Laws passed to improve working conditions.
- **Great Exhibition (1851)** – Showcased industrial achievements.

Questions

1.What fuel powered many early factories?

2.What invention did James Watt improve?

3.Who invented the water frame?

4.Who built the first public railway line?

5.What replaced cottage industries?

6.What was the name of the 1851 event showcasing industrial achievements?

7.What laws were passed to improve working conditions?

8.What type of cloth was central to early industry?

9.What is the term for the growth of towns and cities?

10.What is the name for a person who creates new devices?

Questions

1.What is the term for using children in dangerous work?

2.What is a man-made waterway used for transport?

3.What is the term for treating land into larger farms?

4.What group opposed new machinery in factories?

5.What machine revolutionised spinning?

6.What powered early trains and ships?

7.What is the term for the process of developing industries?

8.What movement aimed to improve social conditions?

9.What type of government helped support innovation?

10.What was a key cause of the Industrial Revolution?

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8.04 Industrial Revolution

Theme	Details
Expansion	Driven by trade, exploration, military conquest, and competition with other European powers.
Colonies	Included India, parts of Africa (e.g. Nigeria, South Africa), the Caribbean, Canada, Australia, and more.
Trade & Economy	The empire facilitated the trade of goods like sugar, tea, cotton, and spices. The transatlantic slave trade was a major part of early empire-building.
Resistance	Colonised people resisted through rebellions (e.g. Indian Rebellion of 1857, Mau Mau Uprising in Kenya).
Impact on Britain	Wealth, cultural exchange, migration, and political power. Also led to debates about race, identity, and justice.
End of Empire	Decolonisation after WWII, with many countries gaining independence (e.g. India in 1947).

Word	Definition
Empire	A group of countries ruled by a single power.
Colony	A country or area under the control of another.
Imperialism	The policy of extending a country's power through colonisation.
Commonwealth	A political association of former British colonies.
Decolonisation	The process by which colonies gained independence.
Rebellion	An act of resistance against authority.

Key People & Events

- **Queen Victoria** – Empress of India, symbol of the empire.
- **East India Company** – A powerful trading company that played a key role in colonising India.
- **Indian Rebellion** (1857) – A major uprising against British rule.
- **Scramble for Africa** – European powers divided Africa in the late 19th century.
- **Gandhi** – Leader of Indian independence movement through non-violent protest.

Questions
1.What is an act of resistance against authority?
2.What trade involved sugar, tea, and cotton?
3.What was a major part of early empire-building?
4.What region included Nigeria and South Africa?
5.What year did India gain independence?
6.What was a major impact on Britain from the empire?
7.What type of protest did Gandhi promote?
8.What led to debates about race and identity in Britain?
9.What form of transport helped expand the empire?
10.What was a key cause of empire expansion?

Questions
1.What was Queen Victoria’s title in India?
2.What company played a key role in colonising India?
3.What 1857 event was a major uprising in India?
4.What continent was divided during the Scramble?
5.Who led India’s independence movement?
6.What is a group of countries ruled by one power?
7.What is a country under foreign control called?
8.What is the policy of expanding power through colonisation?
9.What is the name of the association of former colonies?
10.What is the process of gaining independence called?

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Geography
1 of 6

Coasts

Background

1. Coastlines are dynamic changing landscapes, which are affected by the action of the waves.
2. Waves can have differing features; these features can influence the processes and landforms which may develop. **(A)**
3. Destructive waves can erode the coastline. **(B)**
4. Through erosion a number of distinctive coastal features can form. **(D, E, F)**
5. Further processes act on the coastline, leading to material being transported along the coastline. **(C)**
6. This material will eventually be deposited leading to the formation of landforms such as spits. **(G)**
7. Coastal erosion can impact the landscape and people.
8. Different strategies are used to reduce erosion. **(H)**
9. Often these strategies can be controversial. **(I)**

A - The Three Types Of Rock (5)

Swash	Movement of a wave up the beach. The direction is dependent upon the prevailing (common) wind direction.
Backwash	Movement of a wave back down the beach, this happens at 90^0 due to gravity.
Constructive Wave	Have a strong swash and weak backwash; they cause deposition.
Destructive Wave	Have a weak swash and strong backwash; they cause erosion.
Fetch	The distance a wave has travelled.

B - Types Of Erosion – Wearing Away Of Rock (4)

Hydraulic Action	Waves compress pockets of air in cracks in a cliff, causing the crack to widen, breaking off rock.
Abrasion	Eroded material is hurled or scraped against the cliff, breaking off rock.
Attrition	Eroded material in the sea hits into each other, breaking down into smaller pieces.
Solution	The water dissolves certain types of rocks e.g. limestone.

C - Other Coastal Processes (4)

Transportation	The movement of sediment e.g. traction, saltation, suspension and solution.
Deposition	When waves drop the sediment they are transporting, either due to a loss of energy or change in direction of coastline.
Longshore Drift	The movement of sediment along the coastline in a zig-zag motion, due to the wind.
Weathering	Breaking down of rocks by physical and chemical processes.

D - Headlands And Bays (3)

Geology	Different rock types e.g. resistant rock (granite) and less resistant rock (clay).
Headland	Resistant hard rock which is slowly eroded so sticks out to sea.
Bay	Less resistant soft rock which is quickly eroded, retreating to form a bay.

E - Wave Cut Platforms (2)

Wave Cut Notch	These form at the foot of a cliff due to erosion. This undercuts the cliff above leaving it unsupported.
Wave Cut Platform	When the unsupported cliff collapses, the process repeats and the cliff retreats leaving a sloping wave cut platform.

F - Cave Stacks And Arches (3)

Crack	A weakness in the headland is eroded by hydraulic pressure, forming a cave.
Cave	This is eroded further, until the cave erodes all the way through the headland forming an arch.
Arch	The roof of the arch has no support, so collapses to form a stack.

G - Spits (3)

Change In Coastline	Leads to material transported by longshore drift being deposited into the sea, forming a spit.
Hooked Ends	A hooked end forms on a spit due to a change in the prevailing wind direction.
Salt Marsh	An area of salty marshland found behind a spit, which has dried out as the sea can no longer reach this area.

H - Coastal Management (2)

Hard Engineering	Human-made structures that help to deal with coastal erosion, such as: 1. **Sea walls**, which reflect the waves' energy back out to sea 2. **Groynes**, which trap longshore drift.
Soft Engineering	Adaptations which work with nature, such as **managed retreat**, where the coastline is allowed to erode, and people are moved away.

I - Case study example: Holderness coast, Mappleton

Where?	The fastest eroding coastline in Europe, in East Yorkshire.

Reasons to protect (2)	Management strategies (2)	Success (2)
1. Rocks are made of soft rock (till), eroding at 2m per year. 2. The B1242 runs through Mappleton and would be expensive to re-route.	1. Rock groyne put in place to trap sediment being transported by longshore drift, creating a wider beach to absorb the power of the waves. 2. Rip-rap has been placed in front of the cliffs to absorb the wave energy.	1. Good – erosion in front of Mappleton has reduced, so the road has been saved. 2. Bad – beaches further south have been starved of sediment so erosion has increased e.g. at Great Cowden.

Coasts (Questions)

Coastal Processes

1.What is hydraulic action?

2.What is abrasion?

3. What is attrition?

4. What is solution?

5. What is longshore drift?

6. What is deposition?

Waves and Erosion

7. What is swash?

8.What is backwash?

9.What are constructive waves?

10.What are destructive waves?

11.What is fetch?

Coastal Landforms

12.How is a wave-cut notch formed?

13.What is a wave-cut platform?

14.What is a headland?

15.What is a bay?

16.How is a cave formed?

17.How is an arch formed?

18.How is a stack formed?

Depositional Landforms

19.What is a spit?

20.What causes a spit to have a hooked end?

21. What is a salt marsh?

Coastal Management

22.What is hard engineering?

23.What is soft engineering?

24.What is managed retreat?

25.What is the purpose of a sea wall?

26.What is the purpose of a groyne?

Case Study: Holderness Coast

27.Where is the Holderness Coast?

28. Why is the Holderness Coast eroding quickly?

29.What management strategy is used at Mappleton?

30.What is a negative impact of the Mappleton defences?

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Population

Background

1. The world's population is not spread evenly. **(A)**
2. There are many factors that influence where we live. These factors have caused some places to be densely populated, whilst others are sparsely populated. **(B)**
3. Total population is constantly changing, both within countries and world-wide. **(C)**
4. We can look at changes in population by comparing past and predicted population structures. **(D)**
5. The level of development within a country will influence its population structure. However, as countries develop economically, these structures will change. **(E)**
6. In many developed countries the population is ageing. This process brings many impacts. **(F)**
7. Migration is also an important population process world-wide and is one of the biggest drivers of population change. **(G, H)**

A - Population Distribution (4)

Population Density	The number of people who live within 1km^2.
Population Distribution	How people are spread out over an area.
Densely Populated	Places which contain many people per km^2.
Sparsely Populated	Places which contain few people per km^2.

B - Factors Influencing Population

Physical (4)	1. The relief of the land (flat or steep). 2. Natural resource availability. 3. Climate. 4. Fertility of the soil.
Human (3)	1. Transport links. 2. The availability of jobs. 3. The availability of local services e.g. hospitals, education.

C - Population Change (5)

Birth Rate	The number of births per 1000.
Death Rate	The number of deaths per 1000.
Natural Increase	The difference between birth and death rates.
Population Explosion	A sudden rapid rise in the number of people.
Demographic Transition Model	A model which shows the changes a population is likely to go through over time.

E - Population Structure Differences

Developing Countries (2)	1. High birth rates, so a large young dependent population. 2. A lower life expectancy, so a small elderly dependent population.
Developed Countries (2)	1. A declining birth rate, so a small young dependent population. 2. A rising life expectancy, so a large elderly dependent population.

F - An Ageing Population (4)

Life Expectancy	The average age you are expected to live to in a country.
Possible Problems (3)	1. Pressure on the NHS, waiting times could increase. 2. The government may have to support the funding of pensions. 3. Government investment into more care homes and carers might be costly.
Possible Benefits (2)	1. Grandparents can help look after their grandchildren, reducing the cost of childcare for parents. 2. Some elderly have more disposable income so spend more in shops.
Solutions (3)	1. Increase the retirement age. 2. Raise taxes. 3. Offer incentives for couples to have children e.g. longer maternity pay.

