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2024-2025

Knowledge Organiser

Name: .....

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Contents

Animal Farm by George Orwell (1945)

When?	Summary and Themes/Ideas	Quotations
Chapters 1-3	The animals are displeased with how they are treated by Farmer Jones and feel that they are **exploited** by man. Old Major delivers a speech detailing the **oppression**. The pigs are established as being of superior intelligence to the other animals.	**Chapter 1.** Old Major: *"Now, comrades, what is the nature of this life of ours? Let us face it: our lives are miserable, laborious, and short."* **Chapter 1.** Old Major: *"The life of an animal is misery and slavery: that is the plain truth."* **Chapter 1.** Old Major: *"Man is the only real enemy."* **Chapter 1.** Old Major: *"That is my message to you comrades: rebellion!"* **Chapter 1.** Narrator: [Boxer was] *'Not of first-rate intelligence.'* **Chapter 2.** Narrator: *'They were met with much stupidity and apathy.'* **Chapter 2.** Narrator: [The Pigs were] *'Generally recognised as being the cleverest.'* **Chapter 2.** Narrator: [Napoleon had] *'a reputation for getting his own way.'* **Chapter 2.** Narrator: *'The others said of squealer that he could turn black into white.'*
	The animals vow to take back some element of **control** over their own lives on the farm and are successful in overthrowing Farmer Jones. The animals successfully **rebel** and take control of the farm. The animals decide on seven commandments as they establish their **utopian vision** of Animal Farm.	**Chapter 2.** Narrator: *'In the past years, Mr Jones […] had been a capable farmer, but of late he had fallen on evil days.'* **Chapter 2.** Narrator: *'Without bothering to feed the animals.'* **Chapter 2.** Narrator: *'Yes, it was theirs - everything that they could see was theirs.'* **Chapter 2.** Narrator: [The pigs] *'taught themselves to read'.* **Chapter 2.** Narrator: *'Whatever goes upon two legs is an enemy.'* **Chapter 2.** Narrator: *'All animals are equal.'* **Chapter 3.** Narrator: *'Their efforts were rewarded for the harvest was even bigger success than they hoped.'* **Chapter 3.** Narrator: *'The pigs were so clever that they could think of a way around every difficulty.'* **Chapter 3.** Squealer: *'Do you know what would happen if we pigs failed in our duty? Jones would come back!"*
Chapters 4-6	It quickly becomes clear that the pigs are the ones to lead the **rebellion** and gain power – often at the expense of the other and less intelligent animals they are able to **exploit**. Napoleon uses underhand tactics to seize **power**.	**Chapter 4.** Narrator: *'Snowball, at the head of them, rushed forward.'* **Chapter 4.** Narrator: [Snowball was] *'In charge of defensive operation" and "gave his orders quickly'* **Chapter 4.** Narrator: *'Animal hero, First class' […] was conferred there and then on Snowball and Boxer.'* **Chapter 5.** Narrator: *'Snowball wants to build a windmill […] the animals would only have to work three days weekly.'* **Chapter 5.** Napoleon: *'Nonsense.'* **Chapter 5.** Narrator: *'there was no doubt as to which way the vote would go.'* **Chapter 5.** Narrator *'Napoleon stood up and, casting a peculiar sidelong look at Snowball, uttered a high-pitched whimper.'* **Chapter 5.** Narrator: [The dogs] *'They dashed straight for Snowball.'* **Chapter 5.** Narrator: *'Silent and terrified, the animals crept back into the barn.'* **Chapter 5.** Narrator/Squealer: *'The windmill was, in fact, Napoleon's own creation. He had seemed to oppose the windmill.... This […] was something called tactics.'*
	Division of class and **exploitation** of less intelligent animals continues. The pigs gain even more **power** through manipulation	**Chapter 6.** Pigs: *"No animal shall sleep in a bed with sheets."* **Chapter 6.** Napoleon: *'Strictly voluntary.'* **Chapter 6.** Napoleon: *'This traitor has crept here under the cover of night.'* **Chapter 6.** Boxer: *"I will work harder" and "Napoleon is always right."*

Animal Farm by George Orwell (1945)

When?	Summary and Themes/Ideas	Quotations
Chapters 7-8	The pigs' **manipulation** increases, as does their exploitation of the other animals who are working harder for little return.	**Chapter 7.** Narrator: 'Starvation seemed to stare them in the face.' **Chapter 7.** Narrator: 'Whenever anything went wrong it became usual to attribute it to Snowball.' **Chapter 7.** Narrator: [about Clover] 'There was no thought of rebellion or disobedience in her mind.' **Chapter 7.** Squealer: "Napoleon sank his teeth into Jones' leg."
	Napoleon, a symbol of Stalin during the **Russian Revolution**, is promoted to leader of the farm – the other animals appear unaware of the widening class divide between them and the pigs.	**Chapter 8.** Narrator: 'some animals remembered – or thought they remembered – that the sixth commandment decreed: 'No Animal shall kill any other animal'.' **Chapter 8.** Narrator [Napoleon] 'was always referred to in the formal style as 'Our Leader, Comrade Napoleon'.' **Chapter 8.** Narrator: 'A gun was fired every year on Napoleon's birthday.' **Chapter 8.** Narrator: [About Napoleon] 'Father of all animals, terror of mankind, protector of the sheepfold, duckling's friend...'
Chapters 9-10	Boxer prepares for retirement but is then sent away. Towards the end of the novel, the pigs seem to have gone through a transformation as they now take on more qualities of the humans that they so despised at the start. The **power** of the pigs has been steadily increasing throughout and builds to a climax in the final chapter.	**Chapter 9.** Boxer: "I will work harder"; he had no voice left." **Chapter 9.** Clover: "Boxer! Get out! Get out quickly! They're taking you to your death!" **Chapter 9.** Narrator: 'Boxer was never seen again.' **Chapter 9.** Narrator: 'It was necessary to elect a President... there was only one candidate.' **Chapter 9.** Narrator: 'With the songs, the processions, Squealer's list of figures, they were able to forget that their bellies were empty.' **Chapter 10.** Narrator: 'All animals were equal.' **Chapter 10.** Animals: "Four legs good, two legs better!" **Chapter 10.** Narrator: 'A pig walking on its hind legs.' **Chapter 10.** Narrator: 'Already it was impossible to say which was which.'

The Tempest by William Shakespeare (1611)

When?	Summary and Themes/Ideas	Quotations
Act 1	**Scene 1. Exploration** is exposed as dangerous.	**1.1. Boatswain:** *"When the sea is. Hence! What cares these roarers for the name of king?"* **1.1. Mariners:** *"Mercy on us! We split, we split! – Farewell, my wife and children! – Farewell, brother! – We split, we split, we split!"*
	Scene 2. Prospero is exposed as a victim of **usurpation**, for which he seeks **revenge**. Prospero is presented as a powerful **coloniser** and **slave master**. He controls Miranda, uses **manipulation** to control Ariel and has **enslaved** Caliban, presented here as a **savage** but one for whom we have some **sympathy**. **Control** is further established by Prospero as he **manipulates** the relationship between Ferdinand and Miranda.	**1.2. Miranda (to Prospero):** *"O, I have suffered With those that I saw suffer."* **1.2. Prospero (to Miranda):** *"Thy father was the Duke of Milan and a prince of power."* **1.2. Prospero (to Miranda):** *"By foul play, as thou sayst, were we heaved thence."* **1.2. Prospero (to Miranda):** *"By being so retired, o'erprized all popular rate, in my false brother awaked an evil nature."* **1.2. Prospero (to Miranda):** *"There they hoist us to cry to th' sea that roared to us."* **1.2. Ariel (to Prospero):** *"All hail, great master! Grave sir, hail!"* **1.2. Prospero (to Ariel):** *"Hast thou, spirit, performed to point the tempest that I bade thee?"* **1.2. Ariel (to Prospero):** *"Ferdinand […] was the first man that leaped; cried 'hell is empty, and all the devils are here'."* **1.2. Prospero (to Ariel):** *"Ariel, thy charge exactly is performed. But there's more work."* **1.2. Prospero (to Ariel):** *"I will rend an oak and peg thee in his knotty entrails till thou hast howled away twelve winters."* **1.2. Prospero (to Caliban):** *"Thou poisonous slave, got by the devil himself upon thy wicked dam, come forth!"* **1.2. Caliban (to Prospero and Miranda):** *"You taught me language, and my profit on't Is I know how to curse. The red plague rid you for learning me your language!"* **1.2. Caliban (to Prospero and Miranda):** *"Hast thou not dropped from heaven?"* **1.2. Caliban (to Prospero):** *"This island's mine, by Sycorax my mother, which thou takest from me."* **1.2. Caliban (to Prospero):** *"For I am all the subjects that you have, Which first was mine own king."* **1.2. Prospero (to Caliban):** *"If you neglect my orders or do them grudgingly, I'll double you up with pains and cramps."* **1.2. Prospero (to Miranda):** *"I find my zenith doth depend upon a most auspicious star."* **1.2. Prospero (to Ariel):** *"Hast thou, spirit, performed to point the tempest that I bade thee?"* **1.2. Miranda:** *"I might call him a thing divine, for nothing natural I ever saw so noble."* **1.2. Prospero (aside):** *"It goes on, I see, as my soul prompts it."*

The Tempest by William Shakespeare (1611)

When?	Summary and Themes/Ideas	Quotations
Act 2	**Scene 1.** The **usurping** 'men of sin' and the 'noble Neapolitan' Gonzalo arrive on the island. Antonio tempts Sebastian to **usurp** his brother, as he did to Prospero.	**2.1. Gonzalo:** *"Here is everything advantageous to life."* **2.1. Gonzalo:** *"In my kingdom I'd do everything differently from the way it's usually done."* **2.1. Antonio (to Sebastian):** *"My strong imagination sees a crown dropping upon thy head."* **2.1. Antonio (to Sebastian):** *"Twenty consciences, that stand 'twixt me and Milan, candied be they and melt ere they molest!"* **2.1. Sebastian (to Antonio):** *"As thou got'st Milan, I'll come by Naples."* **2.1. Ariel (to Gonzalo):** *"My master through his art foresees the danger that you, his friend, are, and sends me forth."* **2.1. Ariel (to Gonzalo):** *"If of life you keep a care, shake off slumber and beware."*
	Scene 2. Caliban, Stephano and Trinculo embark on a futile, **comedic plot** to **usurp** Prospero, exploring themes of **colonisation**.	**2.2. Trinculo:** *"Misery acquaints a man with strange bedfellows."* **2.2. Stephano:** *"Do you put tricks upon's with savages and men of Ind, ha?"* **2.2. Caliban (aside):** *"That's a brave god and bears celestial liquor. I will kneel to him."* **2.2. Caliban (to Stephano):** *"I'll show thee every fertile inch o' th' island and I will kiss thy foot."* **2.2. Caliban:** *"Freedom, high-day, freedom."*
Act 3	**Scene 1.** The relationship between Miranda and Ferdinand develops, thanks to Prospero's manipulation.	**3.1. Ferdinand (to Miranda):** *"The mistress which I serve quickens what's dead and makes my labors pleasures."* **3.1. Ferdinand (to Miranda):** *"But you, O you, so perfect and so peerless."* **3.1. Ferdinand (to Miranda):** *"My heart fly to your service."* **3.1. Miranda (to Ferdinand):** *"I am your wife, if you will marry me: If not, I'll die your maid: to be your fellow. You may deny me, but I'll be your servant, whether you will or no."*
	Scene 2. Power is exposed as **corruptive** through the **comedic** antics of Caliban, Stephano and Trinculo. Caliban is portrayed as a victim of **colonisation** and **slavery**.	**3.2. Stephano (to Trinculo):** *"If you prove a mutineer, the next tree."* **3.2. Caliban (to Stephano):** *"If thy greatness will revenge it on him."* **3.2. Caliban:** *"With a log batter his skull; or paunch him with a stake."* **3.2. Caliban:** *"Let me lick thy shoe."* **3.2. Caliban (to Stephano):** *"I thank my noble lord."* **3.2. Caliban (aside):** *"I am subject to a tyrant, a sorcerer, that by his cunning hath cheated me of the island."*
	Scene 3. Prospero utilises his **power** over Ariel to exert terrifying **revenge** for his **usurpation**. Alonso, Antonio and Sebastian are now under his control.	**3.3. Ariel:** *"You fools, I and my fellows are ministers of fate."* **3.3. Ariel:** *"I have made you mad…men hang and drown their proper selves."* **3.3. Ariel:** *"You three from Milan did supplant good Prospero."* **3.3. Ariel:** *"Thee of thy son, Alonso, they have bereft."* **3.3. Prospero (aside):** *"They now are in my power and in these fits I leave them."* **3.3. Alonso:** *"With him there lie mudded."* **3.3. Gonzalo:** *"Their great guilt, like poison."*

The Tempest by William Shakespeare (1611)

When?	Summary and Themes/Ideas	Quotations
Act 4	**Scene 1.** Prospero offers Miranda to Ferdinand, reinforcing **patriarchal** views. **Order** is restored as Prospero quells the plot on his life, leaving him in total **control**.	**4.1. Prospero (to Ferdinand):** *"I ratify this my rich gift."* **4.1. Prospero (to Ferdinand):** *"But if thou dost break her virgin knot... discord shall bestrew the union of your bed."* **4.1. Prospero (to Ariel):** *"A devil, a born devil on whose nature nurture can never stick."* **4.1. Caliban:** *"If he awake, from toe to crown he'll fill our skins with pinches."* **4.1. Prospero (to Ariel):** *"At this hour lie at my mercy all mine enemies."* **4.1. Prospero (monologue):** *"We are such stuff as dreams are made on: and our little life Is rounded with a sleep."*
Act 5	**Scene 1.** Prospero is **humanised** by Ariel and realises that **forgiveness** is more **virtuous** than **revenge**. Prospero's **power** as Duke is restored and he decides to give up his **magic** powers and return to Milan to live out his days.	**5.1. Ariel (to Prospero):** *"If you now beheld them, your affections would become tender."* **5.1. Prospero (to Ariel):** *"The rarer action is in virtue than in vengeance."* **5.1. Prospero:** *"I'll drown my books."* **5.1. Prospero:** *"Require my dukedom of thee, which perforce, I know, thou must restore."* **5.1. Prospero:** *"I do forgive thee, unnatural though thou art."* **5.1. Prospero (to Ariel):** *"I shall miss thee, but yet thou shalt have freedom."* **5.1. Ariel (to Prospero):** *"Merrily, merrily, shall I live now Under the blossom that hangs on the bough."* **5.1. Trinculo:** *"If these be true spies which I wear in my head, here's a goodly sight."* **5.1. Prospero:** *"And in the morn I'll bring you to your ship and so to Naples."*
Epilogue	Prospero seeks **forgiveness** from the audience, realising his earlier **bitterness** was wrong.	**Prospero:** *"Release me from my bands with the help of your good hands."* **Prospero:** *"As you from crimes would pardoned be, Let your indulgence set me free."*

Sherlock Holmes by Sir Arthur Conan Doyle (1892)

When?	Summary and Themes/Ideas	Quotations
The Red Headed League	Sherlock Holmes is visited by Jabez Wilson, who tells him of the strange story of The Red Headed League. Mr Wilson has been offered lots of money to do a seemingly pointless job. Holmes uses powers of **deduction** and **observation** to establish that it is a hoax. Holmes becomes introspective to solve the case and work out that it is a front for a serious robbery. Watson acknowledges Sherlock's superior ability to use reason and **rationality**, as he catches the robbers red handed. Sherlock describes how these cases help him **escape the boring routines of everyday life.**	**Sherlock:** *"for strange effects and extraordinary combinations we must go to life itself."* **Sherlock:** *"I shall keep on piling fact upon fact on you until your reason breaks down under them and acknowledges me to be right."* **Watson (narrator):** *'Sherlock Holmes quick eye took in my occupation, and he shook his head with a smile.'* **Sherlock:** *"It is quite a three pipe problem."* **Sherlock:** *"It is introspective, and I want to introspect."* **Watson (narrator):** *'In his singular character the dual nature alternately asserted itself and his extreme exactness and astuteness represented... the reaction against the poetic and contemplative mood which occasionally predominated in him.'* **Watson (narrator):** *'Then it was that the lust of the chase would suddenly come upon him.'* **Watson (narrator):** *'His brilliant reasoning power would rise to the level of intuition.'* **Watson (narrator):** *'I was always oppressed with a sense of my own stupidity in my dealings with Sherlock Holmes.'* **Sherlock:** *"My life is spent in one long effort to escape from the common places of existence. These little problems help me to do so."*
A Scandal in Bohemia	The character of Irene Adler is introduced as **subverting female Victorian stereotypes**. Sherlock Holmes meets the King of Bohemia who tells him that he is due to be married and askes Holmes to help him retrieve a scandalous photograph from Irene Adler. Holmes is reinforced as the embodiment of **knowledge** and **observation**, but also as an eccentric, cold character who lacks normal human **emotion** and **empathy**. Holmes comes up with a plan to get Irene Adler to reveal the location of the photograph by pretending that her house is on fire. Adler falls for the trick but later realises she has been duped and flees.	**Watson (narrator):** *'To Sherlock Holmes she is always the woman.'* **Watson (narrator):** *'In his eyes she eclipses and predominates the whole of her sex…'* **Watson (narrator):** *'All emotions, and that one (love) particularly, were abhorrent to his cold, precise but admirably balanced mind.'* **Watson (narrator):** *'He was... the most perfect reasoning and observing machine the world has seen.'* **Watson (narrator):** *'Grit in a sensitive instrument, or a crack in one of his high-power lenses, would not be more disturbing than a strong emotion in a nature such as his.'* **Watson (narrator):** *'Holmes... loathed every form of society with his whole Bohemian soul.'* **Watson (narrator):** *'He was pacing the room swiftly, eagerly, with his head sunk upon his chest and his hands clasped behind him... He was at work again.'* **Watson (narrator):** *'I could not help laughing at the ease with which he explained his process of deduction.'* **Sherlock:** *"You see, but you do not observe."* **Sherlock:** *"It is a capital mistake to theorise before you have data. Invariably one begins to twist facts to suit theories instead of theories to suit facts."* **Watson (narrator):** *'There was something in his masterly grip of a situation, and his keen, incisive reasoning, which made it a pleasure to study his system of work.'*

Sherlock Holmes by Sir Arthur Conan Doyle (1892)

When?	Summary and Themes/Ideas	Quotations
A Scandal in Bohemia (Continued)	Both Holmes and Watson underestimated Irene Adler because she is a woman, reinforcing their **patriarchal** and **stereotypical** views. In the end, she wins their respect due to the way she outsmarts them and the King of Bohemia. Her intelligence subverts **Victorian stereotypes** of women.	**Sherlock: (about Irene Adler)** *"She is the daintiest thing under a bonnet on this planet."* **Watson (narrator):** *'She stood at the top with her superb figure outlined against the lights of the hall.'* **Watson (narrator):** *'I never felt more ashamed in my life than when I saw the beautiful creature against whom I was conspiring.'* **Sherlock:** *"When a woman thinks that her house is on fire, her instinct is at once to rush to the thing that she values most. It is a perfectly overpowering impulse."* **Sherlock:** *"From what I have seen of the lady she seems indeed to be on a very different level to Your Majesty."* **Watson (narrator):** *'And that was how the best plans of Mr. Sherlock Holmes were beaten by a woman's wit.'* **Watson (narrator):** *'He used to make merry over the cleverness of women but I have not heard him do it of late.'*
A Case of Identity	Mary Sutherland is introduced as a **stereotypical Victorian representation of women** – unintelligent, emotional, obsessed with her appearance, easily outsmarted and not to be taken seriously. She is being manipulated by her strange husband, Mr Hosmer Angel. Mary is the opposite of Irene Adler, who **subverts** these **expectations**. Her new husband wears a mask, has a strange appearance and she doesn't really know anything about him. Holmes is instantly suspicious. Holmes' **eccentricity** is further revealed as he makes **deductions** about the case in a relaxed manner. Holmes works out that Hosmer Angel is not all he appears to be, and is in fact Mary Sutherland's own stepfather, James Windibanks, who is pretending to be Hosmer Angel so that she never marries. While she remains at home, the family have access to all of her money. She has been tricked. Despite his **eccentric** behaviour, Holmes **decency** is made clear in his final treatment of 'Hosmer Angel'.	**Sherlock:** *"life is infinitely stranger than anything which the mind of man could invent."* **Sherlock:** *"Depend upon it. There is nothing so unnatural as the commonplace."* **Sherlock:** *"it is my business to know things. Perhaps I have trained myself to see what others overlook. If not, why should you come to consult me?"* **Watson (narrator):** *'on the pavement opposite there stood a large woman with a heavy fur boa round her neck, and a large curling red feather in a broad-brimmed hat which was tilted in a coquettish Duchess of Devonshire fashion over her ear. From under this great panoply she peeped up in a nervous, hesitating fashion at our windows, while her body oscillated backward and forward, and her fingers fidgeted with her glove buttons.'* **Sherlock:** *"Oscillation upon the pavement always means an affaire de Coeur."* **Watson (narrator):** *'the lady herself loomed behind his small black figure like a full-sailed merchant-man behind a tiny pilot boat.'* **Watson (narrator):** *'a startled look came over the somewhat vacuous face of Miss Mary Sutherland'* **Watson (narrator):** *'I had expected to see Sherlock Holmes impatient under this rambling and inconsequential narrative, but, on the contrary, he had listened with the greatest concentration of attention'.* **Watson (narrator):** *'A flush stole over Miss Sutherland's face, and she picked nervously at the fringe of her jacket.'* **Watson (narrator):** *'For all the preposterous hat and the vacuous face, there was something noble in the simple faith of our visitor which compelled our respect'.* **Watson (narrator):** *'he took down from the rack the old and oily clay pipe, which was to him as a counsellor, and, having lit it, he leaned back in his chair, with the thick blue cloud-wreaths spinning up from him, and a look of infinite languor in his face.'* **Sherlock:** *"It has long been an axiom of mine that the little things are infinitely the most important."* **Sherlock:** *"Never trust to general impressions, my boy, but concentrate yourself upon details."* **Sherlock:** *"The law cannot, as you say, touch you," said Holmes, unlocking and throwing open the door, "yet there never was a man who deserved punishment more."*

Indices, Factions & Significant Figures

Indices

Bases are the same	Multiplying add the powers, dividing subtract	$w^3 \times w^4 = w^{3+4} = w^7$ $w^3 \div w^4 = w^{3-4} = w^{-1}$
Base to the power, all to the power	Multiply the indices	$(w^3)^2 = w^6$
Base to the power of zero	Equals 1	$w^0 = 1$

Prime Factorisation

Prime numbers	Have exactly two factors	✓ Factors of 2: 1, 2 ✗ Factors of 6: 1, 6, 2, 3
Factors of a number	Go into a number	F → 12 number → M FACTORS 1 12, 2 6, 3 4 MULTIPLES 12, 24, 36, 48...
Multiples of a number	Are the times tables	
Prime factor form	Tree thing tree thing	**Express 90 as a product of prime factors:** 90 → 9, 10 → 3, 3, 2, 5 $90 = 2 \times 3^2 \times 5$
Product of its primes	Product means times,2,3,5,7 don't forget your primes	
HCF or LCM of large numbers	Use a venn diagram	80: 2, 2, 2, 5 — 24: 2, 2, 2, 3 HCF = overlap $2 \times 2 \times 2$ LCM = all 80×3 or $24 \times 2 \times 5$
HCF	Multiply the overlap (Common bases, lowest powers)	$280 = 2^3 \times 5 \times 7$, $900 = 2^2 \times 3^2 \times 5^2$ HCF $= 2^2 \times 5$ LCM $= 2^3 \times 3^2 \times 5^2 \times 7$
LCM	Multiply them all (All bases, highest powers)	

Rounding

The first significant figure	Can never be zero	Round to 2sf (1st, 2nd, 3rd) $0.0065|3$ $= 0.0065$
Estimation	1SF	Estimate $\frac{12.7+4.2^2}{0.53} \rightarrow \frac{12.7+4.2^2}{0.53} \rightarrow \frac{26}{0.5} \rightarrow 5$ (×2, ×2)

Fractions

Always make your life simple **Cancel anything on the top**	Simplify first With anything from the bottom	$\frac{\cancel{10}^{2}}{\cancel{21}_{3}} \times \frac{\cancel{14}^{2}}{\cancel{25}_{5}} = \frac{4}{15}$
Multiplying fractions	Top × top bottom × bottom	
Dividing fractions	Times by the reciprocal	$\frac{3}{8} \div \frac{7}{11} = \frac{3}{8} \times \frac{11}{7} = \frac{33}{56}$
Adding or subtracting fractions	Find the LCM	$\frac{7}{12} + \frac{2}{9}$ (LCM 36, ×3, ×4; 12, 24, 36; 9, 18, 27, 36) $= \frac{21}{36} + \frac{8}{36}$ $= \frac{29}{36}$
Comparing fractions	Find the LCM	which is bigger $\frac{4}{5}$ or $\frac{5}{6}$? (LCM 30) $\frac{24}{30}$ $\frac{25}{30}$ Bigger

Equations

Solving Linear Equations

Successful elimination	With an inverse operation	Solve $\frac{10x}{10} = \frac{5}{10}$
If you do it on 1 side	Do it to the other to keep the balance	$3+2x = 5$, $-3 \quad -3$, $\frac{2x}{2} = \frac{2}{2}$, $x = 1$
x on both sides	Eliminate the smallest 'x'	Solve $11-3x = 2x+1$, $+3x \quad +3x$
x on both sides and brackets	Expand the brackets first	Solve $3(x+4) = 5(2x-1)$, $3x+12 = 10x-5$

Coordinates and Basic Graphs

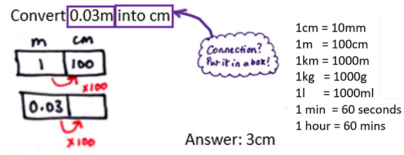
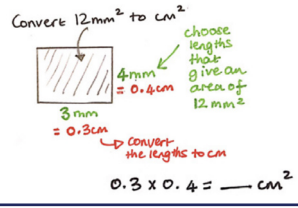
Plotting coordinates: Start at the Go along the Then go up/down the	Origin x axis y axis	Plot the coordinate (2 , -3)
Midpoint of coordinates	Stack them Add them Divide by 2	$(3,4) + (-2,-8) = (1,-4)$, now $\div 2$ = (0.5, -2) Find the midpoint of (3, 4) and (-2, -8)
x = ?	Goes through the x axis	Plot x = -2
y = ?	Goes through the y axis	Plot y = -1

Forming and Solving Linear Equations

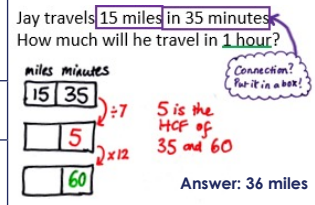
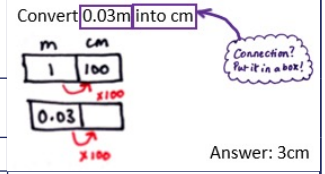
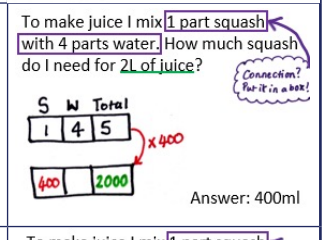
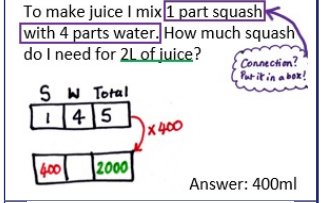
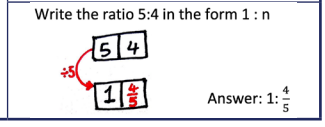
Perimeter is	The distance around a 2D shape	Form an expression for the perimeter of this shape $P = 4x+3+7+4x+3+7$ $P = 8x+20$ Now Solve!
Working backwards	3 steps	The area of this shape is 77cm2. Work out the value of x
Step 1	Write the formula	$A = l \times w$
Step 2	Substitute	$77 = 7(4x+3)$
Step 3	Solve	
Angles in a triangle	Add up to 180°	Form and solve an equation to find the value of 'a' $a+2a+90 = 180$ $3a+90 = 180$ Now Solve!
Don't know something? **One thing in terms of another?**	Call it 'x' Label the smallest thing 'x'	Susan is 3 years older than Mohamed. Aran is twice the age of Susan. The sum of their ages is 75. Form and solve an equation to find each of their ages. Susan = $x+3$ Mohamed = x Aran = $2(x+3) = 4x+6$ $x+3+x+4x+6 = 75$ $6x+9 = 75$ Now Solve!

