

49 Core T1 2023-24.

English Language Component 1: Section B Writing Creative Prose

Take 45 minutes for this section. Remember to plan your story for 5 minutes, write for 35 minutes and use the last 5 minutes to proof read your work for accuracy.

AO5: 60% or 24 marks

- ✓ Communicate clearly, effectively and imaginatively, selecting and adapting tone, style and register for different forms, purposes and audiences
- ✓ Organise information and ideas, using structural and grammatical features to support coherence and cohesion of texts

AO6: 40% or 16 marks

- ✓ Use a range of vocabulary and sentence structures for clarity, purpose and effect, with accurate spelling and punctuation.

1. What the examiner is asking you to do

Top tip: Keep your story to a short timescale.

Produce a piece of creative writing in 45 minutes

- You are being asked to write a short narrative/story.
- You will be given a choice of 4 titles. Read them carefully and decide which one your in-class narrative most convincingly fits with.
- Spend 5 minutes thoroughly writing out your plan. How will you make your narrative fit the question? Try to follow the narrative structure opposite.
- Spend 35 minutes writing. Aim for 450 words – 2.5 sides on average. As you know, the best narratives are realistic but something has to happen.
- Spend 5 minutes at the end checking through your writing very carefully. Read each word carefully. If it doesn't 'sound' right, change it. Think to yourself, 'How could I upgrade my writing?' Pay attention to your VSSSP.

2. What the tasks look like

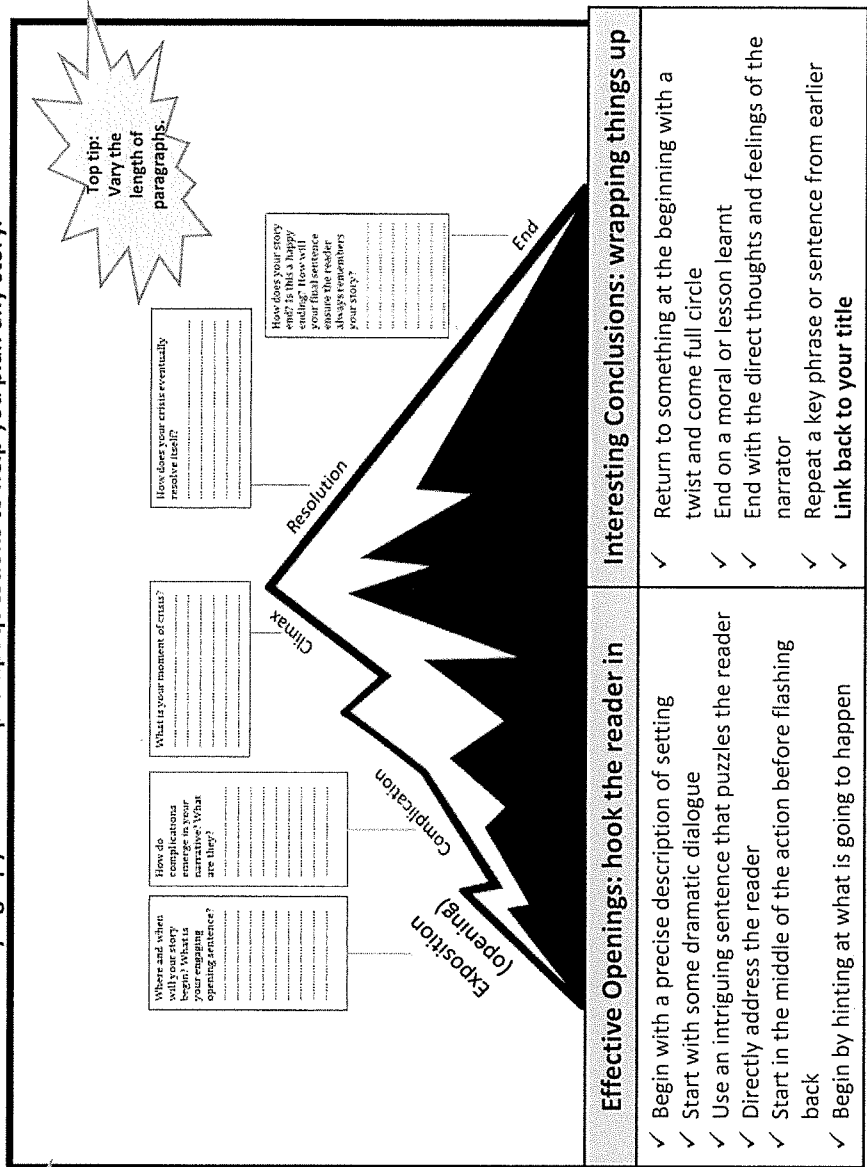
Choose one of the following titles for your writing:

Either

- A memorable weekend
- Write about a time when you had to make a difficult decision
- Write a story which begins: "You are not staying here on your own. Get in the car now," my mum said in that voice which did not allow any argument.
- Write a story which ends: I feared the worst but the teacher could not stop herself from laughing.

3. How to structure a story

Use the Freytag's pyramid and prompt questions to help you plan any story.



Effective Openings: hook the reader in

- ✓ Begin with a precise description of setting
- ✓ Start with some dramatic dialogue
- ✓ Use an intriguing sentence that puzzles the reader
- ✓ Directly address the reader
- ✓ Start in the middle of the action before flashing back
- ✓ Begin by hinting at what is going to happen

Interesting Conclusions: wrapping things up

- ✓ Return to something at the beginning with a twist and come full circle
- ✓ End on a moral or lesson learnt
- ✓ End with the direct thoughts and feelings of the narrator
- ✓ Repeat a key phrase or sentence from earlier
- ✓ Link back to your title

English Language Component 1: Section A Reading 20th Century Literature

Take 1 hour for this section: 10 minutes to read and 50 minutes to write your answers. There are five questions to answer worth 40 marks.

Questions 2, 3, 4 and 5 – Commenting on Language/structure - Look out for the following in texts and comment on All questions: Upscale your explanations of quotes through the effect the writer creates by using them. It is explaining the effect that is important.

Constructing Evidence, Suggests, Because		Word Classes	Figurative Language	Critical Verbs – upscale your analysis of the writer's intentions
What is suggested related to the question...	Ruby is presented as... Drama is created when...	Nouns: the name of a person, place or thing. Verbs: the action word within the sentence eg: <i>sprinting</i> Deontic Modal Verbs: Suggest certainty: <i>must/shall/will</i>	Simile: when a writer compares 2 things using as or like eg: <i>My feet were as cold as ice.</i> Metaphor: when a writer compares 2 things directly eg: <i>My feet were block of ice.</i> Personification: when an inanimate object is given human attributes eg: <i>The fragile arms of the trees swayed desperately in the storm.</i> Symbolism: When one thing is used to stand for something else – e.g – <i>The fire is a symbol of the man's rage.</i>	highlights/ establishes / intensifies/ heightens / cements Reader's response: Shocks/horrifies/disgusts/surprises/amazes/intrigues/entices/confuses/perplexes/overwhelms/frustrates/inspires
How is this delivered by the writer? Embed the evidence from the text in support of what you've said.	Put a comma after the evidence and use quotation marks, '...'	Epistemic Modal Verbs: Suggest possibility: <i>could/might/may</i> Adverbs: the word that describes the verb eg: <i>hysterically</i> Adjectives: the word that describes the noun eg: <i>tranquil</i>		Question 5 always asks you to evaluate a text. Here are some phrases that will help you to evaluate how successful a writer has been.
Explain, why the evidence is significant to what is suggested by the writer.	This implies/suggests/conveys...			Evaluative phrases using critical verbs The author is deliberately highlighting The writer establishes the notion that The tension is heightened when...
2. Sentence types				
Declarative: a statement eg: <i>John was a liar.</i>				
Exclamatory: expresses surprise, shock or anger eg: <i>What a liar he is!</i>				
Interrogative: a question eg: <i>What do you mean John has lied to us?</i>				
Imperative: a command eg: <i>"Stop lying."</i>				
Top band students often identify subtle shifts in tone to help them evaluate texts:				
Describing tone in narrative:				
Describing tone – This might be created by the narrator's word choice or by the word choice of characters through direct speech: cheerful / joyful / lighthearted/ comical/ nostalgic (looking back to the past with fondness) / optimistic Sombre (deeply serious/sad) / angry / aggressive / melancholic / depressing / pessimistic/ resentful / panicked / menacing / tense				
Shifts in tone: The _____ tone shifts to...when.../heightens when.../drops to...when...				