D - Population Structure (4)

Population Structure	The number/proportion of people in each age range, for each gender.
Population Pyramid	A graph showing population structure, by age and sex.
Economically Active	Those people who work, receive a wage and pay tax.
Dependent Population	Those who rely on the economically active for support e.g. the young and elderly.

G - Migration (5)

Economic Migrant	A person who leaves one area or country to go to another, to seek better job opportunities.
Push Factor	Things that make people want to leave an area.
Pull Factor	Things that attract people to live in an area.
Host Country	The destination country for a migrant.
Source Country	The home country of a migrant.

H - Impacts Of Migration

Positives For The Source (2)	1. Money sent home (remittances) can support families. 2. Potential for increased trade between host country and source country.
Negatives For The Source (2)	1. Fewer economically active citizens. 2. Less tax, as fewer working people in the country.
Positives For The Host (2)	1. Migrants can work in jobs that are difficult to fill, therefore contribute tax. 2. New shops and restaurants open, which is positive for the economy.
Negatives For Host (1)	1. Potential pressure on public services e.g. health care.

Population (Questions)

Population distribution

1.What is population density?

2.What does "sparsely populated" mean?

3. What does "densely populated" mean?

4.What is population distribution?

Factors influencing population

5. Name one physical factor that affects population distribution.

6. Name one human factor that affects population distribution.

7.Why might flat land attract more people?

8. How does climate affect population?

Population change

9. What is birth rate?

10.What is death rate?

11. What is natural increase?

12. What is a population explosion?

13. What model shows how population changes over time?

Population structure

14.What is population structure?

15.What is a population pyramid?

16. Who are the dependent population?

17. Who are the economically active?

Population structure differences

18.What is a key feature of developing countries' population structure?

19. What is a key feature of developed countries' population structure?

Ageing population

20.What is life expectancy?

21.Name one problem caused by an ageing population.

22. Name one benefit of an ageing population.

23. Name one solution to an ageing population.

Migration

24.What is an economic migrant?

25. What is a push factor?

26. What is a pull factor?

27. What is a host country?

28. What is a source country?

Impacts of migration

29. Name one positive impact of migration on the host country.

30.Name one negative impact of migration on the source country.

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Tectonics

Background

1. The Earth's structure is made up of layers. **(A)**
2. The characteristics of these layers fuel tectonic plate theory. **(B)**
3. There are four different plate boundaries, each with their own characteristic and resulting hazards. **(C)**
4. Volcanoes can be found along constructive and destructive boundaries, although the volcanoes found at these boundaries are different. **(D)**
5. Earthquakes take place along all of the boundaries, but are often most significant at conservative boundaries. Earthquakes have key features and are measured using the Richter scale. **(E)**
6. People continue to live in tectonic areas for a number of reasons. **(F)**
7. Some of these reasons relate to how we monitor, protect and plan for such hazards. **(G)**
8. However, the impacts of these hazards can still be significant; although they can vary based upon a country's level of development. **(H, I)**

A - The layers of the Earth (3)

Crust	The thin outer layer of the Earth which is divided into plates called tectonic plates.
Mantle	Middle layer of the earth, between the crust and the core, approx. 2900km thick.
Core	The centre, hottest layer of the Earth, broken into the inner (solid) and outer core (liquid).

B - Theory (4)

Plate Boundaries	The place where plates meet.
Convection Currents	Currents in the Earth's mantle which rise from the Earth's core and are strong enough to move tectonic plates.
Oceanic Crust	The part of the Earth's crust under the oceans, usually 6-8km thick.
Continental Crust	The part of the Earth's crust which contains land and is 30-50km thick.

C - Different Plate Boundaries (4)

Plate Boundaries	Where two tectonic plates move apart and new crust is created.
Destructive	Where two tectonic plates come together. The denser oceanic plate is subducted, leading to violent volcanic eruptions.
Conservative	Where tectonic plates move alongside, or past each other.
Collision	Where two continental plates collide, forcing the land upwards and forming mountains.

D - Volcanoes (3)

Shield Volcano	A gently sloping volcano formed by runny lava (low viscosity), usually at constructive boundaries.
Composite Volcano	A steep volcano formed by alternating layers of lava and ash, on destructive boundaries.
Pyroclastic Flow	Torrent of hot ash, rock, gas and steam from a volcano.

E - Earthquakes (4)

Epicentre	The point on the Earth's surface directly above the focus of an earthquake.
Focus	The source of an earthquake beneath the Earth's surface.
Seismic waves	Fast waves of energy generated from the focus.
Richter scale	A scale that measures the energy released by an earthquake.

F - Why People Live In Tectonic Danger Zones

Volcanoes (4)	1. Jobs in tourism. 2. Geothermal energy created. 3. Ash makes the ground fertile, which is good for farming. 4. Diamonds and gold from previous eruptions can be mined.
Earthquakes (3)	1. Friends and family live in the area. 2. It has not happened in such a long time, so people take the risk. 3. Employment in the area.

G

G	Volcanoes	Earthquakes
Monitoring (2)	1. The shape may change. 2. Increase in gases given off e.g. sulphur dioxide.	1. Irregular tremors measured. 2. Radon gas levels increase as rocks crack.
Protect	Lava diversion channels.	Earthquake proof buildings.
Planning (2)	1. Evacuation. 2. Emergency services trained.	1. Earthquake drills. 2. Emergency services on-call.

H - Effects Of Tectonic Hazards (2)

Primary Effects	Direct impacts of an event e.g. people killed, injured, or buildings collapse.
Secondary Effects	The indirect impacts of an event, usually occurring in the weeks, hours, months after the event e.g. the outbreak of disease from contaminated water.

I - Examples

Developing Haiti Port Au Prince	1. 318,000 dead. 2. 1.5 million homeless. 3. Cholera outbreak killed 8,000.
Developed New Zealand Christchurch	1. 181 dead. 2. 80% of the city without electricity. 3. The Rugby World Cup was cancelled. 4. Schools closed for 2 weeks.

Tectonics (Questions)

Earths Structure

1. What are the three main layers of the Earth?

2.Which layer of the Earth is the thinnest?

3. What is the mantle made of?

4. What is the core divided into?

Plate Theory

5.What causes tectonic plates to move?

6.What is the difference between oceanic and continental crust?

7. What is a plate boundary?

Plate Boundaries

8. What happens at a constructive plate boundary?

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Volcanoes

12.What type of volcano has gentle slopes and runny lava?

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14.What is a pyroclastic flow?

Earthquakes

15.What is the epicentre of an earthquake?

16.What is the focus of an earthquake?

17. What are seismic waves?

18.What scale is used to measure earthquake strength?

Living in tectonic zones

19.Name one reason people live near volcanoes.

20.Why might people live in earthquake zones?

Monitoring and planning

21. How can volcanoes be monitored?

22. What is one way to protect against earthquakes?

23. What is an earthquake drill?

24. What is a lava diversion channel?

Effects of hazards

25.What is a primary effect of a tectonic hazard?

26. What is a secondary effect of a tectonic hazard?

Case studies

27. How many people died in the Haiti earthquake?

28.What disease outbreak followed the Haiti earthquake?

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Ecosystems

Background

1. An ecosystem is a community of things that are linked together to make up a type of environment. **(A, B)**
2. An ecosystem contains biotic (living) and abiotic (non-living) parts. **(B)**
3. The climate of an ecosystem is very important as it influences what you will find there. **(C)**
4. The main world biomes can be found in specific parts of the world, they have very different climatic conditions & features. **(C, D)**
5. The rainforest biome has some distinctive features. **(F)**
6. However, deforestation is a major challenge facing rainforests worldwide. **(E)**
7. The deserts worldwide also have some key characteristics. **(G)**
8. The Sahara Desert is a place with opportunities for people, but there are also challenges which need to be overcome. **(H)**

A - Classification Of Ecosystem (4)

Ecosystem	A community of things linked together in an environment.
Biome	An ecosystem on a large scale that covers parts of continents and whole countries.
Habitat	A place where plants and animals live. Example: a pond, or hedgerow.
Biodiversity	The amount of variety of life there is in a place.

B - Features Of An Ecosystem (3)

Biotic	The living parts of an ecosystem. Examples: plants, animals, humans.
Abiotic	The non-living parts of an ecosystem. Examples: soil, climate, river.
Food Chain	A diagram that shows what is eating what in an ecosystem.

C - Climatic Features (4)

Climate Graph	A graph showing rainfall and temperature in a place over a whole year.
Precipitation	Any form of water falling from the sky.
Convectional Rainfall	Rain that is produced when warm air rises, cools and condenses, forming clouds and then rainfall.
High Pressure	Areas where air is sinking, this air has little moisture, thus condensation can not happen.

D - Major Global Biomes (4)

Tundra (2)	1. Found at the far north and south of the planet. 2. A cold ecosystem, little rainfall.
Hot Desert (2)	1. Found along the Tropic of Cancer and the Tropic of Capricorn. 2. Hot environments with little rain.
Tropical Rainforest (2)	1. Found in places along the Equator. 2. Hot and humid environments with huge amounts of rainfall.
Temperate Forest (2)	1. The main biome of the UK and other places along the same lines of latitude. 2. Warm summers, mild winters. No extremes of temperature, rainfall.

E - Deforestation In The Rainforest (6)

Deforestation	The cutting down and removal of forest. This happens due to many factors.
Logging	Cutting down trees to sell the wood for a profit, sometimes this is done illegally.
Cattle Ranching	Removing trees from a large part of the rainforest and keeping cows on the land. These are sold for meat.
Slash And Burn	A type of farming where you cut down a small area of trees, burn the vegetation and then grow crops on this land.
Soil Erosion	When the soil in an area loses its minerals (water or wind erosion) so that it becomes difficult to grow crops there.
Indigenous Tribes	A group of people who live traditional lives in places (like the rainforest).

F - Rainforest Features (3)

Rainforest Layers	Forest floor, understorey, canopy, emergent layer.
Nutrient Cycle	Nutrients move from living things to litter and the soil in a continuous cycle, keeping both plants and soil healthy.
Drip Tip Leaves	A plant adaptation that lets excess water drip off leaves quickly.

G - Desert Characteristics (4)

Diurnal Range	Differences between the highest day and lowest night time temperature.
Nocturnal	Animals only come out at night.
Cactus	Long root systems to get as much water as possible from dry ground.
Camel	Webbed feet to help walk in sand.