Box Method

Units of Measurement

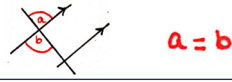
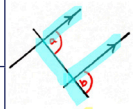
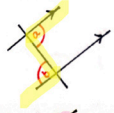
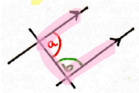
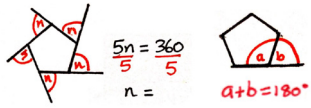
Converting units	Box method Bigger unit equals '1'	
Converting units of area	Draw a rectangle Convert the lengths	

Ratio and Proportion

Connection between two things	Box method	
What do we look for?	Up, down, side to side	
And if that fails?	Middle man, think HCF	
Converting units	Box Method Bigger unit equals '1'	
Currency questions	Box method	
Recipe questions	Box method	
Value for money	Box method with same amounts	
Ratio questions	Box method with a total	
		

Angles, Circles and Percentages

Angles

Angles in a triangle	Add up to 180°	
Angles in a quadrilateral	Add up to 360°	
Angles on a straight line	Add up to 180°	
Opposite angles in a parallelogram	are equal	
Vertically opposite	Angles are equal	
Parallel lines	Fs and Zs	
Fs	Corresponding angles are equal	
Zs	Alternate angles are equal	
Co-interior angles	Add up to 180°	
Exterior angles	Add up to 360°	
Interior and exterior	Add up to 180°	

Circles

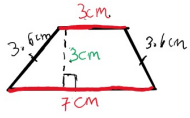
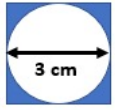
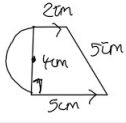
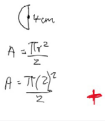
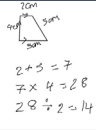
Circumference of a circle	$\pi \times d$	 $C = \pi d$
Area of a circle	$\pi \times$ radius squared	 $A = \pi r^2$
Arc length is	Fraction of the circle times $\pi \times d$	 Arc length $= \frac{200}{360} \times \pi d$
Area of a sector is	Fraction of the circle times πr^2	 Area of Sector $= \frac{200}{360} \times \pi r^2$

Fractions, Decimals and Percentages

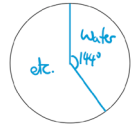
% to fraction	Write it out of 100	Write 48% as a fraction in simplest form $48\% = \frac{48}{100} = \frac{\quad}{\quad}$ Always look to simplify
Decimals to fractions	First to %	Convert 0.6 to a fraction in its simplest form $0.6 = \frac{0.6}{1} = \frac{6}{10} = \frac{\quad}{\quad}$ Always look to simplify
Fractions to decimals	Division using bus stop	Convert $\frac{5}{8}$ to a percentage $5 \div 8 =$ 8 ⟌ 5.000 = 0.625 = 62.5%
The numerator always goes	Inside the bus stop	
Fractions to %	Equivalent fractions Make the denominator 100	Write $\frac{3}{20}$ as a percentage $\frac{3}{20} = \frac{\quad}{100} = \quad\%$
And if that fails?	Convert to decimal first	

Area, Averages and Data

Area

Area of a trapezium	Add up the parallel sides. Times the distance between them. Halve the answer you get. That's the area of a trapezium.	 3 + 7 = 10 10 x 3 = 30 30 ÷ 2 = 15cm²
Shaded area	Big area minus small area	 Area of square − Area of circle A = b x h A = 3 x 3 A = πr² A = π(1.5)²
Compound area	Split into separate shapes and add	  A = πr²/2 A = π(2)²/2 +  2+3 = 7 7 x 4 = 28 28 ÷ 2 = 14

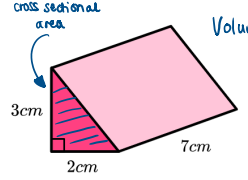
Presenting Data

Pie charts	Box method Total frequency equals 360	Draw a pie chart for the table below: Favourite Drink / Frequency / Angle Water 72 144° Coca Cola 15 Dr Pepper 30 Orange Juice 18 Lemonade 45 Total frequency = 180 360 To find the angles: key angle 180 360 x2 72 x2 
Frequency	How often something happens	Favourite Drink / Frequency Water 72 Coca Cola 15 Dr Pepper 30 Orange Juice 18 Lemonade 45 15 people prefer coca cola as their favourite drink.

Averages and spread

Mean	Fair	Calculate the mean for the following data set 8, 1, 1, 3, 2 8 + 1 + 1 + 3 + 2 = 15 15 ÷ 5 = 3 Mean = 3
Median	Middle (put the numbers in order)	Calculate the median for the following data set 8, 1, 1, 3, 2 1, 1, 2, 3, 8 Median = 2
Mode	Most	Calculate the mode for the following data set 8, 1, 1, 3, 2 1, 1, 2, 3, 8 Mode = 1
Range	Spread (largest – smallest)	Calculate the range for the following data set 8, 1, 1, 3, 2 1, 2, 2, 3, 8 8 − 1 = 7 Range = 7

Volume

Prism	3D shape with the same cross section	 Volume = csa x L = b x h / 2 x L = 2 x 3 / 2 x 7 = 3 x 7 = 21 cm³
Volume is	The space inside a 3D shape	
Volume of a prism	Cross Sectional Area x Length	

Unit 1: Light and Space

1	**What is a wave?**	A transfer of energy
2	**What are the two types of wave?**	Longitudinal and transverse
3	**In what direction are the vibrations in a longitudinal wave?**	The same direction the wave is travelling
4	**In what direction are the vibrations in a transverse wave?**	Perpendicular to the direction the wave is travelling
5	**What is a light source?**	An object that releases light waves
6	**What type of wave is light?**	Transverse
7	**What is a ray diagram?**	A way of drawing how light travels
8	**In a ray diagram, how must light be drawn?**	Straight line, arrow in the middle, no gaps
9	**What four things can occur when light meets an object?**	Transmission, reflection, refraction, absorption
10	**What occurs in transmission?**	The wave goes through the object
11	**What occurs in reflection?**	The wave changes direction away from the object
12	**What occurs in refraction?**	The wave passes through into the object but changes direction
13	**What is absorption?**	The wave is stopped by the object and the objects heats up
14	**In what process do plants absorb light?**	Photosynthesis
15	**Give a word equation for photosynthesis**	Carbon dioxide + water > glucose + oxygen
16	**What is a transparent object?**	One that allows light to be transmitted through
17	**What is an opaque object?**	One which does not allow light to be transmitted through it; it absorbs the light
18	**What is a translucent object?**	One which absorbs some light, and scatters the rest as it is transmitted through the material
19	**What is a "normal"?**	A line drawn at right angles to a surface
20	**What is the incident ray?**	The ray of light approaching a surface
21	**What is the reflected ray?**	The ray of light reflected away from a surface

Unit 1: Light and Space

22	**What is a medium?**	The space or material which a light wave is travelling in
23	**Why does refraction occur?**	Light travels at different speeds in different mediums
24	**How does the density of the medium affect the speed of light?**	The denser the medium, the slower the light
25	**Name the seven colours in visible light**	Red, orange, yellow, green, blue, indigo, violet
26	**What is a colour filter?**	An object that absorbs some colours and transmits others
27	**What gives objects their colour?**	They absorb some colours and reflect others; we only see the reflected colours
28	**What is a star?**	A large sphere of very hot gas in space that emits light
29	**What is the Sun?**	The star nearest the Earth
30	**What is an orbit?**	The path an object takes around another object in space
31	**What is a planet?**	An object that orbits a star
32	**What is the solar system?**	A collection of planets and other objects orbiting the Sun
33	**What is a galaxy?**	A group of billions of stars
34	**Name the planets in our solar system in order of distance from the Sun**	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
35	**What is mass?**	The amount of material contained in an object
36	**What is the symbol for mass?**	m
37	**What is the unit and unit symbol for mass?**	Kilograms, kg
38	**What is a force?**	A push, pull or twist
39	**What is a field?**	A field allows forces to act without physical contact
40	**What is a gravitational field?**	The field around an object that pulls other objects towards it
41	**What is gravitational field strength?**	The force experienced by 1kg of mass in that field

Unit 1: Light and Space

42	**What is the gravitational field strength on Earth?**	about 9.8N/kg
43	**What is the unit and unit symbol for gravitational field strength?**	Newtons per kilogram, N/kg
44	**What is weight?**	The force exerted on an object by a gravitational field
45	**What is the symbol for weight?**	W
46	**What is the unit and unit symbol for weight?**	Newtons, N
47	**What is the formula that relates weight, mass and gravitational field strength?**	W = m x g
48	**What is the Earth's axis?**	An imaginary straight line from the North pole to the South about which the Earth rotates
49	**What causes day and night?**	The rotation of the Earth on its axis
50	**What is the time period of one rotation of the Earth on its axis?**	24 hours
51	**What causes seasons?**	The Earth's tilted axis and its rotation around the Sun
52	**What is the time period of one orbit of the Earth around the Sun?**	365 days
53	**What is the equator?**	An imaginary line drawn around the middle of the Earth
54	**What two things are affected by the seasons?**	The temperature and length of the day
55	**If the North pole is tilted towards the Sun, what affect will this have on the Northern hemisphere?**	Temperature is higher, days are longer
56	**When it is Winter in the Northern hemisphere, what season is it in the Southern hemisphere?**	Summer
57	**If the North pole is tilted towards the Sun, what affect will this have on the Southern hemisphere?**	Temperature is lower, days are shorter
58	**Why is it hotter in the hemisphere which is pointed to the Sun?**	The sunlight is more concentrated
59	**What is a light year?**	The distance travelled by light in a year

Unit 2: Periodic Table

1	**What are atoms made of?**	Protons, neutrons and electrons
2	**What is found in the nucleus of an atom?**	Protons and neutrons
3	**Where are the electrons in an atom?**	Orbiting the nucleus in shells
4	**What is between the electrons and the nucleus?**	Empty space
5	**What is an element?**	A substance made of one type of atom only
6	**What is a compound?**	Two or more different atoms chemically bonded together
7	**What is a mixture?**	When different substances are together but not chemically bonded
8	**What is the periodic table?**	An organised table showing the different elements
9	**Who first prepared the modern periodic table?**	Mendeleev
10	**Why did Mendeleev put some elements together in groups?**	They had similar properties
11	**Why did Mendeleev leave gaps in his periodic table?**	For undiscovered elements
12	**What is a group in the periodic table?**	The vertical columns
13	**What is a period in the periodic table?**	The horizontal rows
14	**What does the group an element is in tell you about its electrons?**	How many it has in the outer shell
15	**What does the period an element is in tell you about its electrons?**	How many shells it has
16	**What is charge?**	A property of particles that can be positive or negative. Other particles have no charge (neutral)
17	**What happens when the same charges come into contact?**	They repel
18	**What happens when opposite charges come into contact?**	They attract
19	**Name the three particles that make up atoms (subatomic particles)**	Protons, neutrons, electrons
20	**State the relative charges of the subatomic particles**	Protons: +1, neutrons: 0, electrons: -1
21	**What is the atomic number of an atom?**	The number of protons in an atom
22	**What is the mass number of an atom?**	The number of protons + the number of neutrons in an atom
23	**Why is the number of electrons in an atom equal to the number of protons?**	As their charges cancel out
24	**How do you calculate the number of neutrons in an atom?**	Mass number - atomic number
25	**How many electrons can go in the first shell?**	2
26	**How many electrons can go in the second and third shells?**	8

Unit 2: Periodic Table

27	What is a property?	A characteristic of something
28	What are the two main types of element?	Metals and non-metals
29	Give three typical properties of metals	Conduct electricity, conduct heat, malleable, ductile, high melting/boiling points, strong
30	Give two typical properties of non-metals	Electrical insulators, heat insulators, low melting/boiling points, weak, brittle
31	What does electrical conductor mean?	Allows electricity to flow through it
32	What does electrical insulator mean?	Does not allow electricity to flow through it
33	What does heat conductor mean?	Allows heat to flow through it
34	What does heat insulator mean?	Does not allow heat to flow through it
35	What does malleable mean?	Easy to bend
36	What does brittle mean?	Shatters easily
37	What does strong mean?	Can hold a lot of weight
38	What does weak mean?	Can't hold a lot of weight
39	What does ductile mean?	Easy to stretch
40	If something has a high melting/boiling point, what state is it at room temperature?	Solid
41	If something has a low melting/boiling point, what state is it at room temperature?	Liquid or gas
42	What does hard mean?	Difficult to scratch
43	What does soft mean?	Easy to scratch
44	What does reactive mean?	Reacts easily with other substances
45	What does unreactive mean?	Does not react easily with other substances
46	What does magnetic mean?	It is attracted to magnets
47	In which group are the alkali metals found?	1
48	What is easier to separate, a mixture or a compound?	A mixture
49	When different substances are mixed together, what happens to their properties?	They are retained (they do not change)
50	When different substances are chemically bonded together, what happens to their properties?	They change
51	What are reactants?	The substances you start with in a reaction

Unit 2: Periodic Table

52	What are products?	The substances you end up with in a reaction
53	When naming a compound with a metal and a non-metal, which comes first in the name?	The metal
54	If a compound has a metal and a non-metal, what is its suffix?	-ide
55	What is a chemical formula?	A way of showing which atoms are in a substance
56	What is the conservation of mass?	That atoms cannot be created or destroyed
57	In a chemical reaction, what happens to the atoms?	They are rearranged
58	In terms of chemical bonds, what happens in a chemical reaction?	Some are broken and others are made
59	How could you tell if a chemical reaction has taken place?	Temperature change, colour change, gas formed, solid formed
60	If mass appears to be lost in a reaction, what has happened?	A gas has been produced which escapes
61	If mass appears to be gained in a reaction, what has happened?	Atoms of a gas from the air have been added
62	When magnesium reacts with oxygen, why does the mass increase?	Atoms of oxygen from the air have been added
63	When magnesium reacts with acid, why does the mass decrease?	A gas is produced which escapes
64	What is a physical change?	A change of state or dissolving
65	Why is a change of state not a chemical change?	No new substances are made
66	What name is given to the group 1 elements?	Alkali metals
67	Why are alkali metals called alkali metals?	They are metals that react with water to form alkalis
68	Why are alkali metals stored in oil?	To stop them reacting with oxygen
69	Give four properties of alkali metals	Very reactive, low density, soft, relatively low melting/boiling point
70	How does the reactivity of alkali metals change down the group?	Increases
71	How does the melting and boiling point of alkali metals change down the group?	Decreases
72	What are the products of a reaction between an alkali metal and water?	Form a hydroxide and hydrogen
73	What name is given to the group 7 elements?	The halogens
74	Give four properties of the halogens	Toxic, form coloured vapours, low melting/boiling point, reactive
75	How does the reactivity of halogens change down the group?	Decreases
76	How does the melting/boiling point of halogens change down the group?	Increases

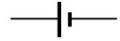
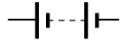
Unit 3: 8BD Digestion

1	**What is digestion?**	The breakdown of food into small molecules
2	**Name 4 food groups**	Carbohydrates, proteins, fats, vitamins and minerals
3	**Give an example of a food containing carbohydrates**	Potato, rice, bread, pasta
4	**Give an example of a food containing protein**	Meat, fish, eggs, milk, cheese
5	**Give an example of a food containing fats**	Meat, milk, yogurt, oil
6	**Give an example of a food containing vitamins and minerals**	Fruit, vegetables
7	**What are carbohydrates broken down into?**	Simple sugars
8	**Give an example of a simple sugar**	Glucose (sucrose, fructose)
9	**What is glucose used for?**	Respiration
10	**What are proteins broken down into?**	Amino acids
11	**What are amino acids used for?**	Growth and repair
12	**What are fats broken down into?**	Fatty acids and glycerol
13	**What are fatty acids and glycerol used for?**	Energy storage
14	**What are vitamins and minerals used for?**	Contribute to all aspects of health
15	**What happens to the small molecules at the end of digestion?**	They are absorbed into the blood
16	**Name the organs in the digestive system in the order food passes through them**	Mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus
17	**Where is food digested?**	The mouth, the stomach and the small intestine
18	**What happens in the small intestine?**	Digested food is absorbed into the blood
19	**What happens in the large intestine?**	Excess water is absorbed (from undigested food)

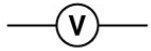
Unit 3: 8BD Digestion

20	**What does the liver do?**	Produce bile
21	**What does bile do?**	Helps digest fats
22	**What is an enzyme?**	A biological catalyst
23	**What is a catalyst?**	Something that makes a chemical reaction faster
24	**What do enzymes do?**	Speed up digestion
25	**What does the pancreas do?**	Produce enzymes
26	**Give four adaptations of the small intestine**	Very long, contains villi, rich blood supply, has microvilli
27	**Why is the small intestine long?**	To increase surface area
28	**Why does the small intestine have villi?**	To increase surface area
29	**Why does the small intestine have a rich blood supply?**	To keep a high concentration gradient
30	**Why does the small intestine have microvilli?**	To increase surface area
31	**What are gut bacteria?**	Bacteria found in the large intestines
32	**What do gut bacteria do?**	Help digest food
33	**What is obesity?**	Having too much body fat
34	**What causes obesity?**	Eating too much sugary or fatty foods
35	**What are the risks of obesity?**	Coronary heart disease
36	**What does coronary heart disease cause?**	The heart to function worse
37	**What is a deficiency disease?**	A disease caused by not getting enough of one food group

Unit 4: Electricity

1	**What is charge?**	A property of particles that is positive or negative (some particles have no charge)
2	**What is the charge of subatomic particles?**	Protons: +1, Neutrons: 0, Electrons: -1
3	**What is an electrical circuit?**	A closed loop which charged particles flow round
4	**In an electrical circuit, what charged particles are flowing?**	Electrons
5	**How do we count electrons?**	In coulombs
6	**What is current?**	How quickly coulombs of electrons are flowing through a circuit
7	**What is the unit for current?**	Amps (A)
8	**What does one amp represent?**	One coulomb passing a point per second
9	**Which particle transfers energy around a circuit?**	Electrons
10	**Where do electrons in a circuit get energy from?**	A power supply
11	**Name two power supplies**	Electrical cell, mains
12	**What is a battery?**	Two or more cells connected together (in series)
13	**What is potential difference?**	The amount of energy each coulomb of charge transfers
14	**What is the unit for potential difference?**	Volts (V)
15	**What happens to the current when potential difference increases?**	It increases
16	**Why does current increase when potential difference is increased?**	The electrons are moving more quickly as they have more energy
17	**What is resistance?**	How electrons can be slowed down by the circuit
18	**What is the unit for resistance?**	Ohms (Ω)
19	**What causes resistance?**	Electrical devices
20	**What is a device?**	Something which transfers energy from the circuit to the surroundings
21	**How do we draw cells in a circuit?**	
22	**How do we draw batteries in a circuit?**	
23	**How do we draw wires in a circuit?**	
24	**What is a switch?**	A place in the circuit where it can be broken
25	**How are switches drawn in a circuit?**	

Unit 4: Electricity

26	**Name 3 electrical devices that transfer energy in a circuit**	Lamp, motor, resistor
27	**How do lamps transfer energy to the surroundings?**	Waves (and heating)
28	**How do we draw motors?**	
29	**How do motors transfer energy to the surroundings?**	Mechanical working (and heating)
30	**How do we draw resistors?**	
31	**How do resistors transfer energy to the surroundings?**	Heating
32	**How is the current in a circuit calculated?**	V/R = I
33	**How do we measure the current in a circuit?**	With an ammeter
34	**How do we draw ammeters?**	
35	**How are ammeters connected to a circuit?**	As part of the circuit (in series)
36	**How do we measure the potential difference across a device?**	With a voltmeter
37	**How do we draw voltmeters?**	
38	**How are voltmeters connected to a circuit?**	On the back of specific devices (in parallel)
39	**What are the two main types of circuit?**	Series and parallel
40	**What are series circuits made of?**	A single loop
41	**How does current change in a series circuit change?**	It doesn't
42	**How does potential difference in a series circuit change?**	It is shared between devices (It drops across each device)
43	**What are parallel circuits made of?**	Different loops and junctions
44	**How does current in a parallel circuit change?**	Splits at junctions
45	**How does potential difference in a parallel circuit change?**	Same across each loop
46	**What is a conductor of electricity?**	A material that allows electricity to pass through it
47	**What is an insulator of electricity?**	A material which does not allow electricity to pass through it
48	**Give an example of a conductor of electricity**	Copper, graphite (any metal)
49	**Give an example of an insulator of electricity**	Plastic, wood, rubber (most non-metals)

Unit 5: Ecology

1	**What is an organism?**	A living thing
2	**What is a feeding relationship?**	How different organisms eat each other
3	**Why do organisms eat each other?**	To get energy and nutrients
4	**What diagram do scientists use to show feeding relationships?**	Food chains and food webs
5	**In a food chain, what name is given to the organism at the start?**	Producer
6	**Where do producers get their energy from?**	The Sun
7	**In a food chain or web, what name is given to an organism that eats another organism?**	A consumer
8	**In a food chain or web, what name is given to the organism that eats the producer?**	Primary consumer
9	**In a food chain or web, what name is given to the organism that eats the primary consumer?**	Secondary consumer
10	**In a food chain or web, what name is given to the organism that eats the secondary consumer?**	Tertiary consumer
11	**What name is given to organisms that eat animals?**	Predators
12	**What name is given to animals that are eaten by other organisms?**	Prey
13	**What is a herbivore?**	An animal that eats plants
14	**What is a carnivore?**	An animal that eats other animals
15	**What is an omnivore?**	An animal that eats plants and animals
16	**In a food chain or web, which direction are the arrows drawn in?**	From the organism being eaten to the organism eating it
17	**In a food chain or web, why are the arrows drawn from the organism being eaten to the organism eating it?**	To show the flow of energy
18	**What is decay?**	The breakdown of dead organisms
19	**What is a decomposer?**	An organism that causes decay
20	**What are the two main types of decomposer?**	Detritivores and microbes
21	**Give an example of a detritivore**	Maggots, woodlice
22	**Give an example of a microbe decomposer**	Bacteria, fungi
23	**Why is decay important?**	It releases waste products that plants can use
24	**What conditions are best for decay?**	Lots of oxygen, warm temperatures, moisture
25	**What is the “population” of an organism?**	The number of that organism in a particular area

Unit 5: Ecology

26	**What is interdependence?**	How organisms depend on each other for survival
27	**What is bioaccumulation?**	How toxic materials can build up in a food chain
28	**What is an adaptation?**	A way in which an organism suits its environment
29	**Name two types of adaptation**	Physical and behavioural
30	**Give an example of a physical adaptation**	Sharp teeth, camouflage, foot surface area, spikes
31	**Give an example of a behavioural adaptation**	Making nests to shelter offspring (children), huddling for warmth, rolling into a ball, courtship displays
32	**What is competition?**	Where organisms have to struggle against each other for resources
33	**What resources do organisms often compete over?**	Food, water, space, light, mates
34	**What is a species?**	A group of organisms that can breed and produce fertile offspring
35	**What is a mutation?**	A change to an organism's DNA
36	**What can mutations result in?**	Slight changes to an organism's adaptations
37	**What is natural selection?**	How organisms with the most useful adaptations are more likely to survive and reproduce
38	**What is evolution by natural selection?**	That over time natural selection can result in large changes to organisms and new species arising
39	**Give two sources of evidence for evolution**	The fossil record, bacterial resistance
40	**What does the fossil record show?**	That over time species have changed physically
41	**What is bacterial resistance?**	How bacteria become resistant to antibiotics
42	**What is extinction?**	When an entire species dies out
43	**Name two things that can cause extinction**	New predators, new diseases, changes to habitat, more successful competitors, catastrophic events (like volcanoes or asteroid impacts)
44	**How can scientists estimate population size?**	Using quadrats
45	**What is a pyramid of numbers?**	A chart showing how many of each organism live in an area
46	**What is classification?**	How scientists put different organisms in groups
47	**What are the seven classification levels?**	Kingdom, phylum, class, order, family, genus, species
48	**What are the five chordate groups?**	Mammals, fish, birds, reptiles, amphibians
49	**What is biodiversity?**	The variety of different species in an area
50	**Why is biodiversity important?**	Moral reasons, species may be useful to us, protects food supply, limits large changes to food chains and webs
51	**How do scientists try to maintain biodiversity?**	Gene banks, protection of habitats, breeding programmes