English Language Component 1: Section B Writing Creative Prose

Take 45 minutes for this section. Remember to plan your story for 5 minutes, write for 35 minutes and use the last 5 minutes to proof read your work for accuracy.

4. Understanding when to change paragraph – Use TipTop:

As a general rule you should change paragraph when:

1. Time: You change the time of the story
 2. Place: You change the place/location where the story is taking place
 3. Topic: You change the focus of the story in terms of action or events
 4. Person: You change the person who is speaking when using dialogue
- Remember you can use single sentence or single word paragraphs for dramatic effect.*

5. Vocabulary and Language Features

The content and detail of your writing is important so try to incorporate at the following features

Feature	Example	Feature	Example
Powerful nouns	The edifice filled the skyline.	Onomatopoeia	The scuttle of claws against the wooden floor, sent shivers down her spine.
Well-chosen adjectives	The looming edifice filled the skyline.	Alliteration	The wind whistled and wailed down the chimney at the storm grew.
Excellent verbs	The looming edifice dominated the skyline.	Personification	The windows of the house stared down like lifeless eyes.
Evocative adverbs	The looming edifice dominated the skyline menacingly.	Pathetic fallacy	The cold rain thundered down spitefully on the people below.
A simile	Her eyes glistened darkly like jet black coals.	Sensory description (5 senses)	An acrid stench from the scorching fire caught in the back of his throat.
A metaphor	The pearls of her teeth glistened with spittle.	Oxymoron	A cold fire of rage rippled through her.

6. Vary the type and form of sentence that you use:

Type	Example	Form	Example
Use statements for impact	This was the end.	Be bold with a simple sentence	The bull charged.
Add drama through exclamations	"I hate you!" she screamed in fury, slamming the door as she left.	Combine ideas with a compound sentence	The day had begun brightly, but a now large looming clouds bristled ominously on the horizon.
Create confusion through interrogatives	What was happening? Was that an explosion? A gun firing?	Add pace with a complex sentence	As he sprinted down the road, his lungs burning, his eyes smarting from the acrid fumes, Marcus realised he couldn't out run the deadly lava.
Create tension with imperatives	"Get down! Take cover before it's too late!"	Use a fragment for force	That's when she saw it. Too late...

7. Different ways to begin your sentences – Fronted Adverbials

Sentence type	Example
'-Ing' verb starter	Fleeing in terror, the mountain villagers abandoned their homes.
Simile starter	Like a nuclear detonation, the summit of the mountain exploded.
Preposition starter	Inside the bowels of the volcano, a nightmare lake of magma churned.
Adverb starter	Mercilessly, the molten rock consumed everything in its path.
Conjunction starter	Because it was pitch black, he couldn't see.
ED adjective starter	Terrified and alone, the boy crept along the edge.

8. Use a range of punctuation for effect:

Sentence type	Example
Brackets add in extra information and act as an 'aside' to your reader:	My idea (which had seemed crazy at first) actually worked.
A semi colon joins two independent clauses to show that they are related.	The beach was beautiful; I could have stayed there all day.
A dash – also joins two independent clauses but puts emphasis on the one that comes after it.	I couldn't believe it – I'd been right all along.

English Language Component 1: Section A Reading 20th Century Literature

Take 1 hour for this section: there are five questions to answer worth 40 marks. Read the text in sections as you answer the questions.