H - Opportunities And Challenges For Development In The Sahara Desert

Where?	The Sahara is found in Northern Africa.
Opportunities (2)	**Challenges (2)**
1. In Algeria, oil extraction accounts for 60% of the GDP. 2. Farming in Egypt happens because the Aswan Dam provides water all year round to grow crops, providing an income to farmers.	1. Extreme temperatures can cause illness or death because of dehydration. 2. Water is scarce and so farming can be unreliable meaning an unreliable income for farmers.

Ecosystems (Questions)

Features of ecosystems

1.What is an ecosystem?

2.What is a biome?

3. What is a habitat?

4. What does biodiversity mean?

5.What are biotic components?

6.What are abiotic components?

7.What is a food chain?

Global Biomes

8.Where are tundra biomes found?

9. What are the climatic conditions of tundra biomes?

10.Where are hot deserts located?

11. What are the conditions in hot deserts?

12.Where are tropical rainforests found?

13. What are the conditions in tropical rainforests?

14.What is the main biome of the UK?

15.What are the conditions in temperate forests?

Rainforest features and deforestation

16.Name the layers of the rainforest.

17.What is the nutrient cycle?

18.What are drip tip leaves?

19.What is deforestation?

20. Why is logging done in rainforests?

21. What is cattle ranching?

22.What is slash and burn farming?

23.What is soil erosion?

24. Who are indigenous tribes?

Desert features and the Sahara Desert Case Study

25. What is diurnal range?

26.What does nocturnal mean?

27. How are cactus roots adapted?

28. How are camels adapted to deserts?

29.What is one opportunity for development in the Sahara?

30. What is one challenge of living in the Sahara?

Ecosystems (Questions)

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Weather and Climate

Background

1. Weather and climate are different, however both are influenced, measured and described by a few factors. **(A)**
2. The climatic conditions of an area are determined by several factors. **(B)**
3. There are four distinct climatic zones in the UK, which are determined by the direction of the prevailing wind. **(C)**
4. Precipitation is caused when warm air rises. There are three ways that this can happen. **(B, D)**
5. High pressure air systems bring warm, settled weather conditions. **(E)**
6. Low pressure air systems bring wet, changeable weather conditions. **(F)**
7. Tropical storms (an example of a low pressure climatic hazard) need certain conditions to form. **(G)**
8. Hurricane Katrina is a famous tropical storm that affected the USA in 2005. **(H)**

A - Weather And Climate (5)

Weather	The day-to-day conditions of the atmosphere which change quickly.
Climate	The average weather conditions over longer periods of time.
Precipitation	Any form of water falling from the sky.
Humidity	The amount of moisture in the air.
Air Pressure	The force exerted onto the Earth's surface by the weight of the air.

B - Factors Affecting Weather And Climate (4)

Latitude	Higher latitudes are colder. Lower latitudes (nearer the equator) are hotter.
Winds	Wind can bring different weather conditions depending on where it comes from.
Altitude	Higher areas get more rainfall and are colder than low land.
Urban Areas	Can be 2.2°C warmer than the surrounding rural areas.

C - The UK's Air Masses (4)

Tropical Maritime	Wind from the south-west brings wet weather, with warm temperatures in the summer, but mild in the winter.
Tropical Continental	Wind from the south-east brings dry weather with hot temperatures in the summer, but mild in the winter.
Polar Continental	Wind from the north-east brings dry weather with cold temperatures in the summer, and often freezing conditions in the winter.
Polar Maritime	Wind from the north-west brings wet weather with cold temperatures.

D - The Types Of Precipitation (3)

Convectional	Produced when warm air rises, cools and condenses, forming clouds and then rainfall.
Frontal	Warm air meets cold air and rises because it is less dense. It cools, condenses forming clouds, then precipitation.
Relief	Warm air is forced to rise as it meets a hill or mountain. It cools at high altitude, condenses and forms clouds, then precipitation.

E - High Pressure Systems

How is the air moving?	Areas where air is sinking, this air has little moisture.	
Conditions (3)	**Positive impacts (2)**	**Negative impacts (2)**
1. Calm weather with a cloudless sky. 2. Hot weather in summer, cold weather in winter. 3. Morning frost is common.	1. Lots of sunlight means farmers can grow more crops. 2. Increase in tourism, which boosts the local economy.	1. Places such as Spain and Portugal are at high risk of forest fires during prolonged dry periods. 2. Can cause fog in the winter, which can lead to traffic accidents.

F - Low Pressure System

How is the air moving?	Air is rising, it cools and condenses causing high levels of precipitation.	
Conditions (3)	**Positive impacts (2)**	**Negative impacts (3)**
1. Unsettled weather which can change quickly. 2. High winds and high cloud cover. 3. Precipitation occurs as rising air cools and condenses.	1. Rainfall refills stores of water, such as reservoirs. 2. Wind farms will generate more energy.	1. Low pressure systems can cause large, destructive storms. 2. Bad weather can harm the tourist industry as tourists are put off. 3. Areas can be flooded.

G - Causes Of Tropical Storms (3)

High Temperatures	Oceans have to be 26.5°C or higher.
Weather System	A low pressure system means air rushes in and causes high winds.
Deep Ocean	Warm water is the power source for a tropical storm and should be 60 metres deep or more.

H - Case Study Example: Hurricane Katrina 2005

Where?	New Orleans, south coast of the USA.
Effects (3)	**Responses (2)**
1. 1,836 died. 2. 10,000 people homeless. 3. Floods were up to 3 metres deep in places.	1. $105 billion was spent on rebuilding. 2. 10,000 people evacuated to the Superdome for shelter.

Weather and Climate (Questions)

Weather and climate introduction

1. What is weather?
2. What is climate?
3. What is precipitation?
4. What is humidity?
5. What is air pressure?

Factors affecting weather and climate

6. How does latitude affect climate?
7. How does altitude affect climate?
8. How do winds affect weather?
9. How do urban areas affect temperature?

UK air masses

10. What weather does a tropical maritime air mass bring?
11. What weather does a tropical continental air mass bring?
12. What weather does a polar continental air mass bring?
13. What weather does a polar maritime air mass bring?

Types of precipitation

14. What causes convectional rainfall?
15. What causes frontal rainfall?
16. What causes relief rainfall?

High pressure systems

17. What is the air movement in a high-pressure system?
18. What weather is associated with high pressure?
19. Name one positive impact of high pressure.
20. Name one negative impact of high pressure.

Low pressure systems

21. What is the air movement in a low-pressure system?
22. What weather is associated with low pressure?
23. Name one positive impact of low pressure.
24. Name one negative impact of low pressure.

Tropical Storms

25. What temperature must ocean water be for a tropical storm to form?
26. What depth must the ocean be for a tropical storm to form?
27. What type of pressure system causes tropical storms?

Case study: Hurricane Katrina (2005)

28. Where did Hurricane Katrina strike?
29. How many people died in Hurricane Katrina?
30. Name one response to Hurricane Katrina.

Weather and Climate (Questions)

Weather and climate introduction

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2. What is climate?
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Case study: Hurricane Katrina (2005)

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Africa

Background

1. Africa is a continent with spectacular human and physical features. Some of these features have influenced Africa's population distribution. **(A, B)**
2. Africa is home to some very large and important rivers, such as the amazing Nile. **(C, D)**
3. Kenya is a country with amazing physical features. **(E)**
4. Kenya has distinct climatic zones, which have influenced the activities which take place across the country. **(F)**
5. Kenya is an important country due to its trade links with countries around the world. **(G)**
6. Tourism is an important industry for the Kenyan economy. **(H)**
7. The capital city of Kenya, Nairobi, is a city of opportunities and challenges. **(I)**

A - Africa's Human And Physical Features (4)

Human Geography	Studying what people do to the Earth.
Physical Geography	Studying what is naturally occurring on Earth.
Relief	The shape of the land surface and its height above sea level.
Megacity	A very large city with a population of over 10 million people.

B - Africa's Population (4)

Population Density	The number of people who live within 1km^2.
Physical Geography	How people are spread out over an area.
Densely Populated	Places which contain many people per km^2.
Sparsely Populated	Places which contain few people per km^2.

C - The Amazing Nile (5)

Deposition	When a river loses energy so drops its load.
River load	The material which the river is transporting.
Delta	Formed where layers of sediment are deposited at river mouths.
Distributaries	A smaller river channel created where a river splits, often to form a delta.
Silt	The fertile, eroded material transported by a river.

D - Human Use Of The Nile (3)

Irrigation	Addition of water to farmland by artificial means.
Agriculture	Farming.
Hydro-electric power	The use of fast flowing water to turn turbines which produce electricity.

E - Kenya's Physical Features (3)

Constructive Margin	Where tectonic plates move apart and new land is created.
Fertile	Rich in nutrients.
Rift Valley	Steep-sided valley formed by the sinking of land between two faults or cracks caused by plate movements.

F - Kenya's Climate (3)

Climate	The average weather conditions over longer periods of time.
Precipitation	Any form of water falling from the sky.
Altitude	Higher areas get more rainfall and are colder than low land areas.

G - Kenya's Trade Links With The World (6)

Trade	The exchange of goods and materials between countries.
Trade Deficit	Cost of imports is greater than the money obtained from exports.
Trade Surplus	Money from exports is greater than the money made from imports.
Imports	Goods brought into a country.
Exports	Sending goods to another country for sale.
Colony	An area, or country, ruled by another country.

H - Tourism In Kenya (3)

Tertiary Sector	Industries which provide a service such as; teaching, accounting, health care, sales etc.
Coral Reef	A marine ecosystem formed by the growth of coral that protects the coast from erosion and provides a habitat for marine plants and animals.
Mass Tourism	A form of tourism that involves tens of thousands of people going to the same resort often at the same time of year.

I - Opportunities And Challenges In Nairobi

Where?	The capital and the largest city of Kenya, situated in the south central highlands.

Opportunities (3)	Challenges (3)
1. There are many global companies in Nairobi such as Shell, General Motors, Barclays, and many others. 2. Nairobi has beautiful natural parks and gardens such as Uhuru Park. 3. Nairobi is home to the Kenyan parliament.	1. Estimates suggest that over 1 million people live in shanty settlements such as Kibera. 2. In Kibera there is poor sanitation, with sewage running through the streets. Water must be purchased from pumps. 3. Unemployment in Kibera is estimated to be 50%.