Unit 6: 8PEa Electricity

1	**What do we call a closed loop which can carry electricity?**	A circuit
2	**How do we count electrons?**	In coulombs
3	**What is current?**	How quickly coulombs of electrons are flowing through a circuit
4	**What is the unit and unit symbol for current?**	Amps (A)
5	**What does 1A represent?**	One coulomb passing a point per second
6	**Which particle transfers energy around a circuit?**	Electrons
7	**Where do electrons in a circuit get energy from?**	A power supply
8	**Name two power supplies**	Electrical cell/battery, mains power
9	**What is a battery?**	Two or more cells connected together (in series)
10	**What is potential difference?**	The amount of energy each coulomb of charge transfers
11	**What is the unit and unit symbol for potential difference?**	Volts (V)
12	**What happens to the current when potential difference increases?**	It increases
13	**What is resistance?**	How electrons can be slowed down by the circuit
14	**What is the unit and unit symbol for resistance?**	Ohms (Ω)
15	**What causes resistance?**	Electrical devices
16	**What is a device?**	Something which transfers energy from the circuit to the surroundings
17	**What is a switch?**	A place in the circuit where it can be broken
18	**Name 3 electrical devices that transfer energy in a circuit**	Lamp, motor, resistor

Unit 6: 8PEa Electricity

19	**How do lamps transfer energy to the surroundings?**	Waves (and heating)
20	**How do motors transfer energy to the surroundings?**	Mechanical working (and heating)
21	**How do resistors transfer energy to the surroundings?**	Heating
22	**What equation links potential difference, resistance and current?**	V/R = I
23	**How do we measure the current in a circuit?**	With an ammeter
24	**How are ammeters connected to a circuit?**	As part of the circuit (in series)
25	**How do we measure the potential difference across a device?**	With a voltmeter
26	**How are voltmeters connected to a circuit?**	Across (on the back of) specific devices (in parallel)
27	**What are the two main types of circuit?**	Series and parallel
28	**What are series circuits made of?**	A single loop
29	**How does current change in a series circuit change?**	It doesn't
30	**How does potential difference in a series circuit change?**	It is shared between devices (It drops across each device)
31	**What are parallel circuits made of?**	Different loops and junctions
32	**How does current in a parallel circuit change?**	Splits at junctions
33	**How does potential difference in a parallel circuit change?**	Same across each loop
34	**Give an example of a conductor of electricity**	Copper, graphite (any metal)
35	**Give an example of an insulator of electricity**	Plastic, wood, rubber (most non-metals)

Unit 6: 8PEa Electricity

36	**What is a field?**	The area around an object where a non-contact force acts
37	**Give three examples of fields**	Gravitational, magnetic, electric
38	**What are the two ends of a magnet called?**	North pole and south pole
39	**What happens when opposite magnetic poles are brought together?**	They attract
40	**What happens when the same magnetic poles are brought together?**	They repel
41	**What is a magnetic substance?**	Something which is attracted to magnets
42	**Name two magnetic substances**	Iron, nickel (and cobalt)
43	**What is the direction of a magnetic field?**	From north to south
44	**What are electromagnets formed from?**	A coil of wire round an iron core
45	**In what two ways can an electromagnet be made stronger?**	Add more turns on the coil, increase current
46	**What are the three options for charge?**	Positive, negative, neutral
47	**What is the (relative) charge on a proton, electron and neutron?**	Proton: +1, electron: -1, neutron: 0
48	**What happens when the same charges come into contact?**	They repel
49	**What happens when opposite charges come into contact?**	They attract
50	**What is an electric field?**	The field around a charged object
51	**How can objects gain a static charge?**	By being rubbed together
52	**How do electrons cause objects to have a static charge?**	They can move from one object to another
53	**If an object gains electrons, what charge does it have?**	Negative
54	**If an object loses electrons, what charge does it have?**	Positive
55	**What can a large build-up of static charge cause?**	Electric shock

Unit 7: Materials and the Earth

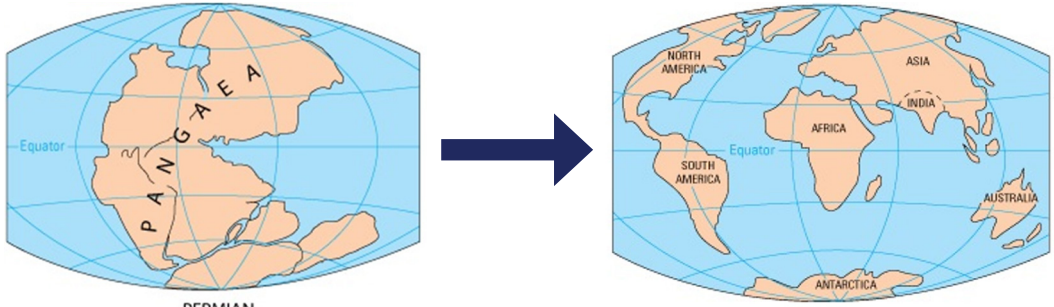
1	What are the three main layers of Earth?	Crust, mantle, core
2	Which layer of Earth is made of solid rock?	Crust
3	Which layer of Earth flows very slowly?	Mantle
4	Which layer of Earth is solid metal?	Core
5	Why can the crust move?	It has tectonic plates (which are moved by the mantle)
6	What are the three types of rock?	Sedimentary, igneous, metamorphic
7	How do sedimentary rocks form?	Smaller bits of other rocks get stuck together
8	Give two properties of sedimentary rocks	Crumbly, form in layers
9	How do igneous rocks form?	When molten (liquid) rock cools and solidifies
10	How do metamorphic rocks form?	When rocks are compressed or heated within Earth's crust
11	In what kind of rock are fossils found?	Sedimentary
12	What is a porous rock?	A rock which absorbs water
13	What are the two main gases in Earth's atmosphere?	Oxygen and nitrogen
14	What approximate % of Earth's atmosphere is nitrogen?	78%
15	What approximate % of Earth's atmosphere is oxygen?	21%
16	Name two gases other than oxygen and nitrogen that are in Earth's atmosphere	Carbon dioxide, water vapour
17	How is carbon dioxide removed from the atmosphere?	Photosynthesis
18	In what three ways is carbon dioxide added to the atmosphere?	Respiration, combustion of fossil fuels, decomposition
19	Why is adding more carbon dioxide to the atmosphere a problem?	It causes global warming (which causes climate change)
20	How has the amount of carbon dioxide in the atmosphere changed over the last 200 years?	Increased rapidly
21	Why has the amount of carbon dioxide in the atmosphere increased rapidly over the last 200 years?	Humans began burning fossil fuels

Tectonics

Key Processes:

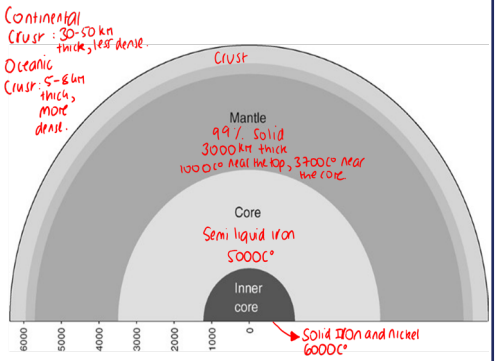
Tectonic Drift

- The earth was initially a super continent called Pangea 250 million years ago.
- Plates move a few centimetres a year, but this adds up to thousands of kilometres over millions of year.
- This movement is called Tectonic Drift.

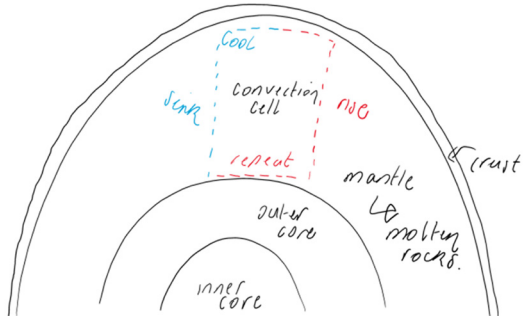


Key Diagrams:

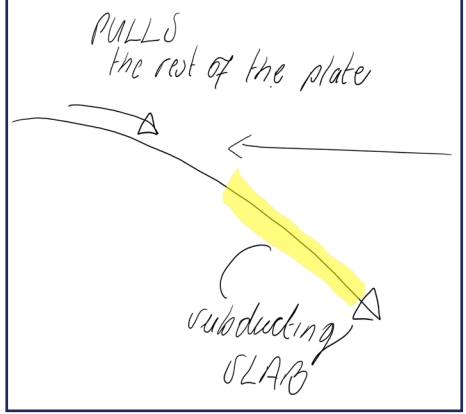
Layers of the Earth



Convection Currents



Slab and Pull Theory



Tectonics

Key Processes:

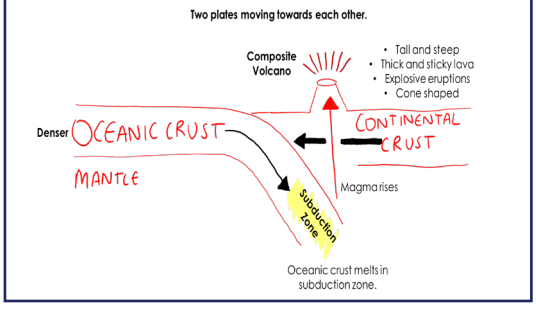
Why do people live in areas of tectonic hazards?

1. Creates tourism (e.g. Vesuvius in Italy).
2. The ash makes the land fertile meaning jobs for farmers.
3. Friends and family may live nearby.
4. Some people cannot afford to live elsewhere.

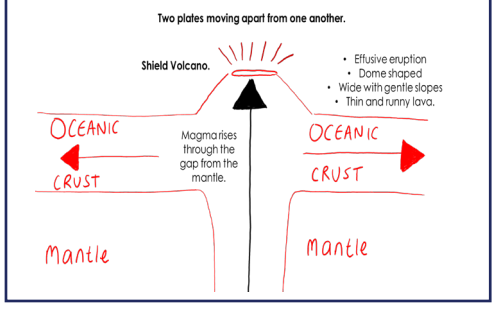
Predicting and Preparing for Volcanic Eruptions	Predicting and Preparing for Earthquakes
Tiltmeters used to measure change in shape.	Use seismometers to identify irregularities in tremors.
Spectrometers to measure sulphur dioxide emissions.	Measure radon gas that will appear as cracks in the ground.
Evacuation and exclusion zones around the volcano.	Retrofit existing buildings with cross bracings.
Ensure medical, food and water supplies are stocked.	Practice earthquake drills.

Key Diagrams:

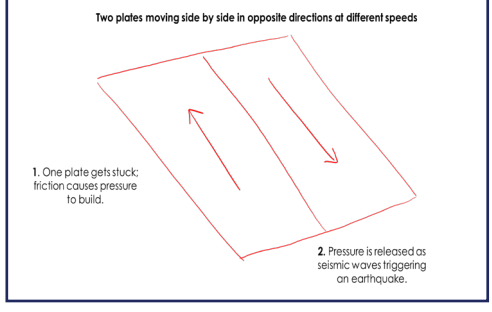
Convergent Margin



Divergent Margin

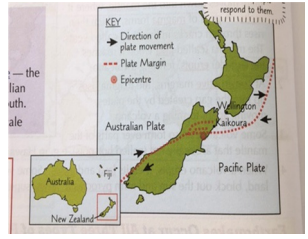


Conservative Margin



Application:

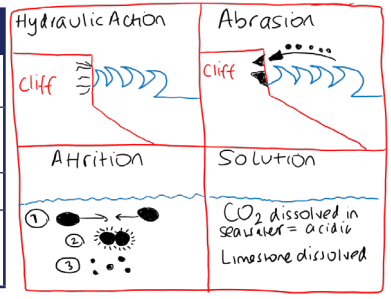
Earthquake location Both 7.8 magnitude	LIC Gorkha Nepal, 2015 GDP per capita: US$ 690	HIC Kaikoura, New Zealand 2016: GDP per capita: US$ 40,331
Primary effects	9,000 people died, 20,000 injured.	2 died and 50 injured.
Secondary effects	A lack of clean water led to 13 dying from Typhus.	100,000 landslides blocked roads and rail.
Short term responses	Search and rescue teams, water and medical support arrived quickly from India and China.	200 of the most vulnerable were evacuated from Kaikoura in 24 hours.
Long term responses	The road from Nepal to Tibet was reopened after 2 years.	Most roads and rail systems were repaired within 2 years.



Coasts

Key Processes:

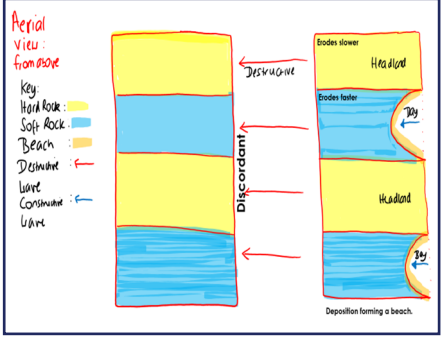
Erosion Types	
Abrasion	Eroded material is hurled or scrapes against the cliff, breaking off rock.
Hydraulic Action	Waves compress pockets of air in cracks in a cliff, causing the crack to widen, breaking off rock.
Solution	Cliffs e.g. chalk dissolve in seawater.
Attrition	Eroded material in the sea, hit into each other breaking down into smaller pieces.



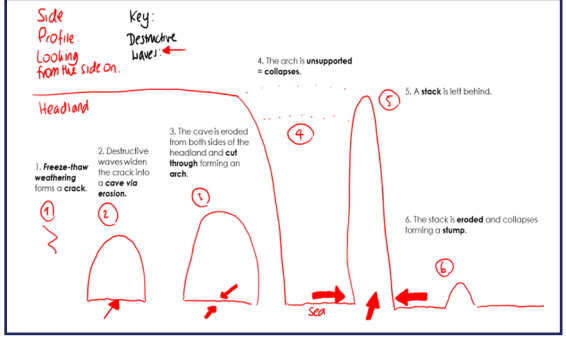
Weathering Types	
Freeze-Thaw Weathering (Mechanical)	Temperature changes causes water to freeze and then melt widening cracks in rocks until they break.
Root Action (Biological)	Seeds fall into cracks in rocks. These germinate and the roots break the rocks open until they break.
Burrowing (Biological)	Animals widen cracks in rocks.
Acid Rain (Chemical Weathering)	Rainwater is slightly acidic due to dissolved CO_2. This reacts with limestone rock causing it to dissolve.

Key Erosional Diagrams:

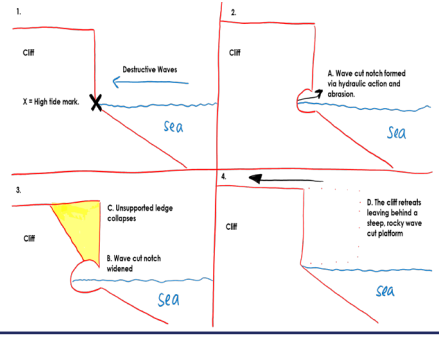
Headland and Bay Formation



Cave, Arch, Stack, Stump Formation



Wave Cut Platform Formation



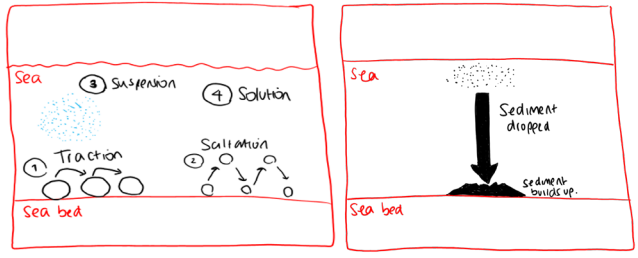
Application: Happisburgh Coastal Management Scheme

Reasons to protect	Coastal Management Strategies	Failures of the scheme
• Rock type – the cliffs are made from less resistant boulder clay (made from sands and clays) which slumps when wet. • Naturally narrow beaches – these beaches give less protection to the coast as they don't reduce the power of the waves. • Powerful destructive waves – waves at Happisburgh travel long distances over the North Sea (so have a long fetch) which means they will increase in energy. The North Sea is eroding the coastline at a rate of 15 metres each year.	• Groynes have been built at Sea Palling to trap sediment transported by longshore drift, creating a wider beach to absorb the power of the waves. • In 2002 4000 tonnes of rock armour were placed in front of the cliffs to absorb wave energy.	• There has been significant loss of grade 1 (important) agricultural land by up to 10m per year. This reduces farmer output, profit and has led to job losses. • In 15 years, 26 seafront homes (e.g. family homes) have been lost and up to 600 more are at threat • In 2011 Happisburgh lost government funding. The coastline is left to be eroded by managed retreat, and residents and business owners are being/have been moved out of the area.

Coasts

Key Processes:

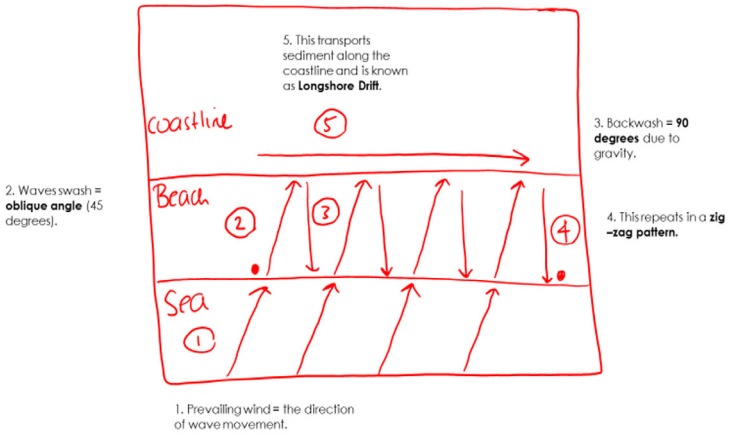
Transportation Types	
1. Traction	Large rocks are rolled along the seabed.
2. Saltation	Smaller rocks are bounced along the seabed.
3. Suspension	Smaller material/sediment is held in the water.
4. Solution	The smallest silt and sediment is dissolved into the water.



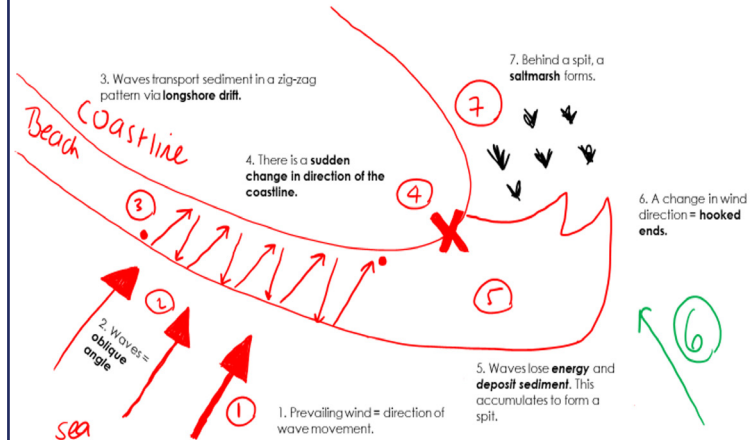
Deposition
Description
Material is dropped by the waves due to a loss of energy and velocity.

Key Depositional Diagrams:

Longshore Drift



Spit Formation

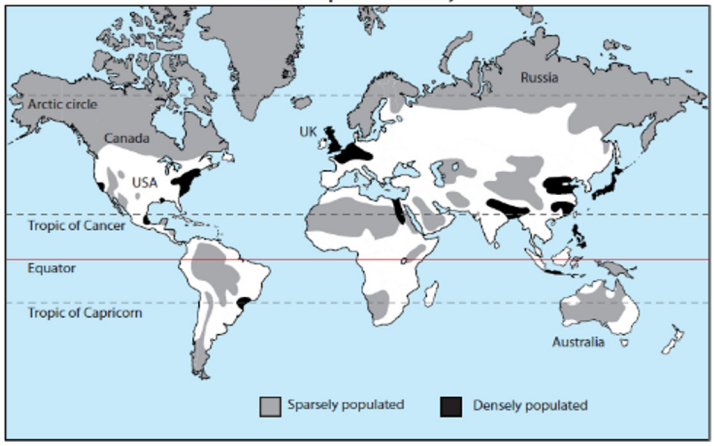


Population and Migration

Key Processes:

- **Sparsely Populated** – Places which contain few people per km sq.
- **Densely populated** – Places which contain many people per km sq.
- **Population density** – The number of people per km sq.

World Population Density



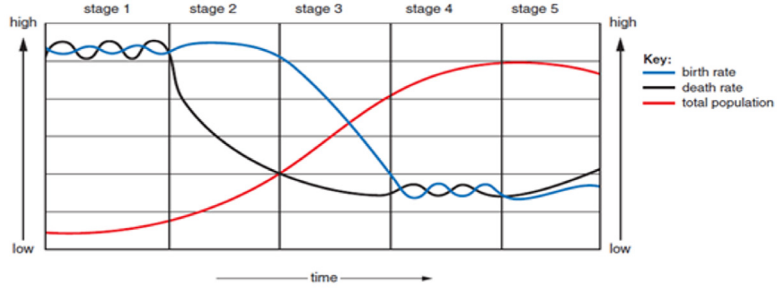
Factors affecting Population Density

Human = Red

Physical = Black

Densely Populated	Sparsely Populated
Pleasant climate	Steep slopes
Fertile soil	Poor soils
Access to infrastructure and services	Lack of access to infrastructure
Access to high paying jobs	Low paying, low skill jobs

Key Diagrams: The Demographic Transition Model



Stages of the DTM

Stage 1:
- Limited medical care + poor diet = high infant mortality.
- Strong religious values = high birth rate.
- Example: Indigenous Tribes in the Amazon Rainforest.

Stage 2:
- Increase in access to basic medical care = decreased infant mortality and death rate.
- Diets also improved.
- Birth rate remains high as children are needed to work on farms.
- Birth rate also remains high as religion plays a significant role in society.
- Example: Afghanistan.

Stage 3:
- Decrease in birth rate as women are able to access education.
- Decrease in birth rate as religion loses importance in society and contraception becomes available.
- Death rate continues to decline due to improvements in diet, healthcare and physical fitness.
- Total population continues to increase as there is natural increase.
- Example: India.

Stage 4:
- Birth rate remains low and fluctuating as women put careers before having children.
- Death rate remains low due to improvements in healthcare, diet and physical fitness.
- Total population reaches its peak and begins to fall.
- Example: The UK.

Stage 5:
- Death rate is greater than birth rate = natural decrease.
- Ageing population due to improvements in healthcare, diet and physical fitness.
- Children are expensive so birth rates continue to fall.

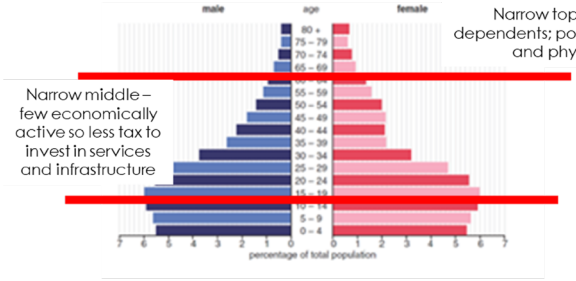
Population and Migration

Population structure means the number / proportion of people in **each age range**, for each **gender**. Population pyramids show the population structure of the country they represent.

There are three groups on a population pyramid:

1. **Economically active** – 16-65 age group, working age and can provide taxes.
2. **Young dependents** – 0-15 age range, rely on the working age for support via taxes.
3. **Elderly dependents** – 65+ age range, rely on the working age for support via taxes.

Developing Nation



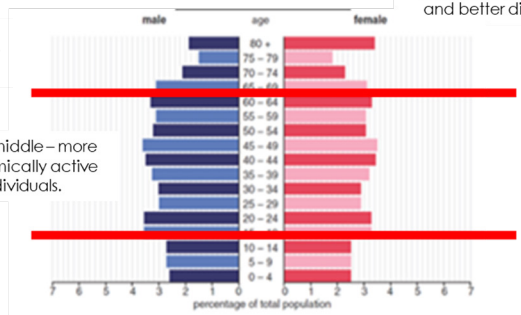
Narrow top – few elderly dependents; poor healthcare, diet and physical fitness

Narrow middle – few economically active so less tax to invest in services and infrastructure

Wide bottom– lots of young dependents due to a lack of contraception, high levels of religiosity and women getting married young.

Developed Nation

Wide top – ageing population due to better healthcare, increasing fitness and better diet.



Wider middle – more economically active individuals.

Narrow bottom– few young dependents due to the expense of raising children and increasing numbers of women putting their careers before starting a family.

Application: The UK's Ageing Population	
Causes	**Impacts**
1. **Better health care** so illnesses are treated with some success. 2. **Better diet** means heart attacks and diseases related to unhealthy eating are on the decline. 3. **Fitness**; the elderly are looking after themselves better than ever before, e.g. attending the gym etc.	1. **2/3s of hospital beds taken** by those over the age of 65, this can increase **waiting times**, putting pressure on the NHS. 2. They receive a **state pension** causing a significant cost for the government. 3. The elderly often **look after grandchildren**, this means that parents do not have to pay **expensive childcare costs**, so parents have more disposable cash.