Q	Description	Mins	Example Question	How to answer this question
1	List five things question (5 marks) AO1 identify explicit and implicit information and ideas	5	Read lines 1-7. List five things you learn about Ruby Lennox in these lines.	<ol style="list-style-type: none"> 1. Read and highlight the key focus from the question 2. Rule off the lines where the section of text ends. 3. Read the relevant section and highlight elements that help you answer the question 4. Keep it simple - write down the things you learn in a few words/simple sentences. You can write more than five things. You CAN use one word answers. <p>Timings are a mark a minute.</p>
2	What impressions does the writer create OR How does the writer show question (5 marks) AO2 explain, comment on and analyse how writers use language to achieve effects and influence readers.	7.5	Read lines 8-23. What impressions does the writer create of the Lennox family in these lines? OR How does the writer show the narrator's thoughts and feelings in these lines?	<p>-The approach to these questions are very similar.</p> <p>-Spend just over a minute per mark.</p> <p>-Track chronologically through the section of the text.</p> <ol style="list-style-type: none"> 1. Read and highlight the key focus from the question 2. Rule off the lines where the section of text starts and ends. 3. Read the relevant section and track through the text for evidence to help you answer the question. Highlight short quotes to answer the question. <p>Aim to select and write about 5 quotations for a five mark answer and 8 to 10 for a 10 mark answer. These should be as short as possible.</p> <p>4. Use 'evidence-suggests-because' - to answer the question - two sentences as a maximum for each quote. Write BRIEFLY about the effects of the particular words/techniques or structural features on the reader - how does this language feature help to create the impression/show the thing that the question asks about?</p>
3 & 4	What impressions does the writer create OR How does the writer show question (10 marks) AO2 explain, comment on and analyse how writers use language and structure to achieve effects and influence readers	15 mins each	Read lines 24-35. What impressions does the writer create of the woman in these lines? OR How does the writer show the fire spreading and becoming very serious in these lines?	<p>Here is the first part of an example answer to this question - quotes in bold.</p> <p><i>The writer shows the fire spreading and becoming serious through the contrast between the mother "snoring in her bed" while the iron was getting "hotter and hotter". The repetition of "hotter" suggests the iron is becoming more dangerous because the mother has forgotten it. The adjective 'scorching' suggests extreme heat, coupled with the dangerous verbs "sizzle and burn". The flames are personified as they "were happy for a time", suggesting through the phrase "for a time" that they soon got bored and then spread further. This is intensified as the flames "found the carpet", further personifying the fire as having malicious intent and spreading through the house.</i> 6 quotes accurately commented upon = 6 marks so far.</p>
5	To what extent or How far do you agree question (10 marks) AO4 evaluate texts critically and support this with appropriate textual reference.	15	Read lines 50 to the end OR consider the passage as a whole "In the last 20 lines of this passage, Patricia becomes a real heroine." How far do you agree with this view?	<p>This question is asking you to evaluate a text. There will always be evidence to agree with the view, and you may also find evidence to disagree with the view.</p> <ol style="list-style-type: none"> 1. Read and highlight the key focus of the question 2. Read the relevant section (it might be the whole text) and track through the text to select evidence that supports your point of view 3. Aim to select and write about 8 -10 quotations 4. Begin by stating how far you agree with the view and then support this with a range of 'evidence-suggests-because'



What do I need to know?

- Use the three basic index laws to simplify algebraic expressions.
- Calculate with both positive and negative indices.
- Calculate values involving fractional indices.

How do I recognise this topic?

- Check for powers and indices on numbers and/or letters.
- Check to see if the "base number" is the same. E.g.: x^3 and x^5 have the same base number (x) but x^2 and y^5 do not.
- If dealing with fractional and/or negative indices, the word "evaluate" tends to require a simplified numerical answer.

Step by Step Guide / General Tips

- The 3 basic index laws need to be memorised, these are:
 1. $x^a \times x^b = x^{a+b}$ (multiplying/add rule)
 2. $x^a \div x^b = x^{a-b}$ (dividing/subtraction rule)
 3. $(x^a)^b = x^{a \times b}$ (one involving the brackets \rightarrow multiply the powers)
- The negative index only affects the base number, it "flips" the fraction. If the base number is an integer (whole number), then you can convert it to a fraction by writing it out of 1. E.g.: 4 is the same as $\frac{4}{1}$.
- When dealing with fractional indices, understanding the purpose of each part of the fraction is important:
 - The denominator is the "root" of that number, typically the numbers 2 or 3.
 - The numerator is the "power" of that number, typically the numbers 1, 2, 3 and 4 and rarely 5.
- It is recommended to deal with the denominator first, to make the base number smaller, then raise to the power of the numerator.