Africa (Questions)

Africa's human and physical features

1. What is human geography?
2. What is physical geography?
3. What is relief?
4. What is a megacity?

Africa's population

5. What is population density?
6. What does "densely populated" mean?
7. What does "sparsely populated" mean?
8. What is physical geography in terms of population?

The Amazing Nile

9. What is river load?
10. What is deposition?
11. What is a delta?
12. What are distributaries?
13. What is silt?

Human uses of the Nile

14. What is irrigation?
15. What is agriculture?
16. What is hydro-electric power?

Kenya's physical features

17. What is a constructive margin?
18. What does fertile mean?
19. What is a rift valley?

Kenya's climate

20. What is climate?
21. What is precipitation?
22. How does altitude affect climate?

Kenya's trade links

23. What is trade?
24. What is a trade deficit?
25. What is a trade surplus?
26. What are imports?
27. What are exports?
28. What is a colony?

Tourism in Kenya

29. What is the tertiary sector
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Grammar

Adjectives

A – Position

In Spanish, unlike in English, most adjectives come after the **noun** they are describing.

For example:

- Una **casa** blanca – a white **house** (the adjective blanca comes after the **noun casa**)
- El **pelo** negro **–** black **hair** (the adjective black comes after the **noun hair**)
- Un **profesor** irritante – an irritating **teacher** (the adjective irritating comes after the **noun teacher**)

B – Agreement

Adjectives describe nouns. Adjective endings change according to whether the noun is masculine or feminine and singular or plural. There are different patterns of agreement, as follows:

	singular		plural	
	masculine	**feminine**	**masculine**	**feminine**
ending in **-o**	creativo	creativa	creativos	creativas
ending in **-e**	sociable	sociable	sociables	sociables
ending in a consonant	fácil	fácil	fáciles	fáciles
ending in **-dor**	trabajador	trabajadora	trabajadores	trabajadoras

Mi hermano es creativ**o** – Masculine, singular

Mi hermana es creativ**a** – Feminine, singular

Mis hermanos son creativ**os** – Masculine, plural

Mis hermanas son creativ**as** – Feminine, plural

Mi Hermano/hermana es sociabl**e** – Masculine/feminine singular

Mis hermanos/hermanas son sociabl**es** – Masculine/feminine plural

El inglés/la informática es fácil – Maculine/feminine singular

Los idiomas/las matemáticas son fácil**es** – Masculine/feminine plural

El camarero es trabajador – Masculine singular

La camarera es trabajador**a** – Feminine singular

Los camareros son trabajador**es** – Masculine plural

Las camareras son trabajador**as** – Feminine plural

Adjectives – Self-quizzing

A – Position

1. Choose the correct word to complete the sentence: Most adjectives come **before/after** the noun
2. Correct the errors in these phrases:

A. La blanca casa B. El negro pelo C. Un irritante profesor

3. Correct the errors in these phrases:

A. El negro perro B. Una difícil asignatura C. Mi favorito programa

B – Agreement

1. Adjective endings change depending on whether the noun is m_____ or f_____ and s_____ or p_____.
2. Choose the correct adjective:

Mi hermano es **alto/alta**

Mi prima es **bajo/baja**

Los gatos son **pequeños/pequeñas**

Las cobayas son **listos/listas**

El dibujo es **interesanto/interesante**

La tecnología es **excelente/excelenta**

Los museos son **grande/grandes**

Las piscinas son **importante/importantes**

La chica es **fiel/fiele**

Las personas son **tristes/tristas**

La mujer es **habladore/habladora**

Los niños son **habladoros/habladores**

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A – Position

1. Choose the correct word to complete the sentence: Most adjectives come **before/after** the noun
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Present tense – what you normally do

A – Regular verbs

In the present tense, **-ar**, **-er** and **-ir** verbs follow different patterns of endings:

	-ar	-er	-ir
	bail**ar** (to dance)	com**er** (to eat)	escrib**ir** (to write)
yo	bail**o**	com**o**	escrib**o**
tú	bail**as**	com**es**	escrib**es**
él/ella / usted	bail**a**	com**e**	escrib**e**
nosotros/as	bail**amos**	com**emos**	escrib**imos**
vosotros/as	bail**áis**	com**éis**	escrib**ís**
ellos/as / ustedes	bail**an**	com**en**	escrib**en**

A - To conjugate a verb (change an infinitive verb) in the present tense, you usually remove the AR/ER/IR endings to be left with the stem. You then add on the appropriate ending.

Infinitive	Stem	Present tense
Cantar	Cant	Canto (I sing)
Comer	Com	Como (I eat)
Describir	Describ	Describo (I describe)

Some verbs don't follow the usual patterns. Learn each verb by heart.

ir (to go)	**ser** (to be)	**tener** (to have)	**ver** (to see)
voy	soy	tengo	veo
vas	eres	tienes	ves
va	es	tiene	ve
vamos	somos	tenemos	vemos
vais	sois	tenéis	veis
van	son	tienen	ven

Some verbs are irregular in the 'I' form only:

hacer (to do / to make) → hago **salir** (to go out) → salgo

B – Irregular verbs don't follow the same pattern, and you just need to learn the differences.

C – Reflexive verbs

Reflexive verbs describe actions you do to yourself. They include a reflexive pronoun, e.g. **me**, **te**, **se**, which means 'myself', 'yourself', 'his/herself', etc.

ducha**rse** (to have a shower)
me ducho
te duchas
se ducha
nos duchamos
os ducháis
se duchan

Some reflexive verbs are stem-changing in the present tense:

acostarse (to go to bed) → me acuesto (I go to bed)
despertarse (to wake up) → me despierto (I wake up)
vestirse (to get dressed) → me visto (I get dressed)

C – Reflexive verbs are mostly used to describe daily routine actions or family relationships. You conjugate them in the same way as regular verbs, but you just include the reflexive pronoun.

Present tense – Self-quizzing

A – Regular Verbs

1. Conjugate the following verbs into first person singular (I form):

A. Visitar B. Beber C. Vivir

2. Conjugate the following verbs into first person plural (we form):

A. Hablar B. Leer C. Vivir

3. Translate these phrases into Spanish:

A. I talk B. We drink C. I write D. We eat E. I read F. We visit

B – Irregular Verbs

1. Conjugate the following verbs into first person singular (I form):

A. Ir B. Tener C. Ser D. Ver

2. Conjugate the following verbs into first person plural (we form): :

A. Ir B. Tener C. Ser D. Ver

C – Reflexive Verbs

1. Translate these phrases into Spanish:

A. I get up B. I have a shower C. I get dressed D. We have a shower E. We get up

Present tense – Self-quizzing

A – Regular Verbs

1. Conjugate the following verbs into first person singular (I form):

A. Visitar B. Beber C. Vivir

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C – Reflexive Verbs

1. Translate these phrases into Spanish:

A. I get up B. I have a shower C. I get dressed D. We have a shower E. We get up

Preterite tense – what you have done in the past

A – Regular verbs

In the preterite, regular **-ar** verbs follow one pattern of endings and **-er** and **-ir** verbs follow another:

	-ar	-er	-ir
	bail**ar** (to dance)	com**er** (to eat)	escrib**ir** (to write)
yo	bail**é**	com**í**	escrib**í**
tú	bail**aste**	com**iste**	escrib**iste**
él/ella / usted	bail**ó**	com**ió**	escrib**ió**
nosotros/as	bail**amos**	com**imos**	escrib**imos**
vosotros/as	bail**asteis**	com**isteis**	escrib**isteis**
ellos/as / ustedes	bail**aron**	com**ieron**	escrib**ieron**

A - To conjugate a verb (change an infinitive verb) in the preterite tense, you usually remove the AR/ER/IR endings to be left with the stem. You then add on the appropriate ending.

Infinitive	Stem	Present tense
Cantar	Cant	Cant**é** (I sang)
Comer	Com	Com**í** (I ate)
Describir	Describ	Describ**í** (I described)

B – Irregular verbs

Some verbs don't follow the usual patterns in the preterite. Learn each verb by heart.

ir (to go)	**ser** (to be)	**hacer** (to do / make)	**tener** (to have)	**ver** (to see)
fui	fui	hice	tuve	vi
fuiste	fuiste	hiciste	tuviste	viste
fue	fue	hizo	tuvo	vio
fuimos	fuimos	hicimos	tuvimos	vimos
fuisteis	fuisteis	hicisteis	tuvisteis	visteis
fueron	fueron	hicieron	tuvieron	vieron

The verbs **ir** and **ser** are identical in the preterite, but the context makes it clear which verb is meant.

In the preterite, the following verbs are irregular in the 'I' form only:

sacar (to take) → sa**qué** (I took) **jugar** (to play) → jug**ué** (I played) **tocar** (to play) → to**qué** (I played)

B – Irregular verbs don't follow the same pattern, and you just need to learn the differences.

Preterite tense – Self-quizzing

A – Regular Verbs

1. Conjugate the following verbs into first person singular (I form):

   A. Visitar B. Beber C. Vivir

2. Conjugate the following verbs into first person plural (we form):

   A. Hablar B. Leer C. Vivir

3. Translate these phrases into Spanish:

A. I talked B. We drank C. I wrote D. We ate E. I read F. We visited

B – Irregular Verbs

1. Conjugate the following verbs into first person singular (I form):

   A. Sacar B. Jugar C. Tocar

2. Conjugate the following verbs into first person plural (we form):

   A. Ir B. Ser C. Hacer

3. Translate these phrases into Spanish:

A. I had B. We saw C. I went D. We had E. I was F. I did/I made

Preterite tense – Self-quizzing

A – Regular Verbs

1. Conjugate the following verbs into first person singular (I form):

   A. Visitar B. Beber C. Vivir

2. Conjugate the following verbs into first person plural (we form):

   A. Hablar B. Leer C. Vivir

3. Translate these phrases into Spanish:

A. I talked B. We drank C. I wrote D. We ate E. I read F. We visited

B – Irregular Verbs

1. Conjugate the following verbs into first person singular (I form):

   A. Sacar B. Jugar C. Tocar

2. Conjugate the following verbs into first person plural (we form):

   A. Ir B. Ser C. Hacer

3. Translate these phrases into Spanish:

A. I had B. We saw C. I went D. We had E. I was F. I did/I made

Future tense – what you are going to do

A – Near future - Ir a + infinitive

The near future tense is used to talk about what you are going to do. Use the present tense of the verb **ir** followed by **a** plus the infinitive.

voy a salir con mis amigos	I am going to go out with my friends
vas a ver la televisión	you are going to watch TV
va a ir de paseo	he/she is going to go for a walk
vamos a jugar al voleibol	we are going to play volleyball
vais a chatear	you (plural) are going to chat online
van a hacer los deberes	they are going to do their homework

A – Use the present tense of the verb 'ir', the letter 'a' and then an infinitive.