Population and Migration

Key Processes:

Migration is the movement of people, from one place to another.
International migration is when people move from one country (the source) to another country (the host).

Push factors encourage an individual to leave a place. It pushes them out.

Pull factors attract individuals to a place. It pulls them in.

Application:

Causes of Poland to UK Migration	Consequence for Host Country (UK)	Consequences for the Source Country (Poland)
Poland has always had a culture of mobility. For example, in the nineteenth century hundreds of thousands of Polish people migrated to the United States.	Polish migrants alone contribute £2.5bn in tax every year. This provides the government with more tax to invest in improving services and infrastructure.	Poland gains £1bn in remittances which the Polish government can invest in infrastructure and services. These remittances reduce the amount the UK government can invest in services and infrastructure.
The UK Government offered British citizenship to over 200,000 displaced Polish soldiers post WW2. This meant there was already an established Polish Diaspora in the UK.	About 10,500 Poles work in the NHS. These individuals help to treat sick Britons, increasing life expectancies in the UK.	
Following the end of communism, Poland had high unemployment and low wages. For example, in 2004, unemployment in Poland was 20% - in the UK it was only 4%.	80% of migrants are aged between 18 and 35, so the UK's ageing population is counteracted. 	
In 2004, Poland joined the European Union, giving Polish people the legal right to come, live and work in the UK. The UK was one of only three countries that allowed these new European union migrants to come and work straight away.		

Topic 1: The Renaissance

Timeline

1. Lucretius wrote the poem De rerum natura (On the Nature of Things) **c50 BC**	3. The end of the Roman Empire **c476 AD**	5. Ideas, such as logic, flooded into Western Europe from the Islamic World and were studied by scholars such as John of Salisbury **1100s**	7. Poggio discovered a copy of De rerum natura in a manuscript in a German monastery **1417**	9. Many buildings were re-built in Rome **Early 1500s**
c150 AD 2. Ptolemy wrote his most famous work on astronomy	**762** 4. Baghdad was built and scholars began studying and creating new knowledge at the House of Wisdom	**1330s** 6. Petrarch began searching for original versions of texts from Ancient Greece and Rome	**c1440** 8. The printing press was invented in Germany	**1543** 10. Copernicus published a book containing his model of the universe, showing the Earth orbiting the Sun

Key People

11. Aristotle	An Ancient Greek philosopher.
12. Euclid	An Ancient Greek mathematician.
13. Ptolemy	An astronomer from Alexandria.
14. Lucretius	A philosopher, who wrote De rerum natura at the height of the Roman Empire.
15. Al-Khwarizmi	An Islamic scholar in ninth-century Baghdad who wrote works on maths and astronomy.
16. John of Salisbury	An English scholar, author and bishop in the twelfth century.
17. Petrarch	An Italian scholar and one of the first humanists.
18. Poggio Bracciolini	A humanist scholar who discovered a long-forgotten poem by Lucretius in a monastery.
19. Niccolo Niccoli	A humanist scholar who copied De rerum natura in his angled handwriting.
20. Raphael	A Renaissance artist who decorated the pope's apartments in Rome with classical scenes.
21. Michelangelo	A Renaissance artist who painted the ceiling of the Sistine Chapel in Rome.
22. Copernicus	An astronomer who argued that the Earth orbits the Sun.
23. Galileo	An astronomer and physicist who supported Copernicus' model of the universe.

Key Words

24. Classical antiquity	The period of time when the Mediterranean was dominated by Ancient Greece and the Roman Empire.
25. Humanism	A movement that started in the 14th century, which wanted to re-discover the wisdom of ancient texts and focused more on the human world.
26. Manuscript	A book copied by hand.
27. Monastery	A community of monks living together.
28. Perspective	An artistic technique to represent three-dimensional objects on a two-dimensional surface.
29. Renaissance	The French word for 're-birth', used to describe a renewed interest in the classical period between c1400-1600.

Topic 1: The Renaissance

What Kind of Change Was the Renaissance?	
30. Medieval manuscripts	• Following the end of the Roman Empire, monasteries were the main institutions in Western Europe that cared about books. • Books had to be copied out by hand, usually by monks, in order to be preserved but many pre-Christian texts from the classical period stopped being copied. Therefore, the availability of and interest in classical learning, wisdom and texts declined in Western Europe. • However, some classical texts continued to be studied in cathedral schools in Western Europe, and some arrived in Europe from the Islamic world in Arabic translations.
31. Humanism and Poggio's discovery	• In the 1330s, Petrarch, an Italian scholar, became one of the first people to start searching for original versions of forgotten texts from Ancient Greece and Rome. • Scholars like Petrarch became known as 'humanists' – they increased the amount of interest in classical antiquity and believed that the wisdom contained in classical texts would help them to purify the world and the Church. • Poggio Bracciolini was inspired by Petrarch. In 1417 he discovered a long-lost poem by the Roman poet Lucretius, called De rerum natura (On the Nature of Things). • In his poem, Lucretius described everything in the world as being built from atoms, which randomly collided and joined together to form larger objects. • Lucretius' poem suggested there was no special plan or place for humans in the universe, challenging the teachings of the medieval Church. • Lucretius's poem argued that everything in the world was temporary and would eventually break up into atoms, and so it encouraged people to embrace beauty and pleasure while alive.
32. Developments in knowledge	• In c1440, the printing press was invented in Germany, which made books cheaper and more widely available. Many classical texts, such as the complete works of Aristotle and a textbook version of Ptolemy's ideas, were printed in large numbers, along with new works. • As books became more widely read, scholars began to spot errors in them, correct these errors and so suggest new theories (e.g. Copernicus and Galileo).
33. Renaissance art and architecture	• Wealthy merchants spent money on new palaces, such as those in Venice, which sometimes included Islamic influences in their designs. • Artists were inspired by the classical world, and also mixed new colours using pigments/dyes from the East and used perspective to add depth to paintings. • There was lots of re-building in Rome as the city wanted to emphasise its links with the Roman Empire, and new papal buildings were decorated by Raphael and Michelangelo.

Topic 2: Revolutions In Ideas And Religion: Morebath

Timeline

1509	1517	1520	1533	1534	1536	1547	1553	1558	1570	1574
1. Henry VIII is crowned King of England	2. Martin Luther publishes his 95 theses stating why indulgences are wrong	3. The Pope issues a papal bull asking Luther to take back his views. Luther throws it into flames	4. Henry VIII secretly marries Anne Boleyn	5. The Act of Supremacy makes Henry the Head of the Church and officially marks the break with Rome	6. Dissolution of the monasteries. Henry VIII issues a set of injunctions in Morebath	7. Edward VI is crowned King of England aged 9	8. Mary I is crowned Queen of England	9. Elizabeth I is crowned Queen of England	10. The Pope excommunicates Elizabeth I	11. Sir Christopher Trychay dies

Key People

12. Anne Boleyn	Henry VIII's second wife, who he divorced Catherine of Aragon for.
13. Catherine of Aragon	Henry VIII's first wife, who he divorced because she wasn't bearing sons.
14. Edward VI	Protestant King of England 1547-1553.
15. Elizabeth I	Protestant Queen of England 1558-1603.
16. Henry VIII	King of England 1509-47 who broke with Rome.
17. Martin Luther	A German monk who helped start the Reformation.
18. Mary I	Catholic Queen of England 1553-58.
19. Professor Eamon Duffy	Historian who studied Sir Christopher's accounts.
20. Sir Christopher Trychay	Morebath's village priest from 1519-1574.

Key Words

21. Ale	A village party where ale (beer) was the main drink.	**30. Morebath**	A village in Devon, in South-West England.
22. Altar	A table used for religious ceremonies.	**31. Papal bull**	A formal announcement from the Pope.
23. Break with Rome	When Henry VIII made himself Head of the Church of England in 1534.	**32. Protestant**	A form of Christianity which emerged during the 1500s in protest against Catholicism.
24. Catholic	A major branch of Christianity, led by the Pope in Rome.	**33. Puritan**	An extreme Protestant.
25. Diet	A meeting.	**34. Recant**	Take back.
26. Heir	The person who is next in line for the throne.	**35. Reformation**	A movement to reform the Christian Church, which began with Martin Luther in Germany.
27. Indulgence	A forgiveness of one's sins purchased from the medieval Catholic Church.	**36. Store**	Village organisations that raised money for the upkeep of the Church, saints' images and candles.
28. Injunctions	Official order that prevents something.	**37. Vestment**	Garment worn by Christian clergymen, colourful and richly decorated for Catholics.
29. Middle Way	Elizabeth's religious settlement (compromise). It returned England to Protestantism but allowed Catholics to worship in secret.		

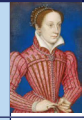
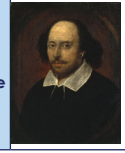
Topic 3: Elizabethan England

Timeline

1492	1559	1568	1572	1577	1587	1600
1. Christopher Columbus set off in search of the Indies on behalf of the Spanish monarch. He 'found' the Caribbean.	3. Elizabeth was crowned Queen of England (she ascended the throne in 1558)	5. Elizabeth's Catholic cousin, Mary Stuart, arrived in England	7. Francis Drake set out to Panama with plans to steal Spanish gold and silver	9. Drake and Diego set out together to circumnavigate the globe.	11. Mary Stuart was executed, which angered many Catholics in England and Europe.	13. Sultan Ahmad al-Mansur sent a delegation from Morocco to England, led by Abd el-Ouahed ben Messaoud to convince Elizabeth that England and Morocco should invade Spain together

1493	1560s onwards	1570	1573	1585-86	1588
2. The Pope gave the Spanish permission to seek out and conquer any lands in this 'New World' belonging to those who weren't Christian	4. English privateers started to raid Spanish shipping and port towns in the Caribbean	6. The Pope issued a papal bull excommunicating Elizabeth, prompting more plots against her	8. Drake and Diego captured over 150,000 pesos of Spanish silver and gold during a raid on Nombre de Dios	10. First failed attempt to colonise Roanoke Island. In 1587, there was a second attempt which was found to have failed in 1590 – after all the colonists mysteriously disappeared!	12. The Spanish Armada was defeated by the English

Key People

14. Abd el-Ouahed ben Messaoud	 The ambassador Ahmad al-Mansur sent to England as part of the Morocco delegation in 1600.	**20. Mary Stuart**	 Elizabeth's Catholic cousin, who also had a claim to the English throne.
15. Cimarrons	A group of enslaved Africans who had escaped and who Drake worked with to capture a large amount of gold and silver from the Spanish.	**21. Philip II**	The king of Spain during Elizabeth's reign.
16. Diego, the Circumnavigator	A man who joined Drake's crew in Panama and later accompanied him on his circumnavigation voyage.	**22. Sultan Ahmad al-Mansur**	 The ruler of Morocco at the end of Elizabeth's reign.
17. Francis Drake	An English privateer who worked for Elizabeth I and circumnavigated the globe.	**23. Walter Raleigh**	English sailor and explorer, and a noted favourite of Queen Elizabeth I.
18. Hugh O'Neill	A Gaelic chieftain who fought against the English for control of the whole of Ireland in the Nine Years' War.	**24. William Shakespeare**	 An English playwright who used stories from North Africa and the Islamic world as inspiration for his plays.
19. Mancheo and Wanchese	Two young indigenous leaders who were brought to England and helped create an English-Algonquian dictionary.		

Key Words

25. Armada	A large fleet of warships.
26. Circumnavigation	To travel completely around, usually by sailing.
27. Colonisation	A process where a government or a group of people take control of another country to make it part of its empire.
28. Colony	A country or area controlled by another country. A colony is part of an empire.
29. Delegation	A body of representatives usually sent to negotiate with another country or leader.
30. Empire	A country or area controlled by another country. A colony is part of an empire.
31. Indigenous people	People who inhabited land before it was colonised.
32. Privateer	Pirates with permission from the Queen.
33. Roanoke Island	An island just off the coast of North America, inhabited by the Algonquian people in the 16th century.

Topic 4: The English Civil War

Timeline

1. James I became King of England	3. Charles I became King of England	5. Charles I dissolved Parliament for 11 years until 1640 (Personal Rule)	7. Charles I made his people pay Ship Money (inland areas from 1635)	9. Taxpayers' Strike	11. Parliament issued Grand Remonstrance	13. Parliament passed the Nineteen Propositions	15. Trial and execution of Charles I	17. Oliver Cromwell became Lord Protector
1603	**1625**	**1629**	**1634**	**1639**	**1641**	**June 1642**	**1649**	**1653**

1605	**1625**	**1633**	**1637**	**1640**	**Jan 1642**	**Aug 1642**	**1649**	**1660**
2.The Gunpowder Plot almost destroyed Parliament	4. Charles married Henrietta Maria	6. Charles I and Archbishop Laud start Arminian reforms	8. Archbishop Laud introduced his prayer book in Scotland	10. Charles I had to recall Parliament to pay for the war with Scotland	12. Charles I stormed into the House of Commons to arrest five MPs	14. The English Civil War started	16. England became a Republic (The Commonwealth)	18. Charles II was crowned King, beginning the Restoration

Key People

19. James I	The first Stuart King of England, who came to the throne after the death of Elizabeth I.
20. Charles I	The second Stuart King of England, executed by Parliament following the Civil War.
21. Henrietta Maria	A Catholic French princess, who married Charles.
22. Lucy Hay	A close friend of Henrietta Maria, who switched sides repeatedly during the English Civil War.
23. William Laud	Arminian Archbishop of Canterbury.
24. Charles II	The King of England following the Restoration.

Key Words

25. Absolutist	A ruler who has absolute power over their people.	**31. Parliament**	The group of people who make or change a country's laws.
26. Arminian	Protestants who worshipped in a similar way to Catholics.	**32. Prayer Book**	A book containing formal prayers to be used in worship.
27. Civil War	A war between people from the same country.	**33. Radical**	Somebody who wants big changes to government or society.
28. Divine Right of Kings	The belief that the monarch received their right to rule directly from God.	**34. Republic**	A country that is not ruled by a monarch.
29. Impeachment	Parliament accusing a government official of abusing the power of their position.	**35. Restoration**	The return of the monarchy to England with Charles II's coronation in 1660.
30. Member of Parliament	The person in Parliament who represents the people from one area.	**36. Treason**	A crime against your own people, nation or monarch.

Topic 5: Transatlantic Slavery

Timeline

1607-1732	1768	1776	1781	1788	1789	1791	1797	1804	1807	1831	1833	1838
1. British colonies were established in North America. Britain became the dominant European trader of enslaved people throughout 17th-19th centuries	2. Granville Sharpe, an abolitionist, won the legal case of Jonathan Strong	3. The British colonies in North America declared independence and formed the USA	4. Enslaved people who had become sick were thrown off the slave ship Zong	5. Petitions flooded Parliament to abolish the slave trade	6. Olaudah Equiano wrote his life story. His campaign for slave ship Zong was successful	7. Haitian/St Domingue rebellion led by Toussaint L'Ouverture	8. William Wilberforce joined 12 opponents of slavery, including Thomas Clarkson. He made speeches in Parliament	9. Haiti declared independent state	10. The slave trade was abolished in the British Empire by Parliament. People could not be bought or sold although people who were already enslaved remained the 'property' of their masters	11. Enslaved people in Jamaica go on strike in protest. Plantation owners respond with violence	12. Slavery was abolished in the British Empire, but only children under the age of 6 were freed immediately	13. End of the apprenticeship clause, which bound formerly enslaved people to their former owners for up to six years after abolition. Many enslaved people within British colonies were finally given their freedom

Key People

14. Adam Smith	Leader of The Enlightenment movement, he was an economist and a philosopher from Scotland. He is known as the 'father of capitalism' and believed that free market economies were required for financial success.
15. John Newton	Worked on slave ships as a young man. After a Christian conversion he renounced the slave trade and became a prominent abolitionist. He died shortly after the 1807 Abolition Act was passed in parliament.
16. Olaudah Equiano	A formerly enslaved person who had fought repeatedly for his freedom. He wrote an autobiography in 1789 called 'The interesting narrative of the life of Olaudah Equiano'.
17. Thomas Clarkson	A key campaigner for abolition. He formed the Society for the Abolition of the Slave Trade in 1787. After the Slave Act was passed in 1807, he continued campaigning in the Americas to abolish slavery there.
18. Toussaint L'Ouverture	Leader of the St Domingue, or Haitian, rebellion.
19. William Wilberforce	MP between 1784-1812 who proposed multiple abolition bills.

Topic 5: Transatlantic Slavery

Key People			
20. Abolition	The act of officially ending or stopping something, e.g. slavery.	**31. Petition**	A formal written request typically with many signatures appealing to authority about a particular cause, e.g. slavery.
21. Abolitionists	The leading campaigners against slavery.	**32. Plantation**	A large estate on which crops such as coffee, sugar, tobacco and cotton are grown.
22. Boycott	To stop buying or using goods as a form of protest.	**33. Propaganda**	Information or ideas, which are often selective, used to make people believe something .
23. Campaign	To work in an organised way towards a common goal, usually a political or social one.	**34. Resistance**	Refusing to accept something and challenging it within their means, e.g. cultural resistance.
24. Colony	A country or area under full or partial control of another country and settlers from that country.	**35. Slave auctions**	A place where enslaved people were traded to the highest bidder.
25. Dehumanisation	Any thought or act that regards a person as 'less than' human, which enslaved Africans heavily resisted.	**36. Slave rebellions**	An armed uprising by enslaved people against the plantation owners and the colonising authorities.
26. Empire	A large group of countries ruled over by a single monarch or sovereign state, e.g. The British Empire, USSR, The Roman Empire.	**37. The Americas**	A broad geographical term, which includes the North (USA after 1776) and South America and the Caribbean Islands, known as The West Indies.
27. Free Market	An economic system in which prices are determined by unrestricted competition by private businesses responding to supply and demand.	**38. The Enlightenment**	A European intellectual movement of the late 17th and early 18th centuries emphasising reason and individualism over tradition. Influenced by philosophers such as Adam Smith.
28. Interpretation	Historians' construction of the past as a way of explaining an event or period, using contemporary sources.	**39. Trade triangle**	A three-point trade process, from the transportation of commodities to West Africa, enslaved Africans to The Americas and raw materials to Britain.
29. Middle Passage	The sea journey undertaken by slave ships from West Africa across the Atlantic Ocean to The Americas.	**40. Transatlantic slave trade**	The transportation by slave traders of enslaved African people, to the Americas, from the 16th to the 19th centuries.
30. Overseer	The person who, on large plantations, directed the daily work of the enslaved workers. They were usually a white person.		

Topic 6: The Industrial Revolution

Timeline				
1. Thomas Newcomen developed the first steam engine, which provided power by burning coal to produce steam	3. James Watt and Matthew Boulton improved the steam engine	5. Parliament passed the Great Reform Act	7. Approximately 53,000 died from a cholera epidemic	9. The government asked Joseph Bazalgette to build a sewer system
1712	**1770s**	**1832**	**1848 - 1849**	**1858**
1764	**1819**	**1833**	**1858**	**1888**
2. James Hargreaves invented the Spinning Jenny, which could spin the same amount of cotton as eight workers	4. Peterloo Massacre	6. Parliament passed the Factory Act	8. The Great Stink	10. Match Girls' Strike

Key People	
11. Annie Besant	A middle-class campaigner, who wrote an article about the conditions at the Bryant & May factory.
12. Factory foreman	A worker who supervised and directed other workers.
13. Henry Hunt	The person who wanted to give a speech about Parliamentary reform before the Peterloo Massacre.
14. John Snow	The first person to make the connection between contaminated water and cholera.
15. Match Girls	The workers at the Bryant & May factory who went on strike.
16. Members of Parliament (MPs)	A representative of a constituency in Parliament, who helps to make and change laws.
17. Piecer	A child worker made to fix snapped threads in a cotton mill.
18. Scavenger	A child worker made to crawl below spinning machines to collect loose cotton.

Key Words	
19. Borough	An area which is represented by an MP in parliament. People in the borough vote for who they want to be their MP.
20. Cotton mill	A factory with machines for spinning or weaving to make cloth from cotton.
21. Electorate	The group of people who have the right to vote in elections.
22. Middle class	The group of people who would employ others to work for them (e.g. factory owner).
23. Strike	A refusal to work by a group of people in order to highlight an issue with their employer e.g. poor working conditions.
24. Suffrage	The right to vote in elections.
25. Trade union	An organisation of workers who fight for better pay, rights and conditions for workers.
26. Working class	The group of people who work in return for wages, usually in manual or industrial work (e.g. in factories).

Topic 6: The Industrial Revolution

Key Words	
20. Borough	An area which is represented by an MP in parliament. People in the borough vote for who they want to be their MP.
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25. Scavenger	A child worker made to crawl below spinning machines to collect loose cotton.
26. Sewer	An underground tunnel for carrying away human waste and waste material.
27. Trade Union	An organisation of workers who fight for better pay, rights and conditions for workers.
28. Strike	A refusal to work by a group of people in order to highlight an issue with their employer e.g. poor working conditions.
29. Protest	A public expression of your objection/disapproval of something.
30. Suffrage	The right to vote in elections.
31. MP	A Member of Parliament who represents a constituency.
32. Working Class	The group of people who work in return for wages, usually in manual or industrial work (e.g. in factories).
33. Middle Class	The group of people who would employ others to work for them (e.g. factory owner).

What was the Industrial Revolution?	
34. Agriculture	New inventions meant that farms could grow more food using fewer workers.
35. Population	The population of Britain increased rapidly, increasing the demand for goods.
36. Technology	New machines and technology, such as the steam engine, were invented so goods could be manufactured more quickly.
37. Factories	Goods began to be manufactured in factories using machines, rather than by hand in the home.
38. Urbanisation	Many people moved to towns and cities to work in the factories. London grew from 1 million people in 1810 to 7 million people by 1911, making it the largest city in the world.
39. Raw materials	Deep coalmines were dug to provide enough coal to power steam engines.
40. Transport	Canals and railways were developed to transport raw materials and manufactured goods around the country.

Topic 7: The British Empire

Timeline						
1. East India Company granted a Royal Charter **1600**	3. The First Fleet of 11 convict ships reaches 'Australia' **1788**	5. Victoria becomes Queen of the UK **1837**	7. The Great Exhibition is held in Hyde Park, London **1851**	9. Sir Walter Mildmay founded Emmanuel College in Cambridge **1858**	11. British Army occupies Egypt **1882**	13. Death of Queen Victoria **1901**
1770 2. Captain Cook claims 'Australia' for Britain	**1820s-1832** 4. Violent conflict between British colonists and Aboriginal Tasmanians which resulted in near-destruction of the Aboriginal Tasmanians	**1845** 6. The Irish Potato Famine begins	**1857** 8. The Indian Rebellion begins in Meerut	**1876** 10. Queen Victoria becomes Empress of India	**1899** 12. The start of the Boer War	

Key People	
14. James Cook	British explorer, navigator and colonist who mapped 'Australia's' eastern coastline.
15. Joseph Banks	Botanist on board the Endeavour who studied Australia's plants and wildlife.
16. Robert Clive	Officer in the East India Company who became Governor of Bengal Province.
17. Cecil Rhodes	Businessman and politician in southern Africa, and keen supporter of Empire.
18. Mathinna	Young Aboriginal girl whose drawing has recently been discovered in the archives of the British Museum. Her story reveals to us how Aborigines of 'Australia' experienced British colonialism in the 19th century.
19. Rani Lakshmibai	Indian queen of the state of Jhansi, northern India, who led the rebellion against British rule of India in 1857.
20. John Pope-Hennessy	British MP in the 19th century who was an Irish Catholic. He was an outspoken opponent of Britain's actions during the Indian Rebellion but then later became a Governor of the British Empire in Mauritius.

Topic 7: The British Empire

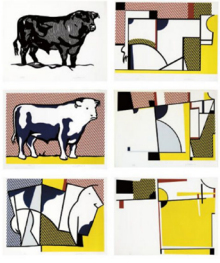
Key People			
21. Aborigine	Nomadic hunter-gatherer population native to 'Australia' and nearby islands.	**34. Irish Republican Brotherhood**	Secret organisation formed by Irish nationalists.
22. Admiral	Highest ranking naval officer, usually in command of a fleet.	**35. Indigenous**	Originating in a particular place.
23. Bengal	Wealthy province in northeast India, where the British built their factory called Calcutta.	**36. Maharajas**	Indian Princes who ruled their states in partnership with the British Empire.
24. Civil service	The permanent staff of a government, responsible for administering the country.	**37. Mughals**	Dynasty originally from Central Asia that ruled much of India from the 16th to 19th century.
25. Colony	A country or area under full or partial control of another country and settlers from that country.	**38. Mutiny**	Rebellion against authority, often soldiers or sailors against their commanding officers.
26. Dependent colony	A colony in which a small number of officials rule a large native population.	**39. Nawab**	Prince granted a province of India to rule on behalf of the Mughal Emperor.
27. East India Company	Private company formed in 1600 with rights to trade between India and England.	**40. Patriotism**	Showing strong support for your own country.
28. Endeavour	The ship that Captain Cook sailed on his first voyage to the lands that the British named 'Australia'.	**41. Penal colony**	A remote settlement used to exile convicted criminals from the general population.
29. Exports	Goods or services sold to other countries.	**42. Press gangs**	Groups who would travel Britain forcing men to enlist in the Army or Navy.
30. Factories (colonial)	Coastal trading posts where merchants can do business in foreign lands.	**43. Puppet government**	Situation where a country's ruler is controlled by an outside power.
31. Great Exhibition	International exhibition celebrating industry and culture held in 1851.	**44. Raj**	Term for British ruled India from 1858 until Indian Independence in 1947.
32. Home Rule	Policy advocating that Ireland regains its own government, and own Parliament.	**45. Settlement colony**	Colony in which native population is outnumbered by foreign arrivals.
33. Imports	Goods or services brought in from other countries.		

Abstraction, 21st Century Artists & Locality

Abstraction In Art: Abstract art is art that does not attempt to represent an accurate depiction of a visual reality but instead uses shapes, colours, forms, and gestural marks to achieve its effect.