Worked Example

Simplify the following expressions.

a) $2^3 \times 2^6$	b) $5^7 \div 5^4$	c) $(8^2)^5$
$x^a \times x^b = x^{a+b}$ (multiplying/add rule)	$x^a \div x^b = x^{a-b}$ (dividing/subtraction rule)	$(x^a)^b = x^{a \times b}$ (one involving the brackets)
$2^3 \times 2^6$	$5^7 \div 5^4$	$(8^2)^5$
2^{3+6}	5^{7-4}	$8^{2 \times 5}$
2^9	5^3	8^{10}

Evaluate the following

a) 2^{-3}	b) $9^{\frac{3}{2}}$	c) $8^{-\frac{2}{3}}$
Ignore the negative sign and the whole thing over 1.	Root the denominator. Power of the numerator.	Combine the previous two results.
$\frac{1}{2^3}$	$\sqrt{9} = 3$	$\sqrt[3]{8} = 2$ (root)
$2^3 = 2 \times 2 \times 2$	$3^3 = 27$	$2^2 = 4$ (power)
$2^{-3} = \frac{1}{2 \times 2 \times 2} = \frac{1}{8}$	$9^{\frac{3}{2}} = 27$	$4^{-1} = \frac{1}{4}$ (negative)



What do I need to know?

- Able to convert between ordinary numbers and standard form.
- Able to multiply, divide, add and subtract numbers in standard form.
- Able to read numbers in standard form on a calculator.

How do I recognise this topic?

- Check for the standard form format, will always include "x10ⁿ" (e.g.: 4 x10⁷).
- Look for the key words "standard form" and "ordinary number".
- Very large or very small numbers tend to involve standard form.

Step by Step Guide / General Tips

- Rewrite the standard form part of the number to help with conversions (e.g.: 10⁴ as 10000).
- Negative powers means numbers get smaller.
- Use index laws to simplify the standard form part of the number when multiplying or dividing.
- If in doubt, convert all numbers out of standard form, perform the calculations and then convert back.

Worked Example

Convert the following numbers to standard form:

a) 90000	b) 804000	c) 0.0364
Decimal point behind the first significant figure	Decimal point behind the first significant figure	Adjust the decimal point so it is behind the first significant figure
9.0000	8.04000	003.64
Write in standard form, counting the digits after the decimal point	Write in standard form, counting the digits after the decimal point	Write in standard form, counting the digits skipped (negative since small numbers)
9×10^4	8.04×10^5	3.64×10^{-2}

Evaluate the following calculations

a) $(4 \times 10^3) \times (3 \times 10^5)$	b) $2 \times 10^5 - 7 \times 10^4$
Deal with the front numbers normally. $4 \times 3 = 12$	Convert into ordinary numbers. $2 \times 10^5 = 200000$
Deal with the 10 ³ and 10 ⁵ using index laws. $x^a \times x^b = x^{a+b}$ (multiplying/add rule)	$7 \times 10^4 = 70000$
$10^3 \times 10^5 = 10^8$	Perform the calculation. $200000 - 70000 = 130000$
Simplify to standard form.	Convert back to standard form.
$12 \times 10^8 \rightarrow 1.2 \times 10^9$	$130000 = 1.3 \times 10^5$



What do I need to know?

- Convert between mixed numbers and improper fractions
- Add and subtract Fractions (including with different denominators)
- Multiply and divide fractions (including mixed numbers)

How do I recognise this topic?

- One digit written over another digit.
- Use of the words: Fraction; Numerator; Denominator; Improper fraction; Mixed Number, Simplify, Cancel down

General Tips

- To find equivalent fractions multiply (or divide) both top and bottom by the same number.
- Convert mixed numbers to improper fractions by multiplying the integer (whole number) by the denominator (bottom number) and adding the numerator (top number). This is the new numerator the denominator stays the same.
- To add or subtract fractions find the lowest common multiple of the denominators and convert, then only add (or subtract) the top numbers (numerator)
- To multiply fractions, multiply the numerator (top) and denominators (bottom) separately the cancel down
- To divide fractions turn the second fraction upside down, then multiply.

Worked Example

K214: Add and subtract mixed numbers."

Determine

$$4\frac{5}{9} - 2\frac{1}{3}$$

Give your answer as a mixed number in its simplest form.

The answer is $2\frac{2}{9}$

One way to calculate $4\frac{5}{9} - 2\frac{1}{3}$ is to convert both mixed numbers to improper fractions.

$$\begin{aligned} & 4\frac{5}{9} - 2\frac{1}{3} \\ &= \frac{4 \times 9 + 5}{9} - \frac{2 \times 3 + 1}{3} \\ &= \frac{41}{9} - \frac{7}{3} \\ &= \frac{41}{9} - \frac{21}{9} \\ &= \frac{20}{9} \\ &= 2\frac{2}{9} \end{aligned}$$

"K216: Divide mixed numbers."