Voy a jugar = I am going to play
Voy a beber = I am going to drink
Voy a visitar = I am going to visit
Voy a ir = I am going to go

B – Future time frame

Use a conjugated verb followed by the infinitive.

Quiero salir con mis amigos	**I want** to go out
Espero ver la television	**I hope** to watch TV
Me gustaría ir de paseo	**I would like** to go for a walk
Quisiera hacer los deberes	**I would like** to do my homework

Future tense – Self-quizzing

A – Simple Future

1. Translate these phrases into Spanish:

A. I am going to talk B. I am going to drink C. I am going to write D. We are going to eat E. I am going to read

F. We are going to visit G. I am going to play H. We are going to watch TV I. I am going to do my homework

B – Future Time Frame

1. Translate these phrases into Spanish:

A. I want to talk to my friends B. I hope to go for a walk C. I would like to write D. I want to eat

E. I hope to go out with my friends F. I would like to watch TV G. I want to play videogames

A / B – Future

1. Choose the correct answer:

A. Voy a **hablar/hablo** con mis amigos B. Espero **como/comer** patatas C. Quiero **visitar/visito** mis abuelos

D. Me gustaría **veo/ver** una película E. Quisiera **jugar/juego** al baloncesto F. Vamos a **escribo/escribir**

Future tense – Self-quizzing

A – Simple Future

1. Translate these phrases into Spanish:

A. I am going to talk B. I am going to drink C. I am going to write D. We are going to eat E. I am going to read

F. We are going to visit G. I am going to play H. We are going to watch TV I. I am going to do my homework

B – Future Time Frame

1. Translate these phrases into Spanish:

A. I want to talk to my friends B. I hope to go for a walk C. I would like to write D. I want to eat

E. I hope to go out with my friends F. I would like to watch TV G. I want to play videogames

A / B – Future

1. Choose the correct answer:

A. Voy a **hablar/hablo** con mis amigos B. Espero **como/comer** patatas C. Quiero **visitar/visito** mis abuelos

D. Me gustaría **veo/ver** una película E. Quisiera **jugar/juego** al baloncesto F. Vamos a **escribo/escribir**

Opinions

A – Opinion + infinitive

You can use infinitives after opinion verbs such as me gusta (I like), no me gusta (I don't like), me encanta (I love), detesto/odio (I hate) and prefiero (I prefer).

For example:

Me gusta leer libros	I like to read books / I like reading books.
No me gusta nadar	I don’t like to swim / I don’t like swimming.
Me encanta comer chocolate	I love to eat chocolate / I love eating chocolate.
Odio ver el telediario	I hate to watch the news / I hate watching the news
Prefiero salir con mis amigos	I prefer to go out with my friends / I prefer going out with my friends

B – Plural opinions

If the noun that you are giving an opinion about is plural (starts with ‘los’ or ‘las’), opinion phrases that use ‘me’, such as ‘me gusta’, ‘me encanta’, ‘me chifla’, ‘no me gusta’ need to end in an ‘n’.

Me gusta**n las** matemáticas	I like Maths
Me encanta**n los** animals	I love animals
No me gusta**n las** montañas	I don’t like the mountains

Opinions – Self-quizzing

A – Opinion + Infinitive

1. Choose the correct answer:

A. Me gusta **salir/salgo** con mis amigos B. Me encanta **como/comer** en un restaurante

C. No me gusta **chatear/chateo** D. Me gustaría **veo/ver** la tele E. Odio **hago/hacer** mis deberes

2. Translate these sentences into Spanish:

A. I like to visit my grandparents B. I prefer to read books C. I don't like eating chocolate

A – Plural Opinions

1. Choose the correct answer:

A. Me **gusta/gustan** las ciencias B. Me **gusta/gustan** el chocolate C. Me **encanta/encantan** el fútbol

D. Me **gusta/gustan** los caramelos E. Me **encanta/encantan** los fines de semana

2. Translate these sentences into Spanish:

A. I like sports B. I love books C. I don't like pasta

Opinions – Self-quizzing

A – Opinion + Infinitive

1. Choose the correct answer:

A. Me gusta **salir/salgo** con mis amigos B. Me encanta **como/comer** en un restaurante

C. No me gusta **chatear/chateo** D. Me gustaría **veo/ver** la tele E. Odio **hago/hacer** mis deberes

2. Translate these sentences into Spanish:

A. I like to visit my grandparents B. I prefer to read books C. I don't like eating chocolate

A – Plural Opinions

1. Choose the correct answer:

A. Me **gusta/gustan** las ciencias B. Me **gusta/gustan** el chocolate C. Me **encanta/encantan** el fútbol

D. Me **gusta/gustan** los caramelos E. Me **encanta/encantan** los fines de semana

2. Translate these sentences into Spanish:

A. I like sports B. I love books C. I don't like pasta

Modal verbs

Modal verbs are used to express ideas like possibility, ability, permission or necessity. Modal verbs must be followed by an infinitive.

Key modal verbs	
Se puede	You can
Se debe	You must
Suelo	I usually
Tengo que	I have to

+

Key infinitives

Visitar – to visit

Ir – to go

Comer – to eat

Ver – to watch/see

Ser – to be

Hacer – to do

Hablar – to talk

Salir – to go out

Modal verb + infinitive

You can visit = **Se puede** visitar

You must watch = **Se debe** ver

I usually go = **Suelo** ir

I have to eat = **Tengo que** comer

Modal verbs – Self-quizzing

A – Understanding

1. What is a modal verb and what must it be followed by in Spanish?
2. Translate the following into Spanish: "You must go."
3. What does “Tengo que” mean in English?
4. Which Spanish modal verb means “I usually”?
5. Identify the infinitive in the sentence: **"Suelo hablar"**

B – Practice

1. Translate into English:

a. Se puede salir b. Se debe ser c. Tengo que hablar d. Suelo ver

2. Translate these sentences into Spanish:

a. I usually eat b. You can go c. You must talk d. I have to do

Modal verbs – Self-quizzing

A – Understanding

1. What is a modal verb and what must it be followed by in Spanish?
2. Translate the following into Spanish: "You must go."
3. What does “Tengo que” mean in English?
4. Which Spanish modal verb means “I usually”?
5. Identify the infinitive in the sentence: **"Suelo hablar"**

B – Practice

1. Translate into English:

a. Se puede salir b. Se debe ser c. Tengo que hablar d. Suelo ver

2. Translate these sentences into Spanish:

a. I usually eat b. You can go c. You must talk d. I have to do

Time

A la/las	At
Es la/son las	It is
Y cuarto	Quarter past
Y media	Half past
Menos cuarto	Quarter to
Y cinco	Five past
Y diez	Ten past
Y veinte	Twenty past
Menos veinte	Twenty to
Menos diez	Ten to
Menos cinco	Five to

Examples

At one o'clock – A la una

At two o'clock - A las dos

At quarter past three – A las tres y cuarto

At half past four – A las cuatro y media

At quarter to five – A las cinco menos cuarto

It is one o'clock – Es la una

It is six o'clock – Son las seis

It is five past seven – Son las siete y cinco

It is ten past eight – Son las ocho y diez

It is ten to nine – Son las nueve menos diez

It is five to ten – Son las diez menos cinco

Time – Self-quizzing

A – Match up

English	Spanish
a. It is quarter past 3	1. Son las ocho y diez
b. It is 10 past 8	2. Son las tres y cuarto
c. At quarter to 5	3. A las cinco menos cuarto
d. It is 5 to 10	4. Son las diez menos cinco
e. It is 6 o'clock	5. Son las seis

B – Fill in the gaps

1. Son las ocho y _____ (20)
2. A las cinco menos _____ (15)
3. Es la _____ (1)
4. Son las siete y _____ (25)
5. A las cuatro y _____ (30)

B – Translate

1. **Translate into Spanish:**

a. It is one o'clock
b. It is ten past eight
c. At quarter past three
d. At five to ten

2. **Translate into English:**

a. Son las seis
b. A la una
c. Son las nueve menos diez
d. A las tres y cuarto

Time – Self-quizzing

A – Match up

English	Spanish
a. It is quarter past 3	1. Son las ocho y diez
b. It is 10 past 8	2. Son las tres y cuarto
c. At quarter to 5	3. A las cinco menos cuarto
d. It is 5 to 10	4. Son las diez menos cinco
e. It is 6 o'clock	5. Son las seis

B – Fill in the gaps

1. Son las ocho y _____ (20)
2. A las cinco menos _____ (15)
3. Es la _____ (1)
4. Son las siete y _____ (25)
5. A las cuatro y _____ (30)

B – Translate

1. **Translate into Spanish:**

a. It is one o'clock
b. It is ten past eight
c. At quarter past three
d. At five to ten

2. **Translate into English:**

a. Son las seis
b. A la una
c. Son las nueve menos diez
d. A las tres y cuarto

Vocabulary

Year 8 Unit 5 – Holidays

	Spanish	English
1	**Fui**	**I went**
2	**Fuimos**	**We went**
3	Me alojé	I stayed
4	En la costa	By the sea
5	En el campo	In the countryside
6	**Viajé**	**I travelled**
7	Viajamos	We travelled
8	**En avión**	**By plane**
9	**En coche**	**By car**
10	Peligroso	Dangerous
11	Barato	Cheap
12	Caro	Expensive
13	**Nadé en la piscina**	**I swam in the pool**
14	Visité los sitios turísticos	I visited the tourist sites
15	Saqué muchas fotos	I took lots of photos
16	Comí	I ate
17	**Fui de compras**	**I went shopping**
18	Compré recuerdos	I bought souvenirs