1. **What is abstraction in art look like?**
2. **What is Cubism?**
3. **How did Picasso respond to the situation in Guernica with his Art?**

The use of Abstraction by famous 20th Century artists



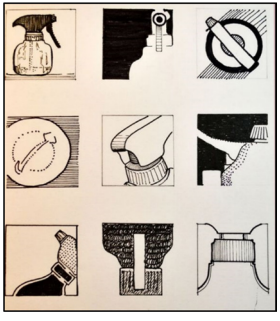
Roy Lichtenstein

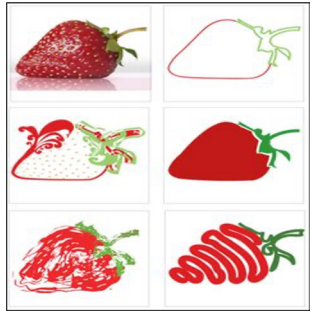
'Guernica' and 'The Weeping Woman'

Picasso

Jean Du Buffet

How do artists create abstract Art?

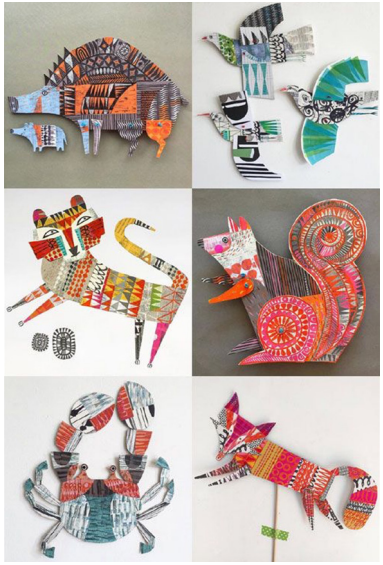




Roy Lichtenstein created the image of the bull in an abstract way; here are some examples of other images deconstructed to become 'abstracted from reality'.

The Guernica image above is a series of scenes showing the horror of war. How many can you find in the image? Picasso also painted Dora Marr's response to the bombing of Guernica. She is still recognisable as a 'Weeping woman'. Jean Du Buffet used monochrome colour to create a self portrait. Simple but highly effective!

Exploring the Work of 21st Century Artists: Clare Youngs



All artists are inspired by nature. We will be doing some observational drawing using a variety of materials techniques and processes. We will be printing onto different papers to create texture for our response to Clare Youngs

Clare Youngs is a collage artist, who makes colourful and playful artworks from cut paper. Each piece of paper used is hand painted or printed with textures and pattern work and then cut and pieced together to make the finished piece. Clare trained as a Graphic Designer and worked in the industry, in London design groups, before branching out into a more art-based career. Clare's work has a strong graphic feel about it, which directly stems from her background in design.

Pattern is also an important feature in many of her artworks. She uses pen and ink, paint, and printing methods to produce an endless variety of patterns to use. Clare will often print a texture over a pattern to add another layer and depth to the finished piece. Clare's work has a retro feel to it. Her love of mid-century design, especially textiles, and children's book illustration has been an influence when developing her own style. But really she is inspired by anything and everything!

Locality – Living in London: Ruth Allen

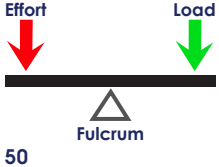
Ruth Allen graduated in 1997 with a degree in textiles and illustration. She is currently based in Stafford where she works from her home studio and teaches locally at a Residential Arts Centre. Her work is based around the theme of both architecture and interiors. The main inspiration for the ways in which she develops techniques, processes and use of colour comes from the 1950s textile prints and interior design. Her interest in the 1950s has developed over the last ten years and the work of Lucienne Day has formed a vital component in the development of her own art practice.

We will be using Ruth Allen's work as inspiration for our own line drawings from our own locations.

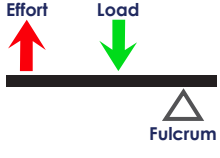
Cam Rotation

Key Terms	
Aesthetics	To describe how a product looks.
Customer	The person a product is designed for.
Environment	To consider how the product affects the nature.
Function	To describe how a product works.
Manufacture	To describe how a product is made.
ACCESSFM	Aesthetics / Cost / Customer / Environment / Safety / Size / Function / Manufacture.
Linear	Moving in a straight line, in one direction.
Reciprocating	Moving in both directions of a straight line
Oscillating	Swinging back and forth in a regular rhythm.
Rotating	Moving in a circular motion.
Cam	A rotating part to, generally, create reciprocating movement.
Follower	A follower contacts the cam to create movement on top of the cam.
Lever	A bar resting on a pivot used to move or lift an object.
Fulcrum	The pivot point in a lever.
Load	The object which is being moved.
Effort	The force being applied to a lever.
Class 1 Lever	Fulcrum in the centre of the lever.
Class 2 Lever	Load in the centre of the lever.
Class 3 Lever	Effort is in the centre of the lever.
123, FLE	How to remember the order of levers. FLE is what is in the middle.

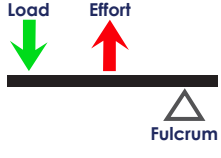
Class 1 Lever



Class 2 Lever

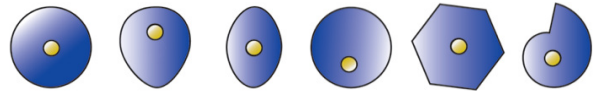


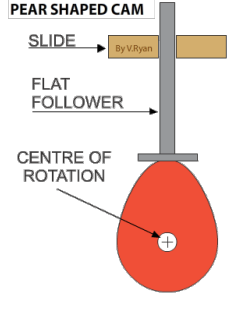
Class 3 Lever



	**Tenon Saw**	To cuts straight lines in wood.
	**Pillar Drill**	To cut a circular hole in timber, polymers and metals.
	**Try Square**	To mark a 90-degree line on a piece of timber.
	**Bench Hook**	To hold timber whilst cutting. Usually to cut across the grain.
	**Woodwork Vice**	To hold timber tightly whilst cutting, shaping or marking.

Cam Types





Health and Safety Rules

Always tie long hair back.

No loose clothing when using machines.

Wear goggles on the pillar drill, disc sander and belt sander. Always wear an apron.

No running in the workshop.

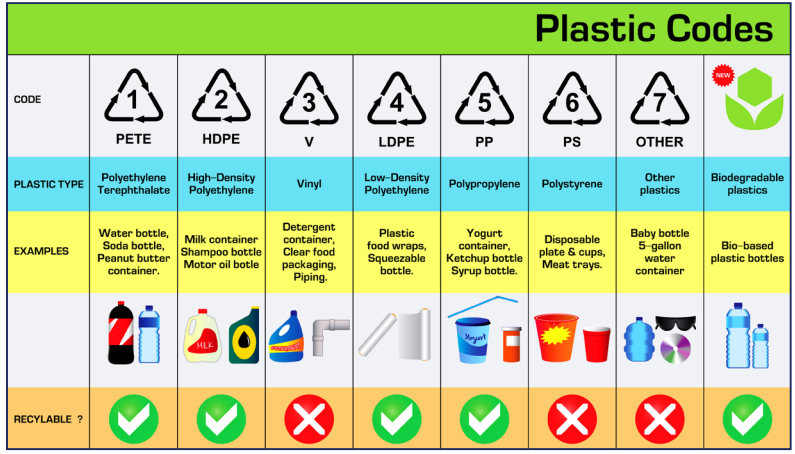
Stay in your place on the workbench unless you are collecting tools or using machines.

Investigating Polymers Rotation

Key Terms	
Polymer	Technical term for what we commonly call **plastics**.
Molecule	A group of atoms **bonded** together.
Polymer Chain	A **chain** of **molecules** found in all polymers.
Thermoforming	A polymer which can be **reheated** and **reformed repeatedly**.
Cross links	**Connections** between polymer chains.
Thermosetting	A polymer which **cannot** be reheated and reformed.
Raw material	The **natural material** from which a product is made.
Extracting oil	**Drilling** into the earth to remove oil.
Fractional distillation	**Separating** oil into different parts, including what is needed to **make polymers**.
Moulding	Turning a polymer into a product shape.
Stock Form	How we **buy** polymers/plastics to use to make products at school e.g. sheet, tubular, square profile.
PVA	Glue used to join timber or paper/board together.
Epoxy Resin	Glue used to join timber/metal/polymers together.
Solvent Cement	Glue used to join polymers together.
Contact Adhesive	Glue used to join timber/metal/polymers together.

Solvent Cement is a very runny clear liquid that works by melting both edges of the Polymer that you want to stick Together. It is difficult to use precisely.

Tensol Glue has a very strong smell and is a very sticky, messy glue. It will stick most polymers together and will also stick wood to polymers. It must be used carefully as it is easy to get the glue all over the surface of the polymer.



	Thermosetting polymers like urea formaldehyde are used to make electrical fittings because they don't catch fire. Even though they are made from oil like thermoforming polymers.
	Clear plastic bottles are made from Thermoforming plastics like Polyethylene Terephthalate or PETE
	Acrylic comes in flat sheets and is another thermoforming polymer. It is used for shop signs.
	Thermoforming plastics like polypropylene and polystyrene can be vacuum formed to make food containers.

Food Science

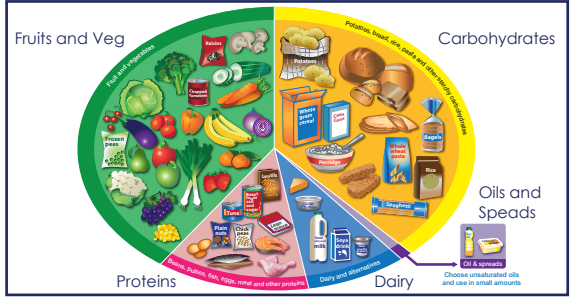
Key Terms

1	**Health and Safety**	Rules you should follow in the kitchen to keep you safe while cooking and preparing food.
2	**Cross-contamination**	When bacteria from raw meat is spread onto vegetables. Puts people at risk of food poisoning. Avoided by using different equipment to prepare and cook raw meat and vegetables.
3	**The Eatwell Guide**	The main source of **nutritional information** in the diet – five food groups: Fruit and vegetables, carbohydrates, protein, dairy and alternatives, oils and spreads. Gives food portion information to people.
4	**Nutritional Values**	The amount of nutrients – **both macro (big) and micro (small)** – that a given dish provides you with.
5	**Macronutrients**	**Nutrients** we supposed to consume in large amounts such as carbohydrates, proteins and fats.
6	**Micronutrients**	**Nutrients** we supposed to consume in small amounts such as vitamins and minerals, including calcium, vitamin A, B, C, D, E and K.
7	**Raising Agents**	Three types: **Chemical** (such as baking powder), **biological** (yeast) and **mechanical** (whisk) used **to get air into food** to change the characteristics. For example, yeast fermenting to release CO_2 to help create air bubbles in bread and make it rise.
8	**Time Plan**	A plan for how you will allocate time to each step of a **method** in a recipe while cooking.
9	**Enzymic Browning**	When a food reacts with oxygen to make it brown.
10	**Food Sources and Origins**	Where a food comes from – the original place. Such as pork from a pig.
11	**Seasonality and Food Miles**	**The distance a product has travelled** to reach the destination it is cooked and eaten in. For instance, peaches bought from abroad to the UK because they're not **seasonal.**

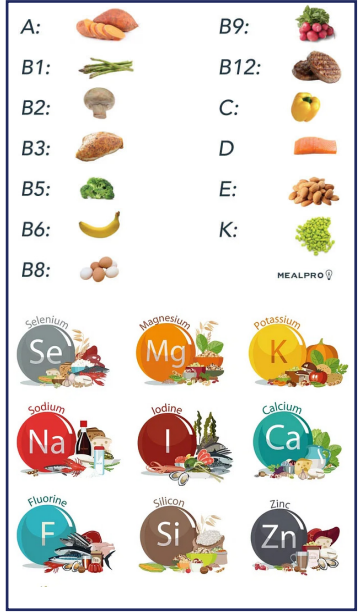
Equipment for Cooking

	**Spatula**	Used to combine, smooth, separate, or collect mixtures or food during cooking or preparation. Different types of spatulas are available.
	**Frying Pan**	Used for different types of frying such as shallow frying, stir fry, deep frying
	**Weighing Scale and Measuring Spoons**	Used to measure the correct amount of solid food and liquid

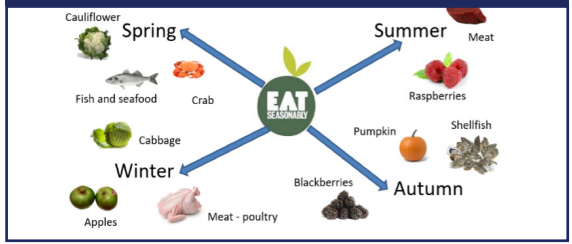
15. The Eatwell Guide



16. Micronutrients



17. Seasonality

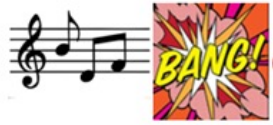


Using Key Terms: Acting

Special effects

Lighting

Design



Special effects

Sound

Design

Production elements

Design

Hair

Make-up

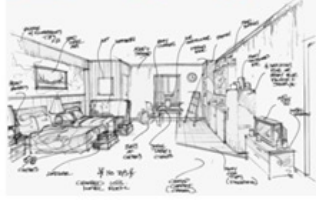
Costumes

Masks

Design

Set

Props



Acting

Vocal skills

Physical skills

Use of stage space

Characterisation

Live Theatre Evaluation

Question areas	**1. Evaluate** – Good and bad. Say whether the production element you are writing about was successful in communicating the intended effect/ impact or not **2. Analyse** – Identify the techniques that were used and explain their intended impact on the audience (using drama key terms) **3. Describe** – Clearly and concisely describe the moment as it happened on stage so the examiner can visualise it in their mind
Key terms - Production elements	**4. Semiotics** – The acting and/or design can communicate abstract concepts, themes and symbols. As an example, a design could include a large, dead tree to suggest the themes of death in a play **5. Design elements** – Set/props, lighting, costume, sound (music and sound effects, live and/or recorded) **6. Character traits/aspects** – Characterisation, physical skills/movement, vocal skills/voice, use of space/proxemics **7. Staging** – Selecting a performance space, adapting/modifying the performance space designing ideas for a play. Includes ideas for all design elements **8. Performance space** – Thrust, in the round, traverse, proscenium arch, end on, apron, black box, promenade, site specific **9. Acting** – Vocal skills, physical skills, characterisation, use of stage space/proxemics, interaction with other characters, handling of props. Using all the key terms write notes on three key moments **10. Costume** – Type, period, fabric, colour, fit and condition, accessories, hair, make-up, masks **11. Set** – Type, period, size and scale, colours, entrances and exits, levels, ramps, revolves, drapes, curtains, flats, backdrops, projections/multimedia **12. Lighting** – Types, colours, angles and positions, special effects, transitions, blackouts, fades **13. Sound** – Types, music, volume/amplification/intensity, direction, live or recorded, positioning, sound effects

Research the Play			
15. Plot	The storyline of a play	**18. Context**	When and where the play is set
16. Character	A person in the narrative/plot	**19. Possible intentions of the playwright**	Why the playwright wrote the play what message did they want to convey to an audience?
17. Theme	An idea or message that the writer highlights during the play	**20. Original performance conditions**	When and where was the play first performed?

Making Notes About the Performance			
21. Director	Responsibility for the practical and creative interpretation of a dramatic script	**23. Key scenes**	As well as the beginning and end choose three key scenes to make notes on. You should consider the climax of the play, tension, something is revealed or changes, dramatic moments
22. Artistic vision/ intention	What the director wants the audience to think, feel or learn by watching the play	**24. Tension/Climax**	When the audience are waiting for something to happen and the scene builds to a moment of climax. (Silence, stillness, sudden, slow, staring or pausing used by the actor.) Design elements and acting are used to create tension in the play

Using Key Terms: Acting

Characterisation	
25. Motivation	What a character wants or needs in a scene
26. Style	The way in which something is performed e.g. naturalistically
27. Subtext	The unspoken meaning, feelings and thoughts beneath the lines

Physical Skills and Vocal Skills			
28. Movement	Changing positions or moving across the space	**41. Pitch**	The vocal register - high or low
29. Posture	The way they stand and hold themselves	**42. Pace**	How quickly or slowly something is done
30. Gesture	Movements of hands, head, legs usually convey a message/meaning	**43. Pause**	A hesitation or silence
31. Facial expressions	The feelings (or lack of them) shown on the face	**44. Emphasis**	Stressing or highlighting something
32. Use of stage space	How an actor moves around the space, using levels, direction	**45. Inflection**	Saying a word in a particular way to stress its meaning
33. Interaction/ Proxemics	How a character reacts to other characters. Proxemics mean moving towards or away from another character and the distance between the characters		
34. Handling of props	How a prop is handled during a performance	**46. Accent**	A way of pronouncing words associated with a country, region or social class
35. Choreography/ stage fights	Setting movements to create meaning/blocking movements to create the impression of violence		
36. Body language	The movements and actions we make to communicate how we feel	**47. Volume**	Degree of loudness
37. Eye contact/Eye line	How and where we move our eyes e.g. looking to the floor	**48. Delivery**	How dialogue is said to convey meaning
38. Levels	How high or low we stand or sit on stage, this can communicate the status of a character	**49. Emotional range/tone**	Feelings are expressed by the way the line is said
39. Gait	The way you walk		
40. Pace and pause of movement	The speed of the movement and use of stillness to convey a meaning, feeling or atmosphere	**50. Phrasing**	Use of hesitation, metre and/or grouping

Using Key Terms: Design

Lighting and Set	
51. Backlight	Light projected from upstage
52. Barndoors	Metal flaps used to shape the light
53. Flood/wash	Unfocused wash of light / light covers the whole stage
54. Floor lighting	Light on a low stand (creates shadows)
55. Followspot	Powerful lantern that follows the actor around the stage
56. Footlights	Low lights downstage
57. Fresnel	A lantern with a soft beam
58. General cover	Light on the acting areas
59. Pinspot	Tightly focused on a small area
60. Profile	Creates clear outlines
61. Blackout	No lighting
62. Crossfade	Change from one state to another
63.Fade/snap	Light slowly on and off/quickly on and off
64. Colour filter	Plastic used to alter the colour
65. Focus	How sharp or defined the light is
66. Fogger	Creates smoke
67. Gobos	Creates patterns of light
68. Pyrotechnics	Creates fire effect
69. Smoke and haze machine	Creates mist or fog
70. Strobe	Short bursts of bright light

Sound	
71. Abstract	Not realistic
72. Motivational sound/sound effects	Effect required by the script (gunshots)
73. Musical theme or motif	Recurring section of music
74. Naturalistic	Realistic sounds
75. Recorded or live sound	Prerecord or happens during the performance
76. Acoustics	Quality of sound
77. Fade/snap	Gradual/sudden off or on
78. Soundscape	Build-up of sounds to create an atmosphere or environment
79. Reverb	Echoing

Set	
80. Box set	A setting of a complete room often naturalistic
81. Backcloth/drop	Hangs at the rear of the scene
82. Cyclorama	Curved screen filling the rear of the stage
83. Trap/trapdoor	Door in the floor of the stage
84. Flat and trunk	Scenery on a flat frame/platform on wheels
85. Furnishings/ stage furniture	Chairs, tables, (Set dressings- cushion
86. Fly	Raise and lower scenery from above the stage
87. Soundscape	Curtains that go transparent when lit a certain way
88. Symbolic	Representing something usually non-naturalistic
89. Multimedia and Projections	Film or images used in the performance

Costume			
90. Headwear	Hat, cap, scarf, headband, ribbon, clasp etc.	**95. Fabric**	Silk, cotton, wool, chiffon, rubber, fur
91. Wigs/facial hair	Colour, length, style/ moustache, sideburns, beards	**96. Decorations/ trim**	Sequins, rhinestones, lace/ buttons, braid, embroidery, fur
92. Make-up/ mask	Natural, character, stylised or fantasy	**97. Padding/ silhouette/fit**	Character padding, tight, loose, high waisted
93. Accessories	Jewellery, ties	**98. Colour**	Palette=range of colour and/or coding= might be significant to the character
94. Style	Victorian, modern, comfy, fancy, Unique, 2000's, 1900's etc.	**99. Condition**	Distressed, worn out, old, clean, pressed, soiled, ripped, mended, faded

Constantin Stanislavski 1863-1938 - Practitioner

Constantin Stanislavski was a Russian theatre practitioner who developed Naturalism. He believed that actors needed to inhabit authentic emotion while on stage and, to do so, they could draw upon feelings they'd experienced in their own lives. He developed exercises that encouraged actors to explore character motivations, giving performances depth and realism.

Stanislavski's exercises for creating a naturalistic character	
Super Objective	What the character wants to achieve by the end of the play. It is usually linked to the main theme of the play. An overreaching want or need, linked to the overall outcome in the play.
Objective	1. A smaller more obtainable want or need within a specific scene.
Stakes	2. When considering an objective an actor may want to think about the stakes. What is to gain and what is to lose from achieving an objective.
Uniting	3. Where you chunk a scene into smaller parts or 'bits' so that the actor is able to focus on one section of text at a time. Uniting a scene depends on a change of topic, a change of mood or a change of characters within a scene (entrances and exits).
'Magic IF'	4. Where the actor puts themselves in the character's shoes, asking 'What would I do IF I was in this situation'. Used to get actors to open up their imaginations to discover new and interesting things about the character they are playing. An actor simply asks themselves a 'what if' question about their character.
Given Circumstances	5. Information about the character and their history. It also includes the time period and location.
Subtext	6. The hidden meaning behind the text. It is usually communicated through the way that an actor delivers the line. Driven by the underlying meaning in the play, as opposed to the words declared on stage. This can be communicated to the audience through the actor's use of intonation, gesture, pauses or stillness. 'Keep in mind that a person says only ten per cent of what lies in his head, ninety per cent remains unspoken'.
Motivation	7. The reason why the character wants what they want in the play.
Emotional Memory	8. When the actor finds a real past experience where they felt a similar emotion to that demanded by the role they are playing. They then 'borrow' those feelings to bring the role to life.
Role-on-the-wall	9. Using an outline of a person and writing out the character's thoughts and feelings on the inside and what they show and say on the outside.

Private Peaceful by Michael Morpurgo (2003)

1. **Plot** - Set in the fields of Devon and the WW1 battlefields of Flanders, two brothers fall for the same girl while contending with the pressures of their feudal family life, the war, and the price of courage and cowardice. 2. **Structure -** The play starts at the end and uses flashback to show the events in Tommo's life. 3. **Genre is a Historical war play -** A play that takes its inspiration from a historical event	
Question areas	Context/social/cultural/historical; aspects of the character; the way the actor uses movement and voice; staging
Key words for question areas	4. **Social/cultural/historical - Context =** Date-Place-Issue. 5. **Character traits/Aspects of character** - persona; what the character is like and their background. Status in life. A character might change during the plot. 6. **Set design** - style; colour; position; stage furniture; stage flats; wings; cyclorama; backdrop: legs; ground row; tabs; borders; levels; symbolism; location. The set should represent the context of the play. 7. **Lighting;** - flood light; follow spot; gel; strobe; ultraviolet; spot light; side lights; up light; down light; warm wash; cold wash; flood light; fade-up; fade down; cross fade (speed of fades can be slow, middle pace fast gobo; blackout). 8. **Costume;** - period costumes; culture; colour; fabric; style; condition; symbolism; element; item (e.g. shirt; hat; shawl; cane; umbrella); 9. **Staging** - the process of selecting, designing, adapting to, or modifying the performance space for a play. This includes stagecraft elements as well as the structure of the stage and its components 10. **Performance space** - thrust; in the round; traverse; end on 11. **Sound design** - sound effects; live or recorded; underscoring; direction; transitions; volume
Context	12. Written in 2003. The play is set in Cornwall, England and in France during WWI - 1914-1918. The play explores British cultural values in particular the 'British stiff upper lip' and the culture of courage and cowardice which lead to 290 British soldiers being executed by firing squad by the British Army.

Private Peaceful by Michael Morpurgo (2003)

Key characters – Key lines and stage directions that impact on the character		
16. Tommy "Tommo" Peaceful	Narrator & protagonist. Kind & fiercely loyal to brothers Charlie & Big Joe & their mother, Mrs. Peaceful. Struggles with feelings of inadequacy & guilt over his father's death. Hesitant to sign up to fight in WWI but does so to prove his bravery – he is 18 at the start of the play but joins up when he is 17. Loves Molly. When Charlie dies Tommo looks after his nephew & Molly after the war.	
	Recalling his father's death	"He is on his back, his face turned away from me as if he doesn't want me to see. One arm is outstretched towards me, his glove fallen off, his finger pointing at me"
	Recalling what prompted him to sign up.	"Suddenly someone prodded me hard in the small of my back. It was a toothless old lady pointing at me with her crooked finger. "Go on, son," she croaked. "You go and fight. It's every man's duty to fight when his country calls, that's what I say. Go on. Y'aint a coward, are you?"
	Tommo talking to Charlie before he is executed by the British Army.	It is the moment. I have to do it now. It is my last chance. I tell him about how Father had died, about how it had happened, what I had done, how I should have told him years ago, but had never dared to. He smiles. "I always knew that, Tommo. So did Mother. You'd talk in your sleep. Always having nightmares, always keeping me awake about it, you were. All nonsense. Not your fault. It was the tree that killed Father, Tommo, not you."
	Recalling Charlie's death	"They tell me he walked out with a smile on his face as if he were going for an early-morning stroll. They tell me that he refused the hood, and that they thought he was singing when he died."
17. Charlie Peaceful	Fiercely loyal and brave. Always sticks up for Tommo & always does what is right. Hated by Sgt Hanley who didn't like that Charlie wasn't afraid to stand up to him. Bravely rescues Cpt Wilkes. Even when being executed by firing squad, he has a smile on his face.	
18. Molly	Childhood friend of Tommo, Charlie & Big Joe. Both Tommo & Charlie love her but she eventually marries Charlie & has his baby. Thrown out of her parent's home when they find out she is pregnant. Goes to live with Mrs. Peaceful.	
19. Sergeant Hanley	One of the antagonists. Malicious and cruel to the men serving in the army. Orders Charlie's execution when Charlie refuses to leave injured Tommo on the battlefield.	