Determine

$$2\frac{2}{7} \div 1\frac{1}{3}$$

Give your answer as a mixed number in its simplest form.

The answer is $1\frac{5}{7}$

One way to calculate $2\frac{2}{7} \div 1\frac{1}{3}$ is to convert both mixed numbers to improper fractions.

$$\begin{aligned} & 2\frac{2}{7} \div 1\frac{1}{3} \\ &= \frac{2 \times 7 + 2}{7} \div \frac{1 \times 3 + 1}{3} \\ &= \frac{16}{7} \div \frac{4}{3} \\ &= \frac{16}{7} \times \frac{3}{4} \\ &= \frac{16 \times 3}{7 \times 4} \\ &= \frac{48}{28} \\ &= \frac{12}{7} \\ &= 1\frac{5}{7} \end{aligned}$$

**What do I need to know?**

- Be able to convert between fractions, decimals and percentages confidently.
- Find basic percentages with and without a calculator.
- Calculate percentage increase and decrease.

How do I recognise this topic?

- Typically involves the following key words: **percent, percentage change, increase, decrease, interest, multiplier.**
- Look for the % symbol.

General Tips / Worked Examples1) Find the % then Add or Subtract.

Find the % of the original amount. Add this on to (or subtract from) the original value.

EXAMPLE:

A dress has increased in price by 30%.
It originally cost £40. What is the new price of the dress?

- 1) Find 30% of £40: $30\% \text{ of } £40 = 30\% \times £40$
 $= 0.3 \times 40 = £12$
- 2) It's an increase, so add on to the original: $£40 + £12 = £52$

2) The Multiplier Method

This time, you first need to find the multiplier — the decimal that represents the percentage change.

E.g. 5% increase is 1.05 (= 1 + 0.05) 26% decrease is 0.74 (= 1 - 0.26)

Then you just multiply the original value by the multiplier and voilà — you have the answer.

A % decrease has a multiplier less than 1,
a % increase has a multiplier greater than 1.

EXAMPLE:

A hat is reduced in price by 20% in the sales.
It originally cost £12. What is the new price of the hat?

- 1) Find the multiplier: $20\% \text{ decrease} = 1 - 0.20 = 0.8$
- 2) Multiply the original value by the multiplier: $£12 \times 0.8 = £9.60$

EXAMPLE:

Tariq buys a plain plate for £2. He paints it, then sells it at a craft fair for £3.75.
Find his profit as a percentage.

- 1) Here the 'change' is profit, so the formula looks like this: $\text{percentage profit} = \frac{\text{profit}}{\text{original}} \times 100$
- 2) Work out the profit (amount made - original cost) $\text{profit} = £3.75 - £2 = £1.75$
- 3) Calculate the percentage profit: $\text{percentage profit} = \frac{£1.75}{£2} \times 100 = 87.5\%$

EXAMPLE:

A house increases in value by 10% to £165 000.
Find what it was worth before the rise.

Note: The new, not the original value is given.

- 1) An increase of 10% means £165 000 represents 110% of the original value.
- 2) Divide by 110 to find 1% of the original value.
- 3) Then multiply by 100.

$$\begin{array}{l} +110 \left\{ \begin{array}{l} £165\,000 = 110\% \\ £1500 = 1\% \\ £150\,000 = 100\% \end{array} \right. \end{array}$$

If it was a decrease of 10%, then you'd put '£165 000 = 90%' and divide by 90 instead of 110.

So the original value was £150 000

**What do I need to know?**

- Convert recurring decimals to fractions
- Convert fractions to recurring decimals
- Use algebra to convert any recurring to a fraction

How do I recognise this topic?