	Spanish	English
19	Compró recuerdos	He/She bought souvenirs
20	Vi sitios históricos	I saw the historical sites
21	**Fue**	**It was…**
22	Genial	Great
23	Divertido	Fun
24	Aburrido	Boring
25	Emocionante	Exciting
26	**El año pasado**	**Last year**
27	El primer/segundo día	On the first/second day
28	Por la mañana	In the morning
29	Por la tarde	In the afternoon
30	Por la noche	In the evening
31	Después	After
32	Más tarde	Later
33	**Normalmente**	**Normally**
34	**Voy**	**I go**
35	**Vamos**	**We go**
36	Visito los sitios turísticos	I visit the tourist sites
37	**Nado en el mar**	**I swim in the sea**

	Spanish	English
38	Como en un restaurante	I eat at a restaurant
39	Hago deportes acuáticos	I do water sports
40	**Compro recuerdos**	**I buy souvenirs**
41	**Juego**	**I play**
42	**Este verano**	**This summer**
43	Este año	This year
44	**Voy a + infinitive**	**I'm going…**
45	**Vamos a + infinitive**	**We're going…**
46	**Quiero + infinitive**	**I want…**
47	Me gustaría / quisiera (+ infinitive)	I would like…
48	**Ir a**	**To go to**
49	**Visitar**	**To visit**
50	Ver los monumentos	To see the monuments
51	Nadar en el mar	To swim in the sea

Year 8 Unit 5 – Foundational knowledge

Look		Write	Check
Fui	I went		
Fuimos	We went		
Viajé	I travelled		
En avión	By plane		
En coche	By car		
Nadé en la piscina	I swam in the pool		
Fui de compras	I went shopping		
Fue	It was…		
El año pasado	Last year		
Normalmente	Normally		
Voy	I go		

Look		Write	Check
Vamos	We go		
Nado en el mar	I swim in the sea		
Compro recuerdos	I buy souvenirs		
Juego	I play		
Este verano	This summer		
Voy a + infinitive	I'm going…		
Vamos a + infinitive	We're going…		
Quiero + infinitive	I want…		
Ir a	To go to		
Visitar	To visit		

Year 8 Unit 5 – Foundational knowledge

Look		Write	Check
Fui	I went		
Fuimos	We went		
Viajé	I travelled		
En avión	By plane		
En coche	By car		
Nadé en la piscina	I swam in the pool		
Fui de compras	I went shopping		
Fue	It was…		
El año pasado	Last year		
Normalmente	Normally		
Voy	I go		

Look		Write	Check
Vamos	We go		
Nado en el mar	I swim in the sea		
Compro recuerdos	I buy souvenirs		
Juego	I play		
Este verano	This summer		
Voy a + infinitive	I'm going…		
Vamos a + infinitive	We're going…		
Quiero + infinitive	I want…		
Ir a	To go to		
Visitar	To visit		

Year 8 Unit 6 – Going out & staying in

Spanish	English
1 Todos los días	**Everyday**
2 Juego al baloncesto	I play basketball
3 Toco el piano	I play (an instrument)
4 Hago natación	I do swimming
5 Veo la tele	**I watch TV**
6 Escucho música	**I listen to music**
7 Salgo	I go out
8 Leo libros	I read books
9 En mi tiempo libre	**In my free time**
10 Me gusta / Me encanta / Detesto	**I like / I love / I hate**
11 El deporte / cine	Sport / Cinema
12 Hacer natación	Swimming
13 Hacer equitación	Horse riding
14 Jugar a los videojuegos	Playing video games
15 Ver películas	Watching films
16 Ir de compras	Shopping
17 Salir con mis amigos	**Going out with friends**
18 Este fin de semana	**This weekend**
19 Voy a (+ infinitive)	**I'm going (to)**
20 Vamos a (+ infinitive)	**We are going (to)**
21 Ir al centro	To go into town

Spanish	English
22 Jugar en el parque	**To play in the park**
23 Visitar a mis abuelos	**To visit my grandparents**
24 Jugar un partido de fútbol	To play in a football match
25 Ver un partido de fútbol	To watch a football match
26 Voy a comprar	**I'm going to buy**
27 Voy a llevar	**I'm going to wear**
28 Prefiero ver	**I prefer to watch**
29 Me gustan	I like (plural)
30 Las noticias	The news
31 Las telenovelas	Soap operas
32 Los concursos	Game shows
33 Las películas de acción	Action films
34 Las comedias	**Comedies**
35 Son...	**They are...**
36 Entretenidos	**Entertaining**
37 Emocionantes	**Exciting**
38 Escucho	**I listen to**
39 Me gusta escuchar	**I like listening to**
40 Mi cantante favorito	My favourite singer
41 Vi	**I saw...**
42 Leí	**I read...**

Spanish	English
43 La semana pasada	Last week
44 Ayer	Yesterday
45 ¿Quieres + infinitive?	**Do you want (to)...?**
46 Salir conmigo	To go out with me
47 Ir de tiendas	To go to the shops
48 Ir al centro	To go into town
49 Ir a una fiesta	To go to a party
50 Ver una película	To watch a film
51 ¿A qué hora?	**At what time?**
52 A las ocho / a las ocho y media	**At eight o'clock / at half past eight**
53 Me gustaría	I'd like to
54 Quisiera	I would like
55 Una talla más grande / pequeña	A bigger size / smaller size
56 ¿Cuánto es?	**How much does that cost?**
57 Son... euros	It costs...
58 Una mesa para dos personas	A table for two people
59 La cuenta, por favor	The bill, please
60 ¿Tiene menú?	Do you have a menu?
61 Hay un problema	There is a problem

Year 8 Unit 6 – Foundational knowledge

Look		Write	Check
Todos los días	Everyday		
Veo la tele	I watch TV		
Escucho música	I listen to music		
En mi tiempo libre	In my free time		
Me gusta / Me encanta / Detesto	I like / I love / I hate		
Salir con mis amigos	Going out with friends		
Este fin de semana	This weekend		
Voy a (+ infinitive)	I'm going (to)		
Vamos a (+ infinitive)	We are going (to)		
Jugar en el parque	To play in the park		
Visitar a mis abuelos	To visit my grandparents		
Voy a comprar	I'm going to buy		
Voy a llevar	I'm going to wear		
Prefiero ver	I prefer to watch		

Look		Write	Check
Las comedias	Comedies		
Son…	They are…		
Entretenidos	Entertaining		
Emocionantes	Exciting		
Escucho	I listen to		
Me gusta escuchar	I like listening to		
Vi	I saw…		
Leí	I read…		
¿Quieres + infinitive?	Do you want (to)…?		
¿A qué hora?	At what time?		
A las ocho / a las ocho y media	At eight o'clock / at half past eight		
¿Cuánto es?	How much does that cost?		

Year 8 Unit 6 – Foundational knowledge

Look		Write	Check
Todos los días	Everyday		
Veo la tele	I watch TV		
Escucho música	I listen to music		
En mi tiempo libre	In my free time		
Me gusta / Me encanta / Detesto	I like / I love / I hate		
Salir con mis amigos	Going out with friends		
Este fin de semana	This weekend		
Voy a (+ infinitive)	I'm going (to)		
Vamos a (+ infinitive)	We are going (to)		
Jugar en el parque	To play in the park		
Visitar a mis abuelos	To visit my grandparents		
Voy a comprar	I'm going to buy		
Voy a llevar	I'm going to wear		
Prefiero ver	I prefer to watch		

Look		Write	Check
Las comedias	Comedies		
Son…	They are…		
Entretenidos	Entertaining		
Emocionantes	Exciting		
Escucho	I listen to		
Me gusta escuchar	I like listening to		
Vi	I saw…		
Leí	I read…		
¿Quieres + infinitive?	Do you want (to)…?		
¿A qué hora?	At what time?		
A las ocho / a las ocho y media	At eight o'clock / at half past eight		
¿Cuánto es?	How much does that cost?		

Year 8 Unit 7 – Daily routine

Spanish	English
1 Me levanto	**I get up**
2 Me lavo los dientes	I brush my teeth
3 Desayuno	**I have breakfast**
4 Voy al instituto a pie	**I go to school by foot**
5 Hago los deberes	**I do my homework**
6 Después	Afterwards / then
7 Más tarde	Later
8 A las…	**At … o'clock**
9 Me levanté a las…	**I got up at…**
10 Desayuné	I had breakfast
11 Fui al instituto	**I went to school**
12 Jugué en mi móvil	I played on my phone
13 Vi la tele	I watched television
14 Escuché música	I listened to music
15 Hice mis deberes	**I did my homework**
16 Fue…	**It was…**
17 Me gustaría (+ infinitive)	**I would like…**

Spanish	English
18 Levantarme	**To get up**
19 Comer	To eat
20 Ir al instituto	**To go to school**
21 Tarde	**Late**
22 Más pronto	Earlier
23 Llevo una vida sana	**I lead a healthy life**
24 Bebo	**I drink**
25 Como sano	**I eat healthily**
26 Todos los días	Every day
27 Casi nunca	Rarely / hardly ever
28 Hago ejercicio	**I exercise**
29 Soy activo	I am active
30 Voy a (+ infinitive)	**I'm going to…**
31 Debemos (+ infinitive)	We should…
32 Se debe (+ infinitive)	**One / you should…**
33 Comer más / menos	**To eat more / less**
34 Beber más	**To drink more**

Spanish	English
35 Hacer deporte	To do / play sport
36 Hacer ejercicio	**To exercise**
37 Dormir más	To sleep more
38 Ayer	**Yesterday**
39 Comí	**I ate**
40 Bebí	**I drank**
41 Jugué al baloncesto	**I played basketball**
42 Hice natación	I went swimming
43 Fui al instituto en bici	I cycled to school
44 Fue…	It was…
45 Bueno para la salud	**Healthy**
46 Malo para la salud	**Unhealthy**
47 Me duele …	**My … hurts**
48 La cabeza	Head
49 Estómago	Stomach
50 He vomitado	I've been sick

Year 8 Unit 7 – Foundational knowledge

Look		Write	Check
Me levanto	I get up		
Desayuno	I have breakfast		
Voy al instituto a pie	I go to school by foot		
Hago los deberes	I do my homework		
A las…	At … o'clock		
Me levanté a las…	I got up at…		
Fui al instituto	I went to school		
Hice mis deberes	I did my homework		
Fue…	It was…		
Me gustaría (+ infinitive)	I would like…		
Levantarme	To get up		
Ir al instituto	To go to school		
Tarde	Late		
Llevo una vida sana	I lead a healthy life		
Bebo	I drink		