Private Peaceful by Michael Morpurgo (2003)

Rehearsal	
34. Performance space	**End on -** One audience side. This performance space is similar to a proscenium arch stage. The stage is at one end and the audience face it directly. In this type of stage there is no arch around the edge of the stage to 'frame' it. **In the round -** Audience are around the performance space **Traverse -** Two audience sides. The action takes place between the audience. The stage is like a catwalk in a fashion show.
35. Blocking	Planning the space and the actor's movement

36. Design elements: key words: Lighting design; sound design; costume design; set design	
37. Themes/symbols	The design can also communicate abstract concepts, such as **themes** and **symbols**. As an example, a design could include dramatic red backlight lighting barbed wire with a body hanging from it to suggest the context and themes of WW1 and the death in the play.
38. Style	Designs can be **naturalistic**, this would aim to create the impression of reality through realistic-looking lighting, sound and set items. A play performed in a **minimalistic** style would use just a few, simple design elements to represent a setting and create an atmosphere for the audience.
39. Colour	Colour can be used within set design to **symbolise** various ideas on stage. For example, for this play we could include dull greys and a monochromatic palette single **colour,** this could enhance the sad atmosphere and dark **themes** in the play.
40. Condition	The condition of a design can reveal important information about the setting or a character's circumstances. For example, shabby, dented and blood covered WW1 helmet might suggest the character has been in a battle and seen death first-hand.
41. Location	The set can tell the audience where and when the scene takes place.
42. Symbolism	Represents a message on stage.

Same by Deborah Bruce (2014)

Plot Summary	When Josie dies in an old people's home, her grandchildren gather to share their memories of her, and her fellow residents feel the effects of her death as her funeral takes place. Is the gulf between the young and old as wide as it feels, or are we fundamentally the same inside whatever age we are?
Context and style	The play was commissioned as part of the 2014 National Theatre Connections Festival and premiered by youth theatres across the UK. The style of the play is naturalistic and was originally written for young actors, but with roles from teens to eighties. Same can be performed by groups of any age. The play explores themes of loss, remembrance and the generation divide between young and old.
Structure	A linear structure with flashbacks nearing the end of the play.
Key characters	
Josie	A Grandmother and wife to Harry who passes away before the start of the play
Fay	One of Josie's grandchildren. Sister to Emma and Young Harry. Is the eldest of the group and wants to seem in charge and to shift the conversation away from negativity.
Emma	One of Josie's grandchildren. Sister to Fay and Young Harry. Kind, empathetic wants to support the others with their grief.
Young Harry	One of Josie's grandchildren. Named after his grandfather Harry. Brother to Emma and Fay. Extroverted and loves debating with the others.
Sarah	One of Josie's grandchildren. Somewhat addicted to her phone.
Jo-Jo	One of Josie's grandchildren. Introverted but always happy to talk about happy memories with her cousins.
Marion	Clare's sister. She is visiting the care home and enjoys helping out the residents.
Eddie	One of the residents of the care home where Josie lived. Always enjoys reminiscing about the past.
Alf	One of the residents of the care home where Josie lived. Is angry about the attention of Josie's funeral.
Harry	Grandfather and husband to Josie. Always kind and supportive of her up until her death.

Same by Deborah Bruce (2014)

Themes	
Loss	Everyone in the play is dealing with the loss of Josie in a different way. Her grandchildren enjoy remembering the happiness of the past whereas the care home residents view the loss of Josie in a less personal way. The residents don't know Josie very well and see her death as more of an inconvenience yet are still affected by the sad nature of her death.
Remembrance	Each character remembers Josie. The care home residents remember Josie as a fellow resident who didn't make much of an impact to their personal lives as she barely left her room due to her condition. The grandchildren have many happy memories of Josie and enjoy sharing these through discussion.
Generational divide	The play has an underlying fundamental question: Is the gulf between the young and old as wide as it feels, or are we fundamentally the same inside whatever age we are? Deborah Bruce intended to have the characters played by young adults no matter the age to emphasise her belief that we are all the same. However, some may argue that there is a bigger generational divide than Bruce seems to assume and that the older generation are completely different to the younger generation in terms of beliefs, upbringing and values.
Family relationships	The play explores the importance of family relationships. Josie leaves behind a husband as well as 6 grandchildren to honour her memory. The care home residents discuss their family relationships and rely on their friendships with each other in order to support them through themes of change and loss.

Staging the Performance	
End-on performance space	One audience side. This performance space is similar to a proscenium arch stage. The stage is at one end and the audience face it directly. In this type of stage there is no arch around the edge of the stage to 'frame' it.
Thrust	Audience sat on three sides. Often, the front of the stage thrusts forward into the audience, like at a concert.
Blocking	Planning the space and the actor's movement
Set design	What the stage looks like and the furniture. As a set designer you will need to consider the practical aspects of set design. The play has lots of fast-paced scenes in various locations, the set design will need to be kept minimal to help with the quick changes.

Year 8 Music

Describing Music Using 'Mad T-Shirt'				
Melody	**A**rticulation	**D**ynamics	**T**ime/**T**empo	**S**tructure
Register– high or low Range – wide or narrow Sequence Ascending/ descending Scalic or broken chord movement Steps or leaps Ornaments Melodic ostinato/riff	Strummed Finger-picking Sustained Stab Staccato Legato Slurred Pizzicato/arco Accents	Pianissimo Piano Mezzopiano Mezzoforte Forte Fortissimo Crescendo Diminuendo	Number of beats in a bar Tempo Accellerando/ rallentando	How many sections What order Which sections are the same Ternary form: ABA 12-bar blues Pop song structure: intro/verse/ chorus/bridge/ outro

Harmony	**I**nstruments	**R**hythm	**T**exture
Major or minor Inversions Consonant or dissonant Key change Added notes in chords Harmonic rhythm Drone/pedal note 'Blue' note	Strings: violin/viola/cello/double bass/harp Woodwind: flute/oboe/clarinet/bassoon/piccolo Brass: trumpet/horn/ trombone/tuba Percussion: timpani/snare/ cymbals (and many others) Voices: soprano/alto/tenor/bass Keyboards: piano/harpsichord/ organ/synthesiser Rock/pop: electric/acoustic guitar/ bass guitar, drumkit, loops/samples	Duration: long or short notes Even or uneven rhythms Dotted rhythms Triplets Syncopation On a particular beat of the bar Rests/pauses Rhythmic ostinato/riff	Note or chord Bass/chords/melody Thick/thin Simple/complex Melody + accompaniment Countermelody Parallel/contrary motion Unison Imitation Call & response

The Elements of Music RECAP	
1. Pitch	How high or low a piece of music or a sound is
2. Tempo	Tempo is how fast or slow the music is played
3. Dynamics	Dynamics is how loud or quiet the music played
4. Rhythm/Duration	Duration/rhythm means how long or short a note is.
5. Texture	Texture describes the different layers of sound
6. Timbre/Sonority	The sound quality of an instrument or voice
7. Articulation	How the music/notes are played
8. Silence	In music these are the RESTS. No sound

The Composers Corner

Bessie Smith

John Williams

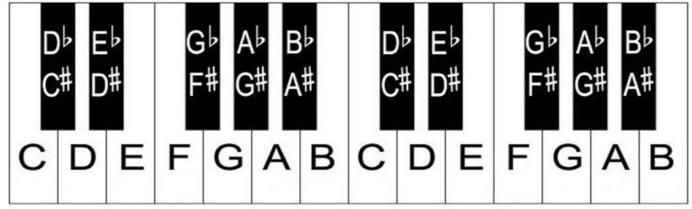
Bob Marley

Keyboard & Music Notes

A. Keywords

1. Key/Tonality	The scale on which a passage of music is based. It is named after the bottom note of the scale.
2. Scale	A set of consecutive notes that go up or down in order
3. Accidentals	Sharps or flats
4. Sharp	♯ the black key to the right of the note
5. Flat	♭ The black key to the left of the note
6. Natural	♮ A sign which cancels our any previous sharp or flat
7. Major Scale	Tonality which sounds happy
8. Minor scale	Tonality which sounds sad
9. Chromatic	Music with lots of accidentals

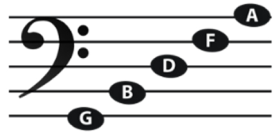
B. Notes on the keyboard



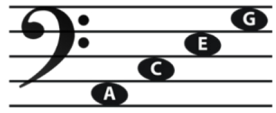
C. Notes on the treble clef

'Every Good Boy Deserves Football'

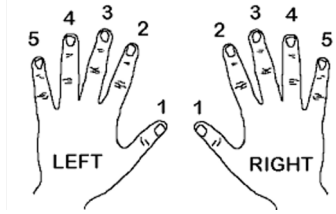
D. Notes on the bass clef



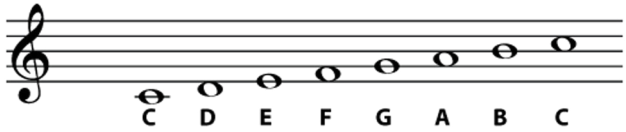
'Good Boys Deserve Football Always'



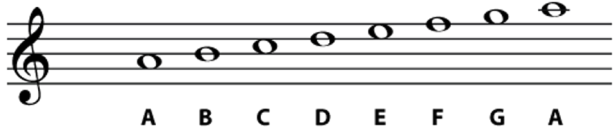
E. Finger numbers for playing the keyboard



F. C major scale



G. A minor scale



Drums & Percussion

Instruments	
1. Djembe	
2. Surdo	
3. Agogo Bells	
4. Claves	
5. Dhol	
6. Tabla	

Keywords	
1. Percussion	Instruments that you hit to create sound
2. Call and Response	A texture where performer(s) do a call and others respond
3. Repetition	Repeating of a rhythm/motif
4. Cyclic Rhythm	Rhythm that repeats over and over
5. Ostinato	Repeating musical motif (rhythm or melody)
6. Polyrhythm	Two or more simultaneous rhythms
7. Cross rhythm	Type of polyrhythm where the rhythms don't easily slot together
8. Master drummer	The lead drummer (who performs the call)
9. Carnival	A street samba performance
10. Clave rhythm	Syncopated rhythm performed by claves in Samba music
11. Groove	A continuous and catchy rhythm

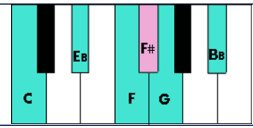
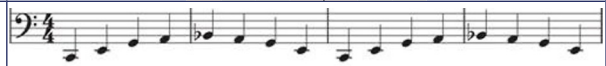
Music of The Indian Subcontinent	
1. Guru	Master performer
2. Improvise	Making up music during a performance, rather than referring to a pre-existing melody or part.
3. Raga	A set of pitches, similar to a scale.
4. Drone	A repeated note or set of notes repeated throughout a piece.
5. Tala	A cycle of beats that repeat.
6. Alap	The opening section of a piece of Indian classical music.
7. Chaal	The fundamental rhythm used in bhangra, played on the dhol.

Year 8 Music

1. Origins

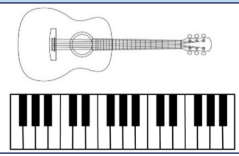
Enslaved African people brought their musical traditions with them when they were transported to work in the North American colonies. These **work songs** were sung rhythmically in time with the task being done. Their songs were passed on **orally** (by word of mouth) and were never usually written down. They used **call and response** where phrases from a lead singer were followed by the others. Early styles of Blues were known as country blues and usually had a solo **singer** accompanied on **guitar** or **piano** sometimes with added **harmonica** or **drums**.

Using Email Professionally

2. 12-bar blues	The 12-bar blues is the name of the structure used in blues music. It is 12 chords, each lasting 1 bar. Roman numerals are used to label the chords, where I means chord 1 in the scale, IV means 4 etc.	I – I – I – I IV – IV – I – I V – IV – I – I
3. Chord	A chord is multiple notes played together at the same time. A chord using three notes is also called a triad. Blues music only uses 3 chords which are played at the start of every bar.	
4. Improvisation	When music is made up 'on the spot'	
5. Blues Scale	The blues scale is a certain selection of notes that have been put together to sound 'bluesy'. The scale is often used to create the improvisation.	
6. Walking Bass	The walking bass is the bassline of any Blues song. This is usually played by the double bass or bass guitar. The tempo of the bass line should be steady, which is why it is called the "walking" bass	
7. Call and Response	A performer plays/sings a 'call' and everyone in the ensemble 'responds'	

Instruments

8. The rhythm section

10	11	12
		
Drum Kit Performs the rhythms and pulse	**Double Bass, Bass Guitar** Perform the bassline (often a walking bass)	**Guitar, Piano** Perform the chords

9. The Frontline

13	14
	 Etta James  BB King
Saxophone, Trumpet Perform the melodies and improvise	**Singer(s)** Perform the melodies and lyrics

Binary and Hexadecimal

Key Words

Bit - The smallest unit of data storage consists of a single 1 or 0. This can be represented by a single transistor.

Nibble - a group of four bits (half a byte).

Byte - a group of 8 bits.

Binary - A base 2 number system that computers understand. Uses digits 0 and 1. Place Value headings: 128, 64, 32, 16, 8, 4, 2 and 1 (2 times bigger each time).

Use of Binary - Matches the computers on/off values used to store and send data. Allows us to program computers with machine code.

Denary - A base 10 number system (10 times bigger each time) Place Value headings: 1000 100 10 1 Uses digits 0 1 2 3 4 5 6 7 8 9 Use of Denary - used by humans for maths. Also, called the decimal system.

Hexadecimal (Hex) - A base 16 system used by humans to help remember and read binary code. Place Value headings: 256, 16, 1 etc. (16 times bigger each time). Uses digits 0 1 2 3 4 5 6 7 8 9 & A B C D E F 10 = A 11 = B 12 = C 13 = D 14 = E 15 = F -

Use of Hex - shorthand version of binary. Easier for humans to understand and faster to enter than binary. 4 binary digit converts to 1 hex digit.

Place Value (PV) - the numerical value that a digit has by virtue of its position in a number. In Binary PV doubles as you go from right to left. In Decimal (normal maths) it goes up by powers of 10

Denary to Hex conversion - CHANTING

Teacher: The most importing thing about Hex

Students: 10 is A

If you know 10 is A we can work out 11 is B and so on

Number Conversions

Number Conversions (Denary > Binary > Hex)

Binary to denary (01001101)

- Place the binary numbers under the binary place value (pv) numbers starting from right to left
- Add together the pv headings where there is a 1 underneath

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

E.g. 64+8+4+1 = 77

Denary to binary (56)

- Work from the left and attempt to subtract the PV numbers from your number
- If you can do it without a negative number then put a 1 under the PV number and use the answer in the next column
- If you can't put a 0 under the PV number then move to the next column

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

Binary to Hexadecimal (01001101)

- Split the **byte** in half, this time use the top place values to convert each half (**nibble**) into **denary**
- If the number is more than 9 use the letters A to F instead.
- E.g. the left nibble would be 4 and the right nibble would be 8 + 4 + 1 = 13
- 13 = D - **Final answer = 4D**

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

Hexadecimal to Binary (F5)

- Use the top **place value headings** to convert each digit of **hexadecimal** number to **binary**.
- Make sure you keep them on the correct side (left to left and right to right)
- F = 15
- Once both sides have been converted to binary
- Add together the pv headings where there is a 1 underneath

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

- 128 + 64 + 32 + 16 + 4 +1 = 245

Binary Addition

Binary addition involves adding two or more binary numbers together. When adding two numbers, you will have the following possible outcomes:

0 + 0 = 0	0 + 1 = 1	1 + 1 = 10	1 + 1 + 1 = 11

When adding binary numbers, so right to left.

Example: add 0100 and 0101

1st Num	0	1	0	0	+
2nd Num	0	1	0	1	
Carried Over	1				
Answer	1	0	0	1	=

0 + 1 = 1 0 + 0 = 0 1 + 1 = 10, so 1 is carried over

0 + 0 + 1 = 1 Therefore, the answer is 1001

Alternative Methods of Converting Hex number 5C into Denary

16 1 1. Write base 16 place values

5 C 2. Write hex underneath

5 x 16 = **80** 12 x 1 = **12** 3. Multiply each digit by it's place value

Ans = 80 + 12 = 92 4. Add the results together

Alternative Methods Converting the Denary number 167 to Hex

16 1 1. Write place values

A 7 2. How many whole 16's fit into 167?

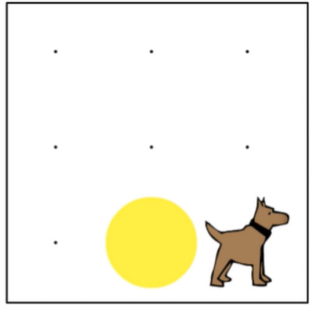
16 x **10** = 160

3. How many are left over? 167 - 160 = **7**

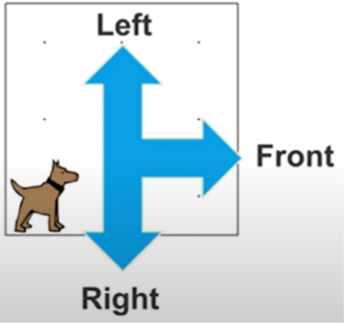
Denary number 167 is A7 in Hex

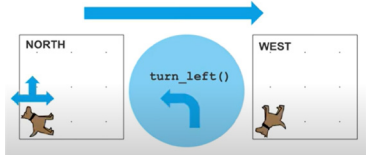
Introduction to Python with Karel

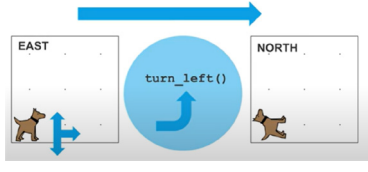
Karel is a dog who listens to your commands.

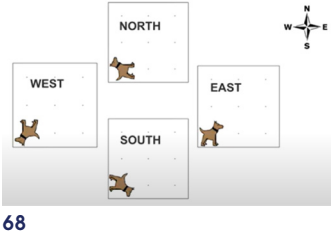


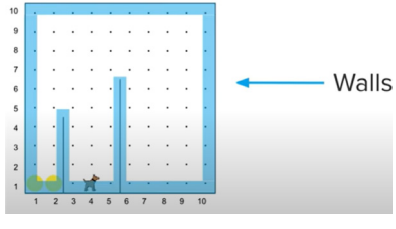
We can move around the *world* and put down tennis balls!









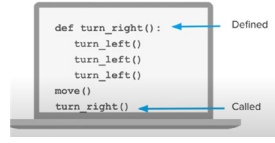


Functions

Karel cannot turn right. We have to use a function to tell Karel to turn left three times to get her to turn right

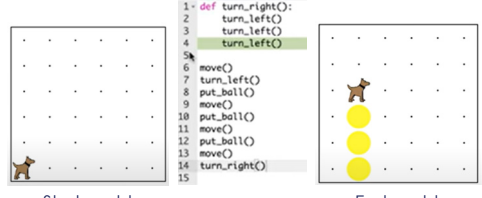
Other names for functions
- Procedure
- Subroutine
- Task
- Process
- Module


```
turn_left()
turn_left()
turn_left()
```



We use def command to start a function.
We then write the commands underneath.
They must be indented.

We then call the function from The main code, which isn't indented and must be after the function



Start world

End world

Karel Basic Commands

All python commands must have no spaces, need to match the exact capitalization, end with brackets ()

`move()` – moves one pip forward

`turn_left()` – turns Karel 90 degrees left

`put_ball()` – places a tennis ball at Karel's current location

`take_ball()` – Picks up a ball if there is one at Karel's current location

`turn_around()`- Karel turns 180 degrees

Introduction to Python with Karel

While Loops

While Loops = Repeat as Long as Condition is True

```
while condition:
    # code to execute while
    # condition is true
```

```
while front_is_clear():
    move()
```

While loops repeat while a condition is true. The condition comes straight after the while and must be followed by a :. The code to repeat is indented underneath

Instruments

For Loops

For loops

For Loop = Repeat Fixed Number of Times

```
# This places ten balls down
for i in range(10):
    put_ball()
```

Code indented after the for loop is repeated the number of times specified by the range command in the brackets

If Then

If then

```
if condition:
    # code
```

If followed by a condition and : Code to run if the condition is true is indented after the IF. If the conditions false the indented code is skipped

```
if front_is_clear():
    move()
```

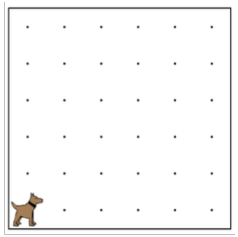
If Then Else

If then else

```
if condition:
    # code if condition is true
else:
    # code to run otherwise
```

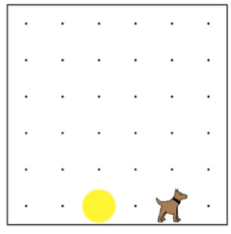
Same as if then but if the condition is false the code indented after the else is run.

```
if front_is_clear():
    move()
else:
    turn_left()
```



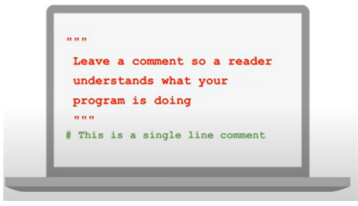
Start world

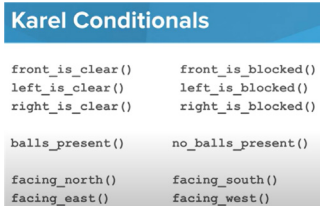
Python code instructions to tell Karel what to do



End world

Commenting your code





Key Words

Integrated Development Environment – The program we write, debug and run our code in

Decomposition – Breaking down our program into small pats to make it more readable and easier to maintain and to avoid repeating code

Top-down design – helps to solve large complicated problems and allows us to collaborate with others by splitting up subproblems that can be solved by themselves

Abstraction – removing unnecessary information that is not important to making a good enough solution to make it easier to make and run the code

Application programming Interface (API) – a set of built in pr- programmed tools for building code and making it easier to write

Hardware and Software

The purpose of the CPU

The purpose of the CPU	To manage basic operations of the computer. To be the 'brains' of the computer
The main components of the CPU	Control Unit. Arithmetic Logic Unit. Registers. Cache
Von Neumann Architecture	The architecture that allows for the storage of instructions and data in the same location
The FDE Cycle	The cycle the CPU continuously carries out to process instructions
Binary	The number system used to store instructions and data in the computer
The role of a register in the CPU	It is a place to temporarily hold data and instructions as they are being processed by the CPU.
The PC	The Program Counter keeps the address of the next instruction to be processed
The MAR	The Memory Address Register is used to tell the CPU where to locate data in Main Memory
The MDR	The Memory Data Register is used to store data that is fetched from Main Memory
The ACC	The Accumulator stores results of logic operations and calculations used during processing

Performance of the CPU

Cores	CPUs with multiple cores have more power to run multiple programs at the same time.
Clock Speed	The clock speed describes how fast the CPU can run. This is measured in megahertz (MHz) or gigahertz (GHz) and shows how many fetch-execute cycles the CPU can deal with in a second.
Cache Size	The more data that can be held in the cache, the shorter the trips the electric pulses need to make so this speeds up the processing time of each of those billions of electrical signals, making the computer noticeable faster overall.

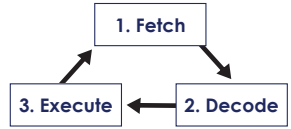
Secondary Storage

Difference from primary storage	CPUs with multiple cores have more power to run multiple programs at the same time.
Cache memory	A small section of extremely fast memory used to store commonly used instructions and data. It is useful as the CPU can access the (fast) cache directly. L1 cache is closest to the CPU, L3 cache furthest
ROM as secondary storage	Not really. ROM is read only. Secondary storage generally needs to be written to as well as read from

Common CPU Components and their Function

The Control Unit has two functions	(1) Sending signals to control the flow of data and instructions, and (2) decoding instructions
Cache Memory	A small section of extremely fast memory used to store commonly used instructions and data. It is useful as the CPU can access the (fast) cache directly. L1 cache is closest to the CPU, L3 cache furthest
The ALU has the following functions	It carries out mathematical operations / logical operations / shifting operations on data; for example multiplication, division, logical comparisons
An Address	This is a location in he Main Memory (RAM) that stores data or instructions in the Von Neumann Architecture
Buses	Transfer information between the CPU and Main Memory (and other places). For example the Address bus carries memory addresses between the CPU and the RAM

The F-D-E (Fetch Decode Execute) Cycle

The F-D-E Cycle repeatedly cycles	
The Fetch Stage	The address is generated by the Program Counter (PC) and is carried to the Memory Address Register (MAR) using the Address Bus. The PC then updates and stores the next memory address, ready for the next round of the cycle. The data or instruction that is in that memory location is placed on the data bus and carried to the processor and is stored in the Memory Data Register (MDR)
The Decode Stage	The data or instruction is then the Memory Data Register (MDR). decoded to find out if it is a piece of data or if it is an instruction to do something such as ADD, STORE, SWITCH, REPEAT etc.
The Execute Stage	The CPU performs the actions required by the instruction. If it is an instruction to control input or output devices the Control Unit will execute the instruction. If it is a calculation then the Arithmetic and Logic Unit (ALU) will execute the instruction. The results of any calculations are recorded in the Accumulator

Hardware and Software

The purpose of RAM and ROM in a Computer System	
The purpose of RAM	RAM is the main memory (also called primary storage) for storing data and programs while they are in use
The purpose of ROM	ROM stores the boot sequence, which is a set of instructions that the computer executes every time it is switched on. ROM is essential since if loads the operating system
We use RAM rather than Secondary Storage	The RAM can be accessed at a much higher speed than the secondary storage. If the CPU was having to communicate directly with secondary storage for the F-D-E cycle the computer would be incredibly slow
Volatility	ROM is non-volatile (it keeps its contents when the power is turned off). RAM is volatile (it loses its contents when the power is turned off)
Primary Storage Devices	Primary storage devices are internal to the system and are the fastest of the memory/storage device category. Typically, primary storage devices have an instance of all the data and applications currently in use or being processed. The computer fetches and keeps the data and files it in the primary storage device until the process is completed or data is no longer required. RAM, ROM, Graphics Card RAM, cache and registers are common examples of primary storage devices
Increasing RAM	This can speed the computer up since there is less need for virtual memory

Considerations for the Most Suitable Storage Device	
Capacity	How much data needs to be stored
Speed	How quickly can the data be stored. How quickly does it need to be read
Portability	Does the device need to be transported? Are weight and size important
Reliability	Is it mission critical? Will it be used over and over again?
Cost	How expensive is the media per byte of storage

Typical Uses	
Optical	Read only distribution on a large scale (CD/DVD). Relatively small capacity
Magnetic	High data capacity. Reasonably fast. Low cost. Cloud storage on server farms
Solid State	Low power. Small. Rugged. Silent. Very fast. Medium data capacity

Data Units	
Bit (b)	The smallest unit of data. 0 or 1
Nibble (N)	4 bits
Byte (B)	8 bits (note the difference between b and B)
Kilobyte (KB)	1000 bytes. Note KB is different from Kb
Megabyte (MB)	1000 KB
Gigabyte (GB)	1000 MB
Terabyte (TB)	1000 GB
Petabyte (PB)	1000 TB

Translation - Sentence Builders

Où es-tu allé(e) en vacances l'année dernière?