Look		Write	Check
Como sano	I eat healthily		
Hago ejercicio	I exercise		
Voy a (+ infinitive)	I'm going to…		
Se debe (+ infinitive)	One / you should…		
Comer más / menos	To eat more / less		
Beber más	To drink more		
Hacer ejercicio	To exercise		
Ayer	Yesterday		
Comí	I ate		
Bebí	I drank		
Jugué al baloncesto	I played basketball		
Bueno para la salud	Healthy		
Malo para la salud	Unhealthy		
Me duele …	My … hurts		

Year 8 Unit 7 – Foundational knowledge

Look		Write	Check
Me levanto	I get up		
Desayuno	I have breakfast		
Voy al instituto a pie	I go to school by foot		
Hago los deberes	I do my homework		
A las…	At … o'clock		
Me levanté a las…	I got up at…		
Fui al instituto	I went to school		
Hice mis deberes	I did my homework		
Fue…	It was…		
Me gustaría (+ infinitive)	I would like…		
Levantarme	To get up		
Ir al instituto	To go to school		
Tarde	Late		
Llevo una vida sana	I lead a healthy life		
Bebo	I drink		

Look		Write	Check
Como sano	I eat healthily		
Hago ejercicio	I exercise		
Voy a (+ infinitive)	I'm going to…		
Se debe (+ infinitive)	One / you should…		
Comer más / menos	To eat more / less		
Beber más	To drink more		
Hacer ejercicio	To exercise		
Ayer	Yesterday		
Comí	I ate		
Bebí	I drank		
Jugué al baloncesto	I played basketball		
Bueno para la salud	Healthy		
Malo para la salud	Unhealthy		
Me duele …	My … hurts		

Year 8 Unit 8 – School & Work

	Spanish	English
1	Hay… edificios	There are … buildings
2	**Llevamos uniforme**	**We wear a school uniform**
3	**Chaqueta**	**Blazer**
4	Pantalón	Trousers
5	Zapatos	Shoes
6	El día empieza a las…	The day starts at…
7	El día termina a las…	The day finishes at…
8	**Después del instituto**	**After school**
9	**Se puede**	**You can**
10	Un viaje escolar	A school trip
11	Al extranjero	Abroad
12	**Pienso que**	**I think that**
13	**Se debe**	**You must**
14	Fumar	Smoke
15	Escuchar al profe	Listen to the teacher
16	**Las normas / reglas**	**Rules**
17	**No es justo**	**It’s unfair**
18	Cambiaría mucho	I would change a lot

	Spanish	English
19	Llevar vaqueros	To wear jeans
20	**Mi madre es…**	**My mum is…**
21	Enfermero	Nurse
22	Camarero	Waiter / waitress
23	Médico	Doctor
24	**Trabaja en…**	**He / she works…**
25	Una fábrica	A factory
26	**Me gustaría ser**	**I would like to be**
27	Espero ser	I hope to be
28	Bailarín	A dancer
29	Viajar por todo el mundo	Travel the world
30	Sería…	That would be…
31	Mi sueño	My dream
32	**Voy a (+ infinitive)**	**I’m going to…**
33	**Quiero (+ infinitive)**	**I want to…**
34	**Casarme**	**To get married**
35	**Estudiar en la universidad**	**To study at university**
36	Ser feliz	To be happy

Year 8 Unit 7 – Foundational knowledge

Look		Write	Check
Llevamos uniforme	We wear a school uniform		
Chaqueta	Blazer		
Después del instituto	After school		
Se puede	You can		
Pienso que	I think that		
Se debe	You must		
Las normas / reglas	Rules		
No es justo	It's unfair		
Mi madre es…	My mum is…		
Trabaja en…	He / she works…		
Me gustaría ser	I would like to be		
Voy a (+ infinitive)	I'm going to…		
Quiero (+ infinitive)	I want to…		
Casarme	To get married		
Estudiar en la universidad	To study at university		

Year 8 Unit 7 – Foundational knowledge

Look		Write	Check
Llevamos uniforme	We wear a school uniform		
Chaqueta	Blazer		
Después del instituto	After school		
Se puede	You can		
Pienso que	I think that		
Se debe	You must		
Las normas / reglas	Rules		
No es justo	It's unfair		
Mi madre es…	My mum is…		
Trabaja en…	He / she works…		
Me gustaría ser	I would like to be		
Voy a (+ infinitive)	I'm going to…		
Quiero (+ infinitive)	I want to…		
Casarme	To get married		
Estudiar en la universidad	To study at university		

8.01: Islam

Key Vocabulary

1	**Muslims**	Followers of the religion Islam.
2	**Pre-Islamic Arabia**	Arabia before the emergence of Islam. It was a polytheistic, fractured society. People lived in nomadic tribes that were in fierce competition for limited resources e.g. water.
3	**polytheism**	The worship of or belief in more than one god.
4	**Quraysh**	A powerful and influential Arab tribe that controlled Mecca before the rise of Islam. They were known for their role as wealthy merchants and dominating trade routes. Prophet Muhammad was born into the Quraysh tribe.
5	**Prophet Muhammad**	An Arab religious, social, and political leader and founder of Islam. Muslims describe him as the 'Seal of the Prophets', meaning he is the last prophet sent by God. This means Muslims believe no prophets will come after him.
6	**Allah**	The Arabic term for 'The God'.
7	**Tawhid**	The Muslim belief in the oneness of God.
8	**monotheism**	The belief that there is only one God.
9	**revelation**	A message from God to humans.
10	**Mecca (Makkah)**	A city in Saudi Arabia where Islam began. The city was established by the prophets Ibrahim and Ishmael. Prophet Muhammad was born in Mecca, and it is a place of pilgrimage for Muslims.
11	**persecution**	Unfair or cruel treatment over a long period of time because of race, religion or political beliefs. Muhammad was persecuted when he tried to spread the message of Allah to the people of Mecca.
12	**Hijrah**	The migration of Prophet Muhammad from Mecca to Medina.
13	**Medina**	A city in Saudi Arabia, where Prophet Muhammad developed the early Muslim community.
14	**Ummah**	The worldwide Muslim community.
15	**mosque**	A Muslim place of worship (also known as a **masjid**).
16	**caliphate**	An area ruled by a Muslim leader.
17	**Caliph**	A Muslim leader of a caliphate.
18	**Conquest of Mecca**	When Prophet Muhammad and his followers peacefully took control of Mecca, leading to widespread acceptance of Islam in Arabia.

Holy Books

The Qur'an	Holiest scripture for Islam. The word means "recite" in Arabic. It was revealed to the Prophet Muhammed by the angel Jibril.

19	**Kaaba**	A sacred (holy) stone building located at the centre of the Great Mosque (Masjid al-Haram) in Mecca, Saudi Arabia. It is considered the holiest site in Islam and is a symbol of the oneness of God. Muslims face towards it during their daily prayers.
20	**Hadith**	A record of the sayings and teachings of Prophet Muhammad.
21	**Sunnah**	A record of the actions and traditions of Prophet Muhammad. It serves as a model for Muslims to follow in their daily lives.
22	**Final Sermon**	Prophet Muhammad's last sermon (talk) to the Muslim community on Mount Arafat. The sermon has many important messages to teach Muslims about what it means to be a follower of Islam, providing instructions on how people should behave and how they should treat each other.
23	**Sunni/Shi'a split**	A division in Islam which occurred after the death of Prophet Muhammad on who should lead the Ummah.
24	**Sunni**	The largest branch of Islam, which emphasises the importance of the Sunnah to living as a Muslim.
25	**Shi'a**	The smaller of the two main branches of Islam, which believes Prophet Muhammad's true successor was his cousin, Ali.
26	**Abu Bakr**	A close companion of Prophet Muhammad who became the first caliph. Sunni Muslims believe that Abu Bakr was the rightful successor to Prophet Muhammad.
27	**Ali**	Muhammad's cousin, who became the fourth caliph.
28	**Mawla**	Prophet Muhammad referred to his cousin Ali as 'mawla'. Mawla can mean "to be close to", "to be friends with", or "to have power over". This meant that different Muslims interpreted Prophet Muhammad's words differently.
29	**The Five Pillars of Islam**	The basic acts in Islam, considered mandatory by believers, and are the foundation of Muslim life.
30	**Shahadah**	One of the Five Pillars - Declaration of faith: "There is no God but Allah and Muhammad is His messenger".
31	**Salah**	One of the Five Pillars - Ritual **prayer** five times a day.
32	**Zakah**	One of the Five Pillars - Giving 2.5% of wealth each year to benefit the poor.
33	**Sawm**	One of the Five Pillars – Fasting during hours of daylight in the Islamic month of **Ramadan**.
34	**Hajj**	One of the Five Pillars – Annual pilgrimage to Mecca (Makkah).
35	**Greater Jihad**	The spiritual struggle within oneself against sin.
36	**Lesser Jihad**	Defending Islam from threat but must meet a range of strict conditions to be declared.
37	**Islamophobia**	Dislike of or prejudice against Islam or Muslims.

Questions – 8.01: Islam

Questions

1. Who are the followers of the religion Islam?
2. What is the Muslim belief in the oneness of God called?
3. What is the key term for the worldwide Muslim community?
4. What is the key term for a message from God to humans?
5. Who do Muslims believe is the ‘Seal of the Prophets’, meaning he is the last prophet sent by God?
6. What is the name of the sacred stone building in Mecca, which is a symbol of the oneness of God and where Muslims face towards during their daily prayers?
7. What is a Muslim place of worship (also known as a masjid)?
8. What is the key term for a record of the actions and traditions of Prophet Muhammad, which serves as a model for Muslims to follow in their daily lives?
9. What is the most important holy book in Islam, which was revealed to the Prophet Muhammed by the angel Jibril?
10. What is the key term for a record of the sayings and teachings of Prophet Muhammad?

Questions

11. What is the Arabic term for ‘The God’?
12. Which city in Saudi Arabia is the birthplace of the Prophet Muhammad and a place of pilgrimage for Muslims?
13. How many times a day do most Muslims perform salah – ritual prayer?
14. What is the Arabic term for the annual pilgrimage to Mecca (Makkah)?
15. During which Islamic month do Muslims fast during daylight hours?
16. What is the largest branch of Islam, which emphasises the importance of the Sunnah to living as a Muslim?
17. What is the smaller of the two main branches of Islam, which believes Prophet Muhammad’s true successor was his cousin, Ali?
18. What word did Prophet Muhammad refer to Ali as, which can mean "to be close to", "to be friends with", or "to have power over”?
19. What is an area ruled by a Muslim leader?
20. Which pillar of Islam involves giving 2.5% of wealth each year to benefit the poor?

Questions – 8.01: Islam

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8.02: Hindu Dharma

Origins of the faith

1. Origins and context	· Over 4000 years old. · Originated in Indian subcontinent
2. Hinduism	A western term that describes the vast diversity of beliefs, traditions and practices within the religion.
3. Cyclical time	There are infinite cycles of creation and destruction

Nature of God

4. Monotheistic or Polytheistic	· Both · One supreme reality · Multiple deities
5. Pantheism	The belief that God and the universe are the same things
6. Brahman	· Ultimate reality, formless and infinite · Within and above all of creation · Exists in different forms and deities
7. Trimurti	The three forces of the universe- Brahma (creator), Vishnu (preserver) and Shiva (destroyer)
8. Atman	· Inner self or soul · Eternal and identical to Brahman
9. Brahma	Creator of the universe
10. Vishnu	Preserver of the universe
11. Shiva	Destroyer and renewer of the universe

Afterlife

12. Law of karma	Belief that the things you do in life will eventually return to you, either in this life or the next.
13. Samsara	The cyclical nature of birth, death, and rebirth, driven by karma
14. Moksha	· The ultimate goal of escaping samsara · The atman is united with Brahman
15. Reincarnation	The belief that the atman will be reborn in a different physical form until it achieves moksha

Sacred texts — Holy Books

16. The Vedas	· Oldest and most important scripture · Contains hymns, rituals and teachings which have been passed down
17. The Upanishads	· Philosophical texts · Contain key concepts such as Brahman, atman and moksha
18. The Bhagavad Gita	Lord Krishna's teachings on duty (dharma) devotion (bhakti) and liberation (moksha)

Living a moral life

19. Cause and effect	• Hindus believe that karma determines our future experiences • If you live a good life and do moral actions you will gain good karma
20. Varnasharma Dharma Caste system	Traditional Hindu society was divided based on differences in wealth, race and occupation
21. Ahimsa	Important of non-violence- supporting peace and avoiding harm to living beings.
22. Sanatana Dharma	Eternal duty to live in a truthful, compassionate and disciplined life.

Hinduism in the UK

23. Different interpretations	Hindu communities worldwide adapt their traditions to local cultures while maintaining core beliefs
24. Migration	Hindus migrated from India, East Africa and the Caribbean
25. British values	Hindu values such as non-violence, respect for all beings and family devotion are similar to British values

Worship

26. Mandir	A temple, a sacred space for Hindu worship, prayer and community events
27. Murtis	Sacred images or statues of deities,
28. Puja	· Hindu worship. · Can be performed privately at home or publicly in the Mandir (temple). · Involves offerings, prayers and rituals to honour deities

Festivals

29. Diwali	· Festival of lights in the Autumn · Celebrates the victory of good over evil · Celebrated with fireworks, exchanging gifts, decorating homes
30. Holi	· Festival of colours, marks the arrival of spring · Holi also celebrates the Hindu god Krishna and the legend of Holika and Prahlad · Celebrated by dancing, singing and throwing of powder paint and coloured water

Pilgrimage

31. Haridwar	· A major pilgrimage site on the River Ganges · Pilgrims seek to be purified by holy dips in the river and rituals
32. Kumbha Mela	· Held every 12 years · Largest religious gathering · Millions bathe in sacred rivers to cleanse sins and attain spiritual growth

Rituals

33. Namakarana	Naming ceremony involves blessings and prayers
34. Weddings	· A sacred ceremony involving a fire at the centre · Bride and groom take seven steps and make seven promises
35. Funerals	· Involves cremation and rituals to guide the atman's journey. · Prayers to help achieve moksha

Questions - 8.02: Hindu Dharma

Questions

1. What is a western term that describes the vast diversity of beliefs, traditions and practices within the religion?
2. How old is Hindu Dharma?
3. Where did Hindu Dharma originate?
4. What is the oldest and most important Hindu scripture (sacred texts), containing hymns, rituals and teachings which have been passed down?
5. What is the key term for the ultimate reality, described as formless, infinite, within and above all of creation and exists in different forms and deities?
6. What is the Hindu festival of lights, which celebrates the victory of good over evil?
7. Which Hindu deity/god is the preserver of the universe?
8. What is the key term for Hindu worship?
9. What is the key term for the cyclical nature of birth, death, and rebirth, driven by karma?
10. What is the belief that the atman (inner self or soul) will be reborn in a different physical form until it achieves moksha?

Questions

11. What is the festival of colours, marking the arrival of spring, celebrated by dancing, singing and throwing of powder paint and coloured water?
12. What is the key term for the ultimate goal of escaping samsara, when the atman is united with Brahman?
13. What is the belief that the things you do in life will eventually return to you, either in this life or the next?
14. What is a name given to a temple for Hindu worship, prayer and community events?
15. What is the key term for sacred images or statues of deities (gods and goddesses)?
16. What is Lord Krishna's teachings on duty (dharma) devotion (bhakti) and liberation (moksha)?
17. Which Hindu deity/god is the creator of the universe?
18. What is the belief that God and the universe are the same things
19. Which Hindu deity/god is the destroyer and renewer of the universe?
20. What is the key term for the three forces of the universe - Brahma (creator), Vishnu (preserver) and Shiva (destroyer)?

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8.03: Sikhi

Context and influences

1. Origins	Started in the Punjab region of South Asia (now present day India and Pakistan). Originated in the late 15th century.
2. 1947 Punjab partition	Division of Punjab into two separate identities • West Punjab (5.5 million Muslims migrated) • East Punjab (4.5 million Hindus and Sikhs)
3. Influences	Sikhi is a unique, distinct religion. *"God is neither Hindu, nor Muslim"*
4. Sikhs worldwide	• 5th largest world religion • 30 million worldwide, 25 million thought to exist in India alone.
5. Sikhs in the UK	0.9% of the population of England and Wales (according to 2021 census).
6. Key facts	• Followers are called Sikhs meaning '**learners**' • Sikhism - westernised name, given to the religion based upon the British domination of India.

Life and teachings of Guru Nanak

7. Guru	Spiritual teacher
8. Ten human Gurus	• The founding fathers of the faith. • Starting with Guru Nanak and ending with Guru Gobind Singh (1708). • Lived spiritually pure lives and shared divine wisdom.
9. Guru Nanak	The founder of Sikhi (1469-1539 CE) Born into a Hindu family, but rejected the caste system.
NANAK'S KEY TEACHINGS	
10. Oneness of God	***'Ik-Onkar'***- there is only one universal creator. ***"God is one but he has many forms".***
11. Equality	Rejected patriarchal society and believed men and women are equal ***"From women, man is born".***
12. Service	Through acts of charity, Sikhs develop compassion ***"Serve others as the Lord's own".***

Sikh identity (The 5 K's)

13. Guru Gobind Singh	The last human guru, known for establishing the Khalsa.
14. Khalsa	Set up in 1699, the Khalsa is a group of committed Sikhs, who must be initiated to join.
15. Amrit Sansar	The name for the Sikh ceremony of initiation to the Khalsa. This signifies a Sikh's vow to follow the Khalsa code of conduct and dedicating themselves to God.
16. The 5 K's	• Kesh (uncut hair) • Kangha (a comb) • Kara (a steel bracelet) • Kachera (cotton underwear) • Kirpan (a sword) 
17. VAISAKHI DAY	
• Birthday of the Khalsa being formed. • Vibrant, colourful processions led by 5 men wearing orange holding swords upright, hymns sung, visit Gurdwaras.	

Written authority: Sikh scripture

Holy Books

18. Guru Granth Sahib	· Holy scripture: consisting of hymns, poems and writings written using the Gurmukhi alphabet. · Considered the eternal **'Living Guru'** as the line of living gurus ended. · Believed to be the correct word of God and so is treated with respect.
19. Gurbani	Meaning *'from the guru's mouth'*. Gurbani refers to the hymns and writings found within the Sikh scripture, Guru Granth Sahib, which are considered the Guru's word and a guide to spiritual enlightenment and salvation. The Guru Granth Sahib contains writing from other gurus.
TEACHINGS IN THE GURU GRANTH SAHIB	
20. Waheguru	- A term used to refer to God, often translated as "Wonderful Lord". Sikhs believe in only one God who is formless, eternal and beyond human understanding.
21. Creation	- Divine spark of God lives in every part of God's creation.
22. Afterlife	• The soul endures the cycle of samsara (birth, death and rebirth), based on karma (the law of cause and effect). • The ultimate goal is union with Waheguru.

The ethical role of the Gurdwara

23. Gurdwara	A Sikh place of worship (200 Gurdwaras in Britain).
24. Focus on spirituality	• Gather for prayer • Hymn singing • Readings from scripture
25. Focus on community	Langar (community kitchen) meal - free vegetarian food offered to all regardless of gender, status or wealth.
26. Sewa	Selfless service without reward. • Sikhs want to volunteer to help with the running of the Langar each week. Sewa links to the belief that we all belong to the same human family. Sikhs want to serve God by helping others ('tan'- physical work and giving time).

Questions - 8.03: Sikhi

Questions

1. When did Sikhi (Sikhism) originate?
2. What is meant by the term ‘guru’?
3. Who is the founder of Sikhi?
4. How many human gurus were there?
5. What is the term used to refer to God, often translated as "Wonderful Lord"?
6. Who was the last human guru, known for establishing the Khalsa?
7. What is the holy book (scripture) of Sikhi, consisting of hymns, poems and writings, considered to be the eternal Guru?
8. What is the name of the group of committed, initiated Sikhs that was set up in 1699?
9. What is the key term for selfless service without reward?
10. What is a Sikh place of worship known as?

Questions

What is the name for the Sikh ceremony of initiation to the Khalsa?

12. What is the Punjabi word for uncut hair?
13. What is the Punjabi word for the cotton underwear worn by Khalsa Sikhs?
14. What is the kangha?
15. What is the kirpan?
16. What is the Punjabi word for the steel bracelet worn by Khalsa Sikhs?
17. What day celebrates the birthday of the Khalsa?
18. What is the langar?
19. What is the meaning of the word ‘Sikh’?
20. Approximately how many Sikhs are there worldwide?