Pendant les vacances, je suis allé(e) en (During the holidays I went to) **L'année dernière on est allés en** (Last year we went to)	**Allemagne** **Égypte** **Écosse** **Espagne** **France** **Grande-Bretagne** **Italie** **Turquie**	**en avion** (by plan) **en bateau** (by boat) **en train** (by train) **en voiture** (by car)	**C'était ennuyeux** (it was boring) **C'était amusant** (it was fun) **C'était génial** (it was great)
Je suis resté(e) dans (I stayed in) **On est restés dans** (we went to)	**un hôtel** (a hotel) **un camping** (a campsite) **un appartement** (an appartment)	**au bord de la mer** (by the sea) **à la montagne** (in the mountains) **à la campagne** (in the countryside)	

Comment as-tu voyagé?

J'ai voyagé (I travelled)	**en avion** (by plane) **en bateau** (by boat) **en train** (by train) **en voiture** (by car) **à vélo** (by bike)	**et c'était rapide** (and it was fast) **et c'était lent** (and it was slow) **et c'était dangereux** (and it was dangerous)	**et c'était sur** (and it was safe) **et c'était bon marché** (and it was cheap) **et c'était cher** (and it was expensive)
Je préfère voyager (I prefer to travel)		**parce que c'est...** (because it is)	

Qu'est-ce que tu as fait pendant les vacances?

Sentence starter	Activity in the perfect tense			opinion		
Le weekend dernier Last weekend	**J'ai...** (I ...)	**nagé dans la mer/la piscine** (swam in the sea/the swimming pool)	**fait de la plongée sous-marine** (went scuba-diving)	**et c'était** (and it was)	**vraiment** (really)	**amusant** (fun)
Le mois dernier Last month	**On a...** (We...)	**visité un parc d'attractions** (visited a theme park)	**pris des photos** (took photos)		**très** (very)	**génial** (great)
L'année dernière Last year		**mangé des glaces** (ate ice cream)	**joué au tennis** (played tennis)		**assez** (quite)	**délicieux** (delicious)
D'abord First of all		**bronzé** (sunbathed)	**regardé des clips vidéo** (watched video clips)		**un peu** (a bit)	**relaxant** (relaxing)
ensuite / puis then		**acheté des baskets** (bought some trainers)	**écouté de la musique** (listenined to video clips)			**intéressant** (interesting)
après afterwards		**fait du shopping** (went shopping)				**ennuyeux** (boring)
finalement finally						**nul** (rubbish)

Translation - Sentence Builders

Qu'est-ce que tu fais normalement pendant les vacances?

Normalement **Normally je vais**	**en Allemagne** **en Grèce** **au Portugal** **en Écosse** **en Albanie** **au Maroc** **en Espagne** **En Roumanie** **aux États-Unis**	**avec mes ami(e)s avec ma famille –** with my friends / my family
Pendant les vacances, During the holiday **En général,** Generally	**Je visite le musée / le parc d'attractions –** I visit the museum / the amusement park **Je nage dans la mer ou dans la piscine / je bronze / je fais du surf –** I swim in the sea or the swimming pool / I sunbathe / I surf **Je fais du shopping / je prends des photos / je joue aux jeux vidéo –** I go shopping / take photos / play video games **Je visite le musée / le parc d'attractions –** I visit the museum / the amusement park	**parce que c'est relaxant / divertissant / rigolo / passionant / ennuyeux –** because it's relaxing / enjoyable / funny / exciting / boring

Qu'est-ce que tu voudrais faire pendant les vacances ?

Activity in the conditional tense		Opinion	
Je voudrais (I would like) **J'aimerais vraiment** (I would really like) **C'est mon rêve de** (It's my dream to)	**visiter une île tropicale** (to visit a tropical island) **faire un tour du monde** (to travel the world) **faire une expédition à la montagne** (to go on an expedition in the mountains) **faire un safari en Afrique** (to go on safari in Africa) **Monter la Tour Eiffel** (to climb the Eiffel Tower) **voir les Chutes de Niagara** (to see Niagra Falls) **passer un mois en Australie** (to spend a month in Australia) **Nager avec des dauphins/requins** (to swim with dolphins/sharks)	**car ce serait** (because it would be)	**amusant** (fun) **génial** (great) **formidable** (amazing) **inoubliable** (unforgettable) **incroyable** (incredible)

Qu'est-ce que tu aimes faire?

Sentence Starter	Opinion verb		Infinitive verb	Complement		Opinion	
Normalement Normally **En général** In general	**je préfère** I prefer **j'adore** I love **j'aime** I like **je n'aime pas** I do not like	**je déteste** I hate **Je veux** I want **Je voudrais** I would want **J'aimerais** I would like	**jouer** to play/playing **manger** to eat/eating **écouter** to listen/listening **regarder** to watch /watching **aller** to go/going **faire** to do/doing to go/going	**au tennis** tennis **au basket** basketball **aux jeux video** videogames **au restaurant** at the restaurant **avec ma famille** with my family **de la musique** music **des films sur netflix** movies on netflix **des dessins animés** cartoons	**au cinéma** to the cinema **au restaurant** to the restaurant **au bowling** bowling **les magasins/du shopping** shopping **du vélo/de la natation** cycling/swimming	**car c'est** (because it is)	**amusant** amusing / fun **intéressant** interesting **génial** Great **relaxant** relaxing **barbant** Boring **ennuyeux** boring **nul** rubbish

Translation - Sentence Builders

Que fais-tu pendant ton temps libre?			
Le week-end/pendant le week-end (At the weekend) **Après le collège** (After school) **Le soir** (In the evening) **Le lundi/ le mardi/ le mercredi/ le jeudi/ le vendredi/ le samedi/ le dimanche** (On Mondays/ on Tuesdays/ on Wednesdays/ on Thursdays/ on Fridays/ on Saturdays/ on Sundays) **Une/deux/trois fois par semaine** Once/twice/three times a week **De temps en temps** (Sometimes) **Tous les jours** (Every day)	**Je fais** (I do) **On fait** (we do)	**de la gymnastique.** (gymnastics) **de l'athlétisme** (athletics)	**de la danse** (dance)
	Je joue (I play) **On joue** (we play)	**au foot.** (football) **au basket.** (basketball) **au tennis** (tennis)	**aux jeux vidéo** (video games) **de la guitare** (the guitar) **du piano** (the piano)
	Je... (I...)	**promène mon chien.** (walk my dog) **sors avec mes amis.** (go out with my friends)	**lis des livres.** (read books)

Qu'est-ce que tu vas faire le weekend?					
Sentence Starter	**Conjugated verb**	**Infinitive verb**	**Verb complement**		**Opinion**	
Ce weekend This weekend **Le weekend prochain** Next weekend	**Je vais** I am going **Ma soeur va** My sister is going to **Mes amis vont** My friends are going to **J'espère** I hope **Je veux** I want **Je voudrais** I would want **J'aimerais** I would like	**jouer** to play **voir** to see **aller** to go **visiter** to visit **faire** to do/make **voyager** to travel	**au basket** basketball **aux jeux vidéo** videogames **Une spectacle** a show **Un match de foot** a football match **au restaurant** to the restaurant **en vacances** on holiday **un musée** a museum **Le centre ville** the town centre **du shopping** shopping **des gateaux** cakes **en France** to France	**Ça va être** It is going to be	**amusant** amusing / fun **intéressant** interesting **génial** Great **relaxant** relaxing **barbant** Boring **ennuyeux** boring **nul** rubbish

Translation - Sentence Builders

Qu'est-ce que tu aimes regarder?

J'adore (I love) **J'aime** (I like) **J'aime regarder** (I like to watch)	**Je regarde** (I watch) **mais je n'aime pas...** (but I don't like) **mais je déteste...** (but I hate)	**les films fantastiques** (fantasy films) **les films d'arts martiaux** (martial arts films) **les films de science-fiction** (sci-fi films) **les films d'horreur** (horror films)	**les films d'action** (action films) **les dessins animés** (cartoons) **les westerns** (westerns) **les comédies** (comedies)	**parce qu'ils sont** (because they are)	**divertissants** (entertaining) **Intéressants** (interesting)	**amusants** (funny) **Ennuyeux** (boring)	**Masculine plural**
				parce qu'elles sont (because they are)	**divertissantes** (entertaining) **Intéressantes** (interesting)	**amusantes** (funny) **Ennuyeuses** (boring)	**Feminine plural**
Mon acteur préféré c'est... (my favourite actor is...)				**parce que'il est** (because he is)	**intelligent** (intelligent)	**Beau** (handsome)	**Masculine singular**
Mon actrice préférée c'est... (my favourite actress is...)				**parce que'elle est** (because she is)	**intelligente** (intelligent)	**belle** (beautiful)	**Feminine singular**
Mon film préféré c'est... (my favourite film is...)				**parce que c'est** (because it is)	**Divertissant** (entertaining) **Intéressant** (interesting)	**amusant** (funny) **Ennuyeux** (boring)	**Masculine singular**

Quelle sorte de musique écoutes-tu?

Opinion	Music genre	connective	adjective		
J'ai une passion pour (I'm passionte about) **J'adore** **J'aime** **Je préfère** **Je n'aime pas** **Je déteste**	**la musique pop** **la musique électronique** **la musique classique** **le rap/le rock/le métal** **le reggae/le hip-hop**	**parce que c'est** (because it is)	**original** **relaxant** **génial** **branché** (trendy)	**émouvant** (moving) **agaçant** (annoying) **nul** (rubbish)	
Je (ne) suis (pas) fan (I'm not a fan of) **J'écoute** **Je n'écoute pas**	**de la musique pop** **de la musique électronique** **de la musique classique** **du rap/du rock/du métal** **du reggae/du hip-hop**	**parce que**	**ça me rend triste** (it makes me sad) **ça me rend heureux/heureuse** (it makes me happy)		
Ma chanteuse préférée c'est... (my favourite singer is...)		**parce qu'elle est** (because she is)	**originale** **formidable**	**incroyable** **belle**	**Feminine singular**
Mon chanteur préféré c'est... (my favourite singer is...)		**parce qu'il est** (because he is)	**original** **formidable**	**incroyable** **beau**	**Masculine singular**

Translation - Sentence Builders

Quelle sorte de musique écoutes-tu?

Sentence starter	Activity in the perfect tense			Opinion		
Le weekend dernier Last weekend **Samedi dernier** Last Saturday **Dimanche dernier** Last Sunday	**J'ai...** (I ...) **On a...** (We...)	**mangé au restaurant** (ate at a restaurant) **fait du shopping** (went shopping) **fait du vélo** (went cycling)	**joué au tennis** (played tennis) **regardé une série** (watched a series) **écouté de la musique** (listened to music)	**et c'était** (and it was)	**vraiment** (really) **très** (very) **assez** (quite) **un peu** (a bit)	**amusant** (fun) **génial** (great) **délicieux** (delicious) **relaxant** (relaxing) **intéressant** (interesting) **ennuyeux** (boring) **nul** (rubbish)
	Je suis allé... (I went...) **On est allés...** (We went...)	**au centre sportif** (to the sports centre) **au parc** (to the park) **au cinéma** (to the cinema)	**au bowling** (bowling) **À la piscine** (to the swimming pool)			

Vocabulary: Comment est ta routine?

Sentence Starter	Verb	Connective	Verb
Le matin In the morning **À huit heures du matin** At 8am **Le soir** In the evening **À neuf heures du soir** At 9pm	**je me réveille** I wake up **je me lève** I get up **elle s'habille** she gets dressed **il se brosse les dents** he brushes his teeth **nous nous lavons** we wash **je mange avec ma famille** I eat with my family **nous regardons la télé** We watch TV	**et puis** and then **et après ça** and after that	**je prends le petit-déjeuner** I have breakfast **je vais au collège** I go to school **j'étudie sur l'ordinateur** I study on the computer **je me douche** I shower **je me couche** I go to bed

Translation - Sentence Builders

Qu'est-ce que tu manges?

Sentence Starter	Verb	Noun		Reason	
Normalement Normally **Pour le petit-déjeuner** For breakfast **Pour le déjeuner** For lunch **Pour le dîner** For dinner **De temps en temps** from time to time **Souvent** Often **Rarement** Rarely	**je mange** I eat **je prends** I have **je bois** I drink	**un sandwich** a sandwich **du poulet** some chicken **du riz some rice** **du jus de fruit** some fruit juice **du chocolat** some chocolate **du gâteau** some cake **de la soupe** some soup **de la salade** some salad **de la dinde** some turkey **de la pizza** some pizza	**de l'eau** some water **des pâtes** some pasta **des frites** some chips **des boissons gazeuses** some fizzy drink **des légumes** some vegetables **des jus de fruits** some fruit juice	**parce que** car	**c'est délicieux** it is delicious **c'est sucré =** it is sweet/sugary **c'est salé =** it is salty **c'est bon pour la santé =** it is good for your health **c'est sain =** It's healthy **c'est malsain =** It's unhealthy

Qu'est-ce que tu as mangé hier?

Sentence Starter	Verb	Noun		
Hier Yesterday **Le weekend dernier** Last weekend	**j'ai mangé** I ate **j'ai bu** I drank	**du riz** **du chocolat** **du gâteau** **de la viande** **de l'eau** **des légumes** **des fruits** **des pâtes** **des frites** **des boissons gazeuses**	**et c'était**	**délicieux** **sucré** **salé** **dégoûtant** **bon**

Translation - Sentence Builders

Où avez-vous mal?

Time Phrase	Activity	Therefore / So	Connective		Exclamation
Hier Yesterday **La semaine dernière** Last week **Le weekend dernier** Last weekend	**J'ai joué au foot/basket** I played football / basketball **J'ai joué aux jeux vidéos** I played videogames **J'ai fait du vélo** I went cycling **J'ai mangé….** I ate… **Il fasait très chaud** It was very hot **J'ai mal dormi** I slept badly	**donc** Therefore	J'ai mal au ventre /bras/dos/genou J'ai mal à la jambe/ gorge/tete J'ai mal aux pieds /épaules/dents		**Quel désastre!** What a disaster! **Quel dommage!** What a shame / pity! **ça fait mal** It hurts
			J'ai de la fièvre I have a fever **J'ai vomi** I'm sick **J'ai une toux** I have a cough **J'ai la grippe** I have the flu	**J'ai un rhume** I have a cold **J'ai un coup de soleil** I'm sunburnt **Je suis fatigué(e)** I'm tired **Je suis malade** I'm ill	

Chez le docteur

Verb	Infinitive phrase	Frequency
Il faut You must **Tu dois** You must	**rester au lit** Stay in bed **rester au chaud** Stay warm **aller chez le dentiste** Go to the dentist **aller à la pharmacie** Go to the pharmacy **Mettre un pansement** Put a plaster on **Dormir beaucoup** Sleep a lot	**Tous les jours** Every day **Une/deux fois par jour** Once/twice per day
	Prendre ce médicament Take this medicine **Prendre des pastilles pour la gorge** Take these throat sweets	

Quelle matières aimes-tu?

Sentence Starter	Opinion verb	Infinitive verb	Subject	Connective	Reason
Normalement Normally **En général** In general **Pendant le confinement** During the lockdown	**je préfère** I prefer **j'adore** I love **j'aime** I like **je n'aime pas** I do not like **je déteste** I hate	**étudier** to study/ studying	**le français** **le dessin** **le théâtre** **l'EPS** **l'histoire** **l'anglais** **la géographie** **la religion** **la technologie** **les sciences** **les maths**	**parce que c'est** because it is	**intéressant** interesting **facile** easy **logique** logical **créatif** creative **difficile** difficult **ennuyeux** boring

Translation - Sentence Builders

Comment est ton collège?

Dans mon collège il y a... in my school there is	**une grande salle** a hall **une cantine** a canteen **un terrain de football** a football pitch **un cour de récré(ation)** a yard/playground **un gymnase** a gym **une piscine** a pool **une bibliothèque** a library **un terrain de tennis** a tennis court **des laboratoires** some science labs **beaucoup de salles de classe** lots of classrooms **plus/moins d'examens** more/less exams **plus d'activités sportives** more sports activities
Mon collège est my school is…	**grand** big **petit** small **moderne** modern **chouette** great **nul** rubbish

Que penses-tu des règles de ton école?

Sentence Starter	Key structures	Infinitive phrase	Connective	Adjective
Dans mon école At my school	**on doit** you must **il faut** you have to	**écouter le prof** Listen to the teacher **porter l'uniforme** Wear a uniform **faire ses devoirs** Do your homework **Être à l'heure** Be on time	**et je pense que c'est** and I think it is **et à mon avis c'est** and in my opinion it is	**juste** fair **injuste** unfair **strict** Strict **cool** cool
	on ne peut pas you can't **il est interdit de** You're not allowed to	**être en retard** Be late **mâcher du chewing-gum** Chew chewing gum **porter des baskets/du maquillage** Wear trainers/makeup **harceler les autres** bully others **utiliser un portable** Use a phone **avoir un piercing** Have a piercing **Fumer** Smoke		

Quel est ton jour préféré au collège?

Mon jour préféré c'est le… **lundi** **mardi** **mercredi jeudi** **vendredi**	**car** **puisque** **parce que**	**on a** **j'ai** **je n'ai pas de/d'**	**français** **théâtre** **géographie** **musique** **technologie** **anglais** **EPS** **histoire** **informatique** **arts plastiques** **maths** **sciences**	**C'est**	**ennuyeux** **amusant** **créatif** **facile** **difficile** **intéressant** **nul** **Le/la prof est…** **sympa/sévère**

Translation - Sentence Builders

Qu'est-ce que tu portes pour aller au collège?					
Sentence starter	**Present tense phrase**			**Opinion**	
Pour aller au collège For school **D'habitude** Usually	**je porte** (I wear) **j'aime porter** (I like to wear) **mais je voudrais porter** (but I would like to wear)	**un pantalon noir** (black trousers) **une chemise blanche** (a white shirt) **un pull noir** (a black jumper) **une jupe noire** (a black skirt) **des chassures noires** (black shoes)	**des chaussettes blanches** (white socks) **des baskets blanches** (white trainers) **un sweat à capuche orange** (an orange hoody)	**J'aime bien l'uniforme parce que** (I really like the uniform because) **Je déteste l'uniforme parce que** (I hate the uniform because)	**C'est confortable** (it's comfortable) **C'est pratique** (it's practical) **C'est chic** (it's elegant) **C'est démodé** (it's old-fashioned) **C'est ennuyeux** (it's boring)

Qu'est-ce que tu voudrais faire comme métier?					
Je voudrais être I would like to be **Je vais être** I'm going to be **Je vais travailler comme** I'm going to work as	**avocat(e)** lawyer **maçon** bricklayer **hôtesse/steward** flight attendant **danseur/se** dancer **pompier/pompière** firefighter **serveur/se** waiter/ess **chanteur/se** singer **cuisinier/cuisinière** cook	**comptable** accountant **vendeur/se** shop assistant **électricien** electrician **infirmier/infirmière** nurse **écrivain(e)** writer **plombier/plombière** plumber **photographe** photographer	**(parce que) c'est un travail...** (because) it is a ___ job	**artistique** artistic **passionnant** exciting **exigeant** demanding **important** important **facile** easy **difficile** hard	**varié** varied **répétitif** repetitive **à responsabilités** with responsibility **avec de bonnes perspectives** with good prospects **avec un bon salaire** with a good salary

Translation - Sentence Builders

3 Time Frames

	Time Marker	Verb (in correct tense)	Place/activity/food
PRESENT	**Normalement** Normally **Le week-end** At the weekend	**je mange** I eat **je joue** I play **j'aime regarder** I like to watch **je vais** I go	**des céréales** cereal **aux jeux vidéo** video games **les films d'horreur** horror films **au parc** to the park
PAST	**Hier** Yesterday **Le week-end dernier** Last weekend	**j'ai mangé** I ate **j'ai joué** I played **je suis allé(e)** I went	
FUTURE	**Ce soir** This evening **Ce week-end** This weekend **La semaine prochaine** Next week	**je vais manger** I'm going to eat **je vais jouer** I'm going to play **je voudrais regarder** I would like to watch **je vais aller** I'm going to go	

Present tense – Irregular verbs

Some verbs are irregular. They don't follow the regular verb pattern.

avoir	**to have**
j'ai tu as il/elle a	i have you have he/she has
être	**to be**
je suis tu es il/elle est	i am you are he/she is

Present Tense - Verb Endings

		Regular ER Verbs	Regular IR Verbs	Regular RE Verbs
I	Je	-E	-IS	-S
You (s)	Tu	-ES	-IS	-S
He / She / One	Il / Elle / On	-E	-IT	
We	Nous	-ONS	-ISSONS	-ONS
You (pl)	Vous	-EZ	-ISSEZ	-EZ
They	Ils / Elles	-ENT	-ISSENT	-ENT

Translation - Sentence Builders

être - to be

je **suis**	I am	nous **sommes**	we are
tu **es**	you are	vous **êtes**	you are
il/elle/on **est**	he/she is/we are	ils/elles **sont**	they are

faire - to do/make

je **fais**	I do	nous **faisons**	we do
tu **fais**	you do	vous **faites**	you do
il/elle/on **fait**	he/she does/we do	ils/elles **font**	they do

aller - to go

je **vais**	I go	nous **allons**	we go
tu **vas**	you go	vous **allez**	you go
il/elle/on **va**	he/she goes/we go	ils/elles **vont**	they go

Studio Grammaire

Most verb form the perfect tense with part of avoir + a past participle.

For regular -er verbs, take off -er and ad é:
manger (to eat) - j'ai mangé (I ate/I have eaten)

boire (to drink), faire (to do/make), lire (to read), prendre (to take) and voir (to see) have irregular past participles.

j' ai	**dansé/regardé**
tu as	**bu**
il/elle/on a	**fait**
nous avons	**lu**
vous avez	**pris**
ils/elles ont	**vu**

A few important verbs take être, not avoir.

The past participle has to agree with the subject:

Elle est allé**e** en ville.

je suis	
tu es	
il/elle/on est	**allé (e)(s)**
nous sommes	**resté (e)(s)**
vous êtes	**sorti (e)(s)**
ils/elles sont	

Year 8 - Sentence Builder

¿Qué hiciste en las vacaciones? - What did you do in the holidays?									
El verano pasado (Last summer) **El año pasado** (Last year)	**fui a** (I went to)	**Grecia** (Greece) **Gales** (Wales) **Escocia** (Scotland) **Francia** (France) **España** (Spain) **Alemania** (Germany) **los Estados Unidos** (the USA) **la playa** (the beach)	**con** (with)	**mis padres** (my parents) **mis amigos** (my friends) **mi familia** (my family) **mis abuelos** (my grandparents) **mi clase** (my class)	**El primer día** (On the first day) **luego** (then) **después** (afterwards) **más tarde** (later) **Por la mañana** (In the morning) **Por la tarde** (In the afternoon) **Por la noche** (In the evening) **Todos los días** (everyday)	**tomé el sol** (I sunbathed) **comí comida típica** (I ate typical food) **nadé en el mar** (I swam in the sea) **visité monumentos** (I visited monuments) **compré recuerdos** (I bought souvenirs) **hice deportes acuáticos** (I did aquatic sports) **hice turismo** (I went sightseeing) **saqué fotos** (I took photos)	**y fue** (and it was)	**súper** (really) **muy** (very) **bastante** (quite) **un poco** (a bit)	**emocionante** (exciting) **interesante** (interesting) **relajante** (relaxing) **delicioso** (delicious) **divertido** (fun) **guay** (cool) **aburrido** (boring) **agotador** (tiring) **caro** (expensive)

¿Cómo fuiste? - How did you get there?				
Viajé (I travelled) **Prefiero viajar** (I prefer to travel)	**en avión** (by plane) **en barco** (by boat) **en tren** (by train)	**en coche** (by car) **En bicicleta** (by bike)	**y fue rápido.** (and it was fast) **y fue lento** (and it was slow) **y fue peligroso** (and it was dangerous) **y fue seguro** (and it was safe)	**y fue barato** (and it was cheap) **y fue caro** (and it was expensive) **Porque es** (because it is)

Year 8 - Sentence Builder

¿Qué haces normalmente durante las vacaciones? - What do you usually do in the holidays?

Normalmente (Usually) **A menudo** (Often) **Cada año** (Every year)	**voy a** (I go to)	**Grecia** (Greece) **Gales** (Wales) **Escocia** (Scotland) **Francia** (France) **España** (Spain) **Alemania** (Germany) **los Estados Unidos** (the USA) **la playa** (the beach)	**con** (with)	**mis padres** (my parents) **mis amigos** (my friends) **mi familia** (my family) **mis abuelos** (my grandparents)	**Generalmente** (Generally) **Por la mañana** (In the morning) **Por la tarde** (In the afternoon) **Por la noche** (In the evening) **Todos los días** (everyday) **A veces** (sometimes)	**tomo el sol** (I sunbathe) **como comida típica** (I eat typical food) **nado en el mar** (I swim in the sea) **visito monumentos** (I visit monuments) **compro recuerdos** (I buy souvenirs) **hago deportes acuáticos** (I do aquatic sports) **hago turismo** (I go sightseeing) **saco fotos** (I take photos)	**y es** (and it is)	**súper** (really) **muy** (very) **bastante** (quite) **un poco** (a bit)	**emocionante** (exciting) **interesante** (interesting) **relajante** (relaxing) **delicioso** (delicious) **divertido** (fun) **guay** (cool) **aburrido** (boring) **agotador** (tiring) **caro** (expensive)

Las vacaciones - Presente/Pasado/Futuro

Time marker	Verb	Complement		
Normalmente (Normally) **Generalmente / en general** (In general)	**voy** (I go) **vamos** (we go)	**a Francia** (to France) **a Alemania** (to Germany) **a Grecia** (to Greece) **a España** (to Spain) **a Italia** (to Italy)	**en barco** (by boat) **en tren** (by train) **en avión** (by plane) **en bicicleta** (by bicycle) **en autocar** (by coach) **en coche** (by car)	**con mi familia** (with my family) **con mis amigos** (with my friencs) **con mis padres** (with my parents) **con mi instituto** (with my school) **con mi clase** (with my class)
El año pasado (Last year) **El verano pasado** (Last summer)	**fui** (I went) **fuimos** (we went)			
El año próximo (Next year) **En el futuro** (In the future)	**me gustaría ir** (I would like to go) **voy a ir** (I am going to go)			

Year 8 - Sentence Builder

¿Qué haces en tu tiempo libre? - What do you do in free-time?

Time expression	Verbs	Complement		Reason
El fin de semana (At the weekend) **Después del instituto** (After school) **Por la mañana** (In the morning) **Por la tarde** (In the afternoon/evening) **Una vez / dos veces / tres veces** Once/twice/three times a week **A veces** (Sometimes) **De vez en cuando** (from time to time) **Todos los días** (Every day)	**hago** (I do) **hacemos**(we do)	**gimnasia** (gymnastics) **atletismo** (athletics)	**equitación** (horse-riding) **natación** (swimming)	**porque (no) es** because it is (not) **divertido** amusing / fun **interesante** interesting **genial** great **emocionante** exciting **guay** cool **tonto** silly
	juego (I play) **jugamos**(we play) **FOR GAMES**	**al fútbol.** (football) **al baloncesto** (basketball)	**al ordenador** (on the computer) **a los videojuegos** (video games)	
	toco (I play) **tocamos**(we play) **FOR INSTRUMENTS**	**la guitarra** (the guitar)	**el piano** (the piano)	
	escucho música (I listen to music) **paseo al perro** (I walk my dog) **salgo con mis amigos** (I go out with my friends) **leo libros** (I read books)			

Qué vas a hacer el fin de semana? - What are you going to do at the weekend?

	Weather	Time expressions	IR (to go) present form	Infinitive	It is going to be	Adjective	
Si (If)	**hace buen tiempo** (the weather is good) **hace mal tiempo** (the weather is bad) **hace sol** (it's sunny) **calor** (it's hot) **frío** (it's cold) **llueve** (it rains)	**el fin de semana** (at the weekend) **mañana** (tomorrow) **esta tarde** (this afternoon)	**voy a** (I am going to) **va a** (he/she is going to) **vamos a** (we are going to)	**descansar** **usar el ordenador** **montar en bici** **jugar a los videojuegos** **hacer deberes** **ver la tele** **ir de compras** **salir con mis amigos** **ir al cine**	**Va a ser** (It is going to be)	**genial** (great) **emocionante** (exciting) **interesante** (interesting) **guay** (cool)	**relajante** (relaxing) **divertido** (fun) **tedioso** (annoying) **aburrido** (boring)

Year 8 - Sentence Builder

Programas de televisión - TV programmes

Opinion verb (1)	TV programmes (2)	Reason (3)	Verb (4)
Prefiero (I prefer) **Odio** (I hate) **Me encanta(n)** (I love) **Me gusta(n)** (I like) **No me gusta(n)** (I do not like)	**el telediario / las noticias** (the news) **los programas de deporte** (sports programmes) **los programas de música** (music programmes) **los dibujos animados** (cartoons) **los concursos** (game shows) **los documentales** (documentaries) **las telenovelas** (soaps / soap operas) **las comedias** (comedies) **las series policiacas** (detective series)	**porque** (because) **ya que** (since)	**es...** (It is) **son...** (They are)

Comparison (5)	Adjective (6)	Comparison (7)	TV programmes (2)
más (more) **menos** (It is)	**aburrido/a /os/as** (boring) **informativo/a/os/as** (informative) **educativo/a/os/as** (educational) **gracioso/a/os/as** (funny) **animado/a/os/as** (lively) **entretenido/a/os/as** (entertaining) **emocionante(s)** (exciting) **interesante(s)** (interesting)	**que...** (than...)	(see column two)

Tipos de películas - Film genres

Opinion verb (1)	TV programmes (2)			Reason (3)	(4)	intensifier (5)	Adjective (6)	
Me encantan... (I love) **Me fascinan...** (I am fascinated by...) **Me gustan mucho...** (I like ... a lot) **Prefiero...** (I prefer) **No me gustan nada...** (I don't like at all) ***Odio/Detesto** (I hate)	**las películas de** **las comedias** (comedies)	**amor** (romantic) **acción** (action) **aventura** (adventure) **artes marciales** (martial arts)	**ciencia ficción** (science fiction) **dibujos animados** (animation) **guerra** (war) **terror** (horror)	**porque** (because) **ya que** (since)	**son...** (they are)	**súper** (really) **muy** (very) **bastante** (quite) **un poco** (a bit)	**interesantes** (interesting) **entretenidas** (entertaining) **aburridas** (boring) **informativas** (informative) **emocionantes** (exciting)	**aterradoras** (scary) **tontas** (silly) **románticas** (romantic) **geniales** (great)

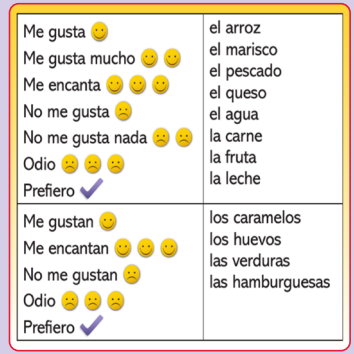
Year 8 - Sentence Builder

¿Qué tipo de música te gusta/no te gusta? ¿Por qué?						
Opinion Phrase	**Style of Music**	**Reason**	**Intensifier**	**Adjective**	**2nd Reason**	
Me encanta Me gusta mucho	el pop el rock el rap el R&B la música clásica la música electrónica la música de...	ya que es	súper muy bastante un poco	popular original pegajoso/a	y también porque...	me gusta el ritmo me encanta la melodía me encanta la letra
No me gusta nada				ruidoso/a lento/a extraño/a fastidioso/a horrible		no me gusta el ritmo odio la melodía odio la letra

Vocabulary for this lesson - Mi rutina diaria				
Sentence Starter		**Verb**		**Time**
Primero (Firstly)	**A menudo** (Often)	**Me despierto** (I wake up)	**Me peino** (I comb my hair)	**a las seis** (at 6 o'clock)
Luego (Then)	**A veces** (Sometimes)	**Me levanto** (I get up)	**Me aliso el pelo** (I straighten my hair)	**a las seis y media** (at 6.30)
Después (Afterwards)	**De vez en cuando** (From time to time)	**Me baño** (I have a bath)	**Me pongo gomina** (I put gel on my hair)	**a las siete** (at 7 o'clock)
Siempre (Always)		**Me ducho** (I have a shower)	**Desayuno** (I have breakfast)	**a las siete y media** (at 7.30)
Por lo general (Generally)	**Nunca** (Never)	**Me lavo la cara** (I wash my face)	**Ceno** (I have dinner)	**a las ocho** (at 8 o'clock)
		Me lavo los dientes (I brush my teeth)	**Veo la tele** (I watch TV)	**a las ocho y cuarto** (at 8.15)
		Me visto (I get dressed)	**Voy al insti** (I go to school)	**a las nueve** (at 9 o'clock)
		Me maquillo (I put on make-up)	**Hago mis deberes** (I do my homework)	

Year 8 - Sentence Builder

¿Qué desayunas/comes/meriendas/cenas normalmente? - What do you usually have for breakfast/lunch/dinner?

Sentence Starter	Verb	Noun		Opinion
Siempre (Always) **Normalmente** (Normally) **Por lo general/ Generalmente** (Generally) **A menudo** (Often) **A veces** (Sometimes) **De vez en cuando** (From time to time) **Nunca** (Never)	**desayuno** (for breakfast I have...) **como** (for lunch I have...) **meriendo** (for tea I have...) **ceno** (for dinner I have...) **bebo** (I drink) **me gusta beber** (I like to drink) **me gusta comer** (I like to eat)	**un bocadillo** (a sandwich) **pollo** (chicken) **pescado** (fish) **marisco** (seafood) **carne** (meat) **arroz** (rice) **queso** (cheese) **sopa** (soup) **ensalada** (salad) **fruta** (fruit) **patatas fritas** (chips)	**verduras** (vegetables) **pasta** (pasta) **pizza** (pizza) **tostadas** (toast) **cereales** (cereals) **galletas** (cookies) **caramelos** (sweets) **bebidas gaseosas** (fizzy drinks) **zumo de fruta** (fruit juice) **agua** (water) **leche** (milk)	

El cuerpo

¿Qué te duele?		(What hurts (you)?)
Me duele el brazo/estómago/pie		(My arm/stomach/foot hurts)
Me duele la cabeza/ garganta		(My head/throat hurts)
Me duele la espalda/mano/pierna		(My back/hand/leg hurts)
Me duelen los dientes/oídos/ojos		(My teeth/ears/eyes hurt)
Tengo – (I have)	**dolor de cabeza**	(a headache)
	dolor de espalda	(a backache)
Tengo – (I have)	**un resfriado**	(a cold)
	fiebre	(a temperature)
	gripe	(the flu)
	tos	(a cough)
	quemaduras del sol	(a sunburn)
	vómito	(I have been sick)
Estoy – (I am)	**cansado / cansada**	(tired)
	enfermo / enferma	(ill/sick)

Year 8 - Sentence Builder

¿Qué te duele y por qué?

Time Phrase	Activity	Therefore / So	Connective	Exclamation
Ayer (Yesterday) **Hoy** (Today) **La semana pasada** (Last week) **El fin de semana pasao** (Last weekend)	**Jugué al fútbol / baloncesto** (I played football / basketball) **Jugué a un videojuego** (I played a videogame) **Hice footing** (I went jogging) **Monté en bicicleta** (I rode a bike) **Comí….** (I ate…) **Hizo mucho calor** (It was very hot) **No dormí mucho** (I didn't sleep much)	**Por eso** (Therefore) **Así que** (So)	**Me duele el brazo/estómago/pie** **Me duele la cabeza/ garganta** **Me duele la espalda/mano/pierna** **Me duelen los dientes/oídos/ojos** **Tengo fiebre** (I have a fever) **Tengo vómito** (I have been sick) **Tengo tos** (I have a cough) **Tengo gripe** (I have the flu) **Tengo catarro** (I have a cold) **Tengo quemaduras de sol** (I'm sunburnt) **Estoy cansado/a** (I'm tired) **Estoy enfermo/a** (I'm ill)	**¡Qué desastre!** (What a disaster!) **¡Qué pena!** (What a shame / pity!) **¡Qué lástima!** (What a shame / pity!) **¡Qué mal!** (How bad!)

Las asignaturas escolares - School subjects

Los lunes **Los martes** **Los miércoles** **Los jueves** **Los viernes** **Por la mañana** (In the morning) **Por la tarde** (In the afternoon)	**a** (at)	**la una**	**cinco** (five past) y **diez** (ten past) **cuarto** (quarter past) **veinte** (twenty past) **veinticinco** (twenty-five past) **media** (half past)	**tengo** (I have) **tenemos** (we have) **estudio** (I study) **estudiamos** (we study)	**español** **inglés** **dibujo** **teatro** **historia** **geografía** **informática** **música** **religión** **educación física**	**(No) me gusta porque es**	**divertido/a** **aburrido/a** **creativo/a** **interesante** **importante** **fácil** (easy) **difícil** (difficult) **útil** (useful)
	a (at)	**las dos** **tres** **cuatro** **cinco** **seis** **siete** **ocho** **nueve** **diez** **once** **doce**	menos **veinticinco** (twenty-five to) **veinte** (twenty to) **cuarto** (quarter to) **diez** (ten to) **cinco** (five to)		**ciencias** **matemáticas**	**(No) me gustan porque son**	**divertidos/as** **aburridos/as** **creativos/as** **interesantes** **importantes** **fáciles** **difíciles** **útiles**

Year 8 - Sentence Builder

El uniforme escolar / La ropa

Sentence starter	Present tense phrase		Opinion	
En el insti (At school)	**llevo** (I wear) **llevamos** (we wear) **tengo que llevar** (I have to wear) **tenemos que llevar** (we have to wear)	**unos pantalones negros** (black trousers) **una camisa blanca** (a white shirt) **un jersey azul** (a blue jumper) **una falda gris** (a grey skirt) **unos zapatos negros** (black shoes) **unos calcetines blancos** (white socks) **unas zapatillas de deporte blancas** (white trainers) **una sudadera naranja** (an orange hoody)	**Me encanta el uniforme porque es...** (I love the uniform because it is...) **Odio el uniforme ya que es...** (I hate the uniform as it is...) **porque es...** (because it is...) **porque son...** (because they are...)	**cómodo** (comfortable) **práctico** (practical) **elegante** (elegant) **bonito** (pretty) **guay** (cool) **incómodo** (uncomfortable) **feo** (ugly) **anticuado** (old fashioned)
Los fines de semana (At weekends)	**me gusta llevar** (I like to wear)			

¿En que te gustaria trabajar en el futuro?

Sentence starter	Modal verb	Infinitive structures	Connective	Verb	Adjective
En el futuro (In the future) **Cuando sea mayor** (When I am older)	**voy a** (I am going to) **me gustaría** (I would like)	**ser enfermero/a** (to) be a nurse **ser veterinario/a** (to) be a vet **ser periodista** (to) be a journalist	**porque** (because) **ya que** (since)	**soy** (I am)	**trabajador/a** (hard-working) **paciente** (patient) **responsable** (responsible) **independiente** (independent) **organizado** (organised) **ambicioso** (ambitious)
		trabajar… (to work) **en una oficina** (in an office) **al aire libre** (outdoors) **en equipo** (in a team) **solo/a** (by myself) **con niños** (with children) **con animales** (with animals)		**es** (it is) **sería** (It would be)	**variado** (varied) **práctico** (practical) **creativo** (creative) **emocionante** (exciting) **bien pagado** (well-paid)
		tener… (to have) **un trabajo creativo** (a creative job) **un trabajo manual** (a manual job)			

Verb Endings

Present

	ar	er	ir
I	- o	- o	- o
You	- as	- es	- es
He / She / It	- a	- e	- e
We	- amos	- emos	- imos
You	- áis	- éis	- ís
They	- an	- en	- en

Preterite

	ar	er/ir
I	- é	- í
You	- aste	- iste
He / She / It	- ó	- ió
We	- amos	- imos
You	- asteis	- isteis
They	- aron	- ieron

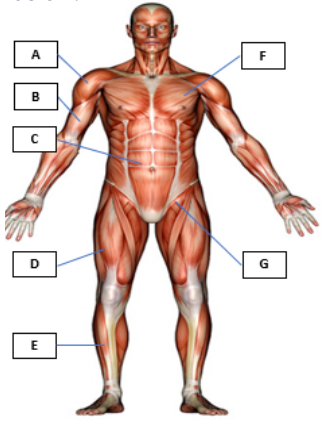
Near Future

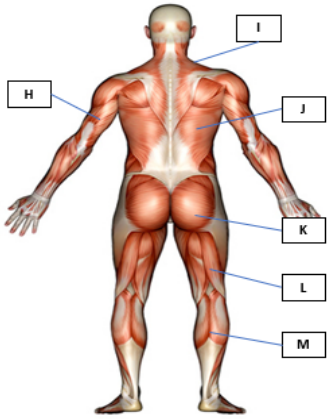
I	voy	+ a	+ infinitive
You	vas		
He / She / It	va		
We	vamos		
You	vais		
They	van		

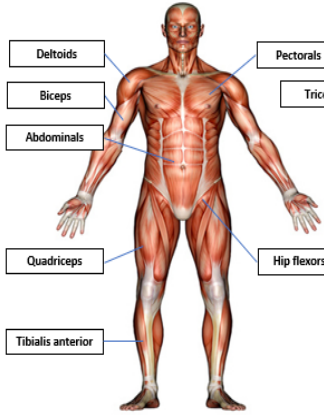
KS3 - PE

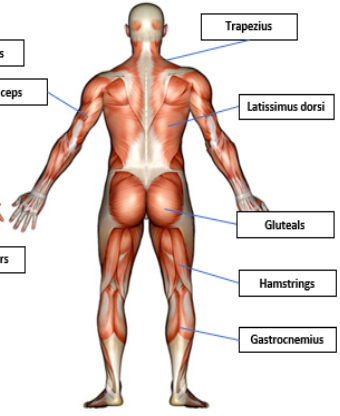
1A

Identify parts A-M on the diagram of the muscular system below.



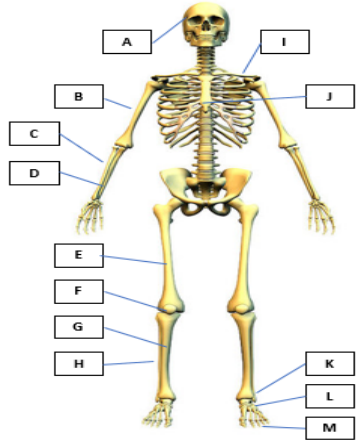


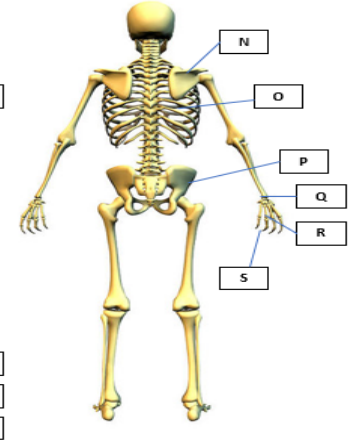


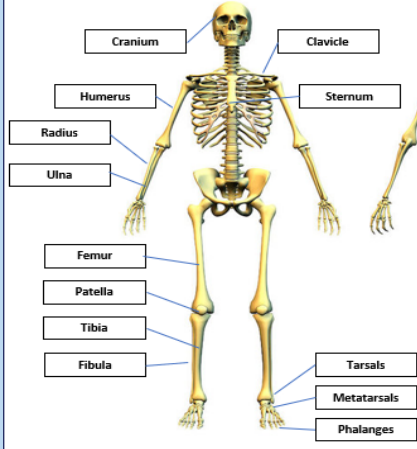


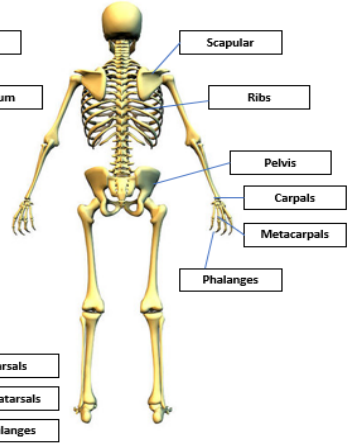
2A

Identify parts A-S on the diagram of the skeletal system below.









KS3 - PE

3A	**Identify three immediate effects of exercise.** • Sweating • Red face • Increased body temperature • Increased heart rate • Increased breathing rate
3B	**Identify three short-term effects of exercise.** • Fatigue • Muscle soreness (DOMS) • Dizziness • Nausea
3C	**Identify three long-term effects of exercise.** • Lower resting heart rate • Weight loss • Increased muscle mass • Increased strength and cardiovascular endurance
3D	**Define *health*.** • A state of complete physical, mental, and social well-being
3E	**Define *fitness*.** • The ability to meet the demands of your environment
3F	**Identify three positive influences on health.** • Regular exercise • Healthy diet • Regular sleep • Positive friendship groups • High quality education

3G	**Identify three negative influences on health.** • Lack of exercise • Unhealthy diet/too much fatty food • Lack of regular sleep • Lack of positive friendship groups • Lack of education
3H	**Identify three types of substance abuse.** • Alcohol • Drugs • Smoking cigarettes
3I	**Identify the negative effects alcohol can have on a person's health.** • Dehydration • Nausea • Memory loss • Liver damage
3J	**Identify the negative effects drugs can have on a person's health.** • Feeling paranoid • Poor judgment • Heart problems
3K	**Identify the negative effects smoking cigarettes can have on a person's health.** • Lung cancer • Increased blood pressure • Poor circulation

KS3 - PE

Define the following fitness components:

a. Agility
b. Balance
c. Cardiovascular endurance
d. Coordination
e. Flexibility
f. Muscular endurance
g. Power
h. Reaction time
i. Maximal strength
j. Static strength
k. Speed

4A

a. The ability to move and change direction quickly with control.
b. Maintaining the centre of mass over the base of support.
c. The ability of the heart and lungs to supply oxygen to the working muscles.
d. The ability to use two or more parts of the body together with control.
e. The range of movement possible at a joint.
f. The ability of a muscle or muscles to repeat contractions without fatigue.
g. Maximum strength x maximum speed.
h. The time taken to respond to a stimulus.
i. The largest force possible in single contraction.
j. The amount of strength applied to an immovable object.
k. The maximum rate at which you can perform a movement or cover a distance.

Identify a sporting example for the following fitness components:

a. Agility
b. Balance
c. Cardiovascular endurance
d. Coordination
e. Flexibility
f. Muscular endurance
g. Power
h. Reaction time
i. Maximal strength
j. Static strength
k. Speed

4B

a. When marking an opponent in netball.
b. When performing a handstand in gymnastics.
c. When running at the end of a marathon.
d. When moving the arms and legs to serve a ball in tennis.
e. When stretching out wide to catch a ball in cricket.
f. When repeatedly punching an opponent in boxing.
g. When jumping for a rebound in basketball.
h. When returning a smash in badminton.
i. When throwing a shot putt in athletics.
j. When holding a handstand in gymnastics.
k. When moving the legs quickly in the 100m.

KS3 - PE

5A	**Define *aerobic*.**
	• With oxygen
5B	**Define *anaerobic*.**
	• Without oxygen
5C	**Identify the equation for aerobic respiration.**
	• Glucose + Oxygen = Energy + CO_2 + Water
5D	**Identify the equation for anaerobic respiration.**
	• Glucose = Energy + Lactic Acid
5E	**Describe *aerobic exercise*.**
	• Long duration and low intensity exercise
5F	**Describe *anaerobic exercise*.**
	• Short duration and high intensity exercise
5G	**Identify examples of an aerobic sporting activity.**
	• A marathon • Long-distance cycling
5H	**Identify examples of an anaerobic sporting activity.**
	• 100m sprint • High jump

5I	**Identify the fitness components developed through aerobic exercise.**
	• Cardiovascular endurance
5J	**Identify the fitness components developed through anaerobic exercise.**
	• Power and speed
5K	**Identify how an athlete would calculate their maximum heart rate (MHR)?**
	• MHR = 220 – age
5L	**Define *heart rate*.**
	• The number of times the heart beats per minute
5M	**Define *stroke volume*.**
	• The volume of blood pumped from the left side of the heart per beat
5N	**Define *cardiac output*.**
	• Heart rate x stroke volume
5O	**Define *anticipatory rise*.**
	• The slight increase in heart rate ahead of starting exercise
5P	**Identify the aerobic and anaerobic training zones.**
	• Aerobic = 60 – 80% of MHR • Anaerobic = 80 – 90% of MHR

KS3 - PE

6A	**Identify the seven nutrients which make up a healthy balanced diet.**
	• Carbohydrates • Fats • Protein • Fibre • Vitamins • Minerals • Water
6B	**Identify the main benefit of each nutrient listed in Q8.40.**
	• Carbohydrates = body's main energy source • Fats = body's secondary energy source • Protein = muscle growth and repair • Fibre = supports digestive system • Vitamins = supports immune system • Minerals = helps maintain strong bones • Water = helps maintain hydration
6C	**Identify examples of each nutrient listed in Q8.40.**
	• Carbohydrates = pasta, rice, potatoes • Fats = red meat, cheese, nuts • Protein = chicken, fish, eggs • Fibre = brown bread, cereal, porridge • Vitamins = fruit and vegetables • Minerals = milk (calcium) • Water = water
6D	**Define *sedentary lifestyle*.**
	• A person's choice to engage in little physical activity

6E	**Identify consequences of a sedentary lifestyle.**
	• Weight gain/obesity • Heart problems (e.g., hypertension) • Diabetes • Low self-esteem
6F	**Define *obesity*.**
	• A person with a large fat content (BMI >30)
6G	**Identify causes of obesity.**
	• High calorie consumption combined with minimal physical activity
6H	**Identify physical, mental and social effects of obesity.**
	• Physical effects: cancer, heart disease, diabetes • Mental effects: depression, loss of confidence • Social effects: inability to socialise
6I	**Define *dehydration*.**
	• The harmful reduction of water in the body
6J	**Identify causes of dehydration.**
	• Not drinking enough fluids • Over-exercising
6K	**Identify three effects of dehydration.**
	• Blood thickens • Increased heart rate • Fatigue

Notes

Notes

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