- Check for the key word 'recurring'
- Check if there are dots above certain numbers

Step by Step Guide / General Tips

- Step 1 – Rewrite your recurring decimal a few more place values, the label it with a letter (typically the letter is x)
- Step 2 – Multiply it by 10 until the recurring decimals match
- Step 3 – Find the difference between the two, to eliminate the recurring aspects of the decimal
- Step 4 – Divide by the coefficient and simplify the fraction as needed

Worked Example

Convert the following recurring decimals to fractions

a) $0.\dot{3}$	b) $0.5\dot{8}$	c) $0.2\dot{1}2$
Step 1 $x = 0.3333$	Step 1 $x = 0.585858$	Step 1 $x = 0.212212212$
Step 2 $10x = 3.3333$ $-x = 0.3333$	Step 2 $10x = 5.858585$ $100x = 58.58585$ $-x = 0.585858$	Step 2 $10x = 2.122122$ $100x = 21.221221$ $1000x = 212.212212$ $-x = 0.212212$
Step 3 $9x = 3$	Step 3 $99x = 58$	Step 3 $999x = 212$
Step 4 $x = \frac{3}{9} = \frac{1}{3}$	Step 4 $x = \frac{58}{99}$	Step 4 $x = \frac{212}{999}$



What do I need to know?

- Convert between mixed numbers and improper fractions
- Add and subtract Fractions (including with different denominators)
- Multiply and divide fractions (including mixed numbers)

How do I recognise this topic?

- One digit written over another digit.
- Use of the words: Fraction; Numerator; Denominator; Improper fraction; Mixed Number, Simplify, Cancel down

General Tips

- To find equivalent fractions multiply (or divide) both top and bottom by the same number.
- Convert mixed numbers to improper fractions by multiplying the integer (whole number) by the denominator (bottom number) and adding the numerator (top number). This is the new numerator the denominator stays the same.
- To add or subtract fractions find the lowest common multiple of the denominators and convert, then only add (or subtract) the top numbers (numerator)
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Worked Example

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One way to calculate $4\frac{5}{9} - 2\frac{1}{3}$ is to convert both mixed numbers to improper fractions.

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K216: Divide mixed numbers."

Determine

$$2\frac{2}{7} \div 1\frac{1}{3}$$

Give your answer as a mixed number in its simplest form.

The answer is $1\frac{5}{7}$

One way to calculate $2\frac{2}{7} \div 1\frac{1}{3}$ is to convert both mixed numbers to improper fractions.

$$\begin{aligned} & 2\frac{2}{7} \div 1\frac{1}{3} \\ &= \frac{2 \times 7 + 2}{7} \div \frac{1 \times 3 + 1}{3} \\ &= \frac{16}{7} \div \frac{4}{3} \\ &= \frac{16}{7} \times \frac{3}{4} \\ &= \frac{16 \times 3}{7 \times 4} \\ &= \frac{48}{28} \\ &= \frac{12}{7} \\ &= 1\frac{5}{7} \end{aligned}$$



What do I need to know?

- Recall squares of numbers up to 15×15 and the cubes of 1, 2, 3, 4, 5 and 10, also knowing the corresponding roots
- Solve equations such as $x^2 = 25$, giving both the positive and negative roots.
- Use index laws for multiplication and division of integer powers.

How do I recognise this topic?

- Look for Keywords: Power; Index; Base; Root; Square; Cube.
- Look for the root symbol $\sqrt{\quad}$ and cube root symbol $\sqrt[3]{\quad}$
- Look for indices in the question e.g. x^2

General Tips

Laws of indices - summary

- When multiplying – add the powers
- When dividing – subtract the powers
- When raising to a power – multiply the powers
- Any number to the power 0 always equals 1.
- First 15 square numbers: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225
- First 5 Cube Numbers and 10 cubed: 1, 8, 27, 64, 125 and 1000

$$\blacksquare a^m \times a^n = a^{m+n}$$

$$\blacksquare a^m \div a^n = a^{m-n}$$

$$\blacksquare (a^m)^n = a^{mn}$$

$$\blacksquare a^0 = 1$$

Worked Example

Law 1: multiplying numbers in index form

$$a^x \times a^y = a^{(x+y)}$$

- Example 1: Simplify $8^3 \times 8^4$
- $= 8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8$
- $= 8^7$

$$5^7 \times 5^4 = 5^{11}$$

Law 2: dividing numbers in index form

$$a^x \div a^y = a^{(x-y)}$$

- Example 2: Simplify $3^6 \div 3^4$
- $= \frac{3 \times 3 \times 3 \times 3 \times 3 \times 3}{3 \times 3 \times 3 \times 3}$
- $= 3^2$

$$6^5 \div 6^2 = 6^3$$

Law 3: indices in brackets

$$(a^x)^y = a^{xy}$$

- Example 1: Simplify $(3^3)^3$
- $= 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$
- $= 3^{15}$

$$(4^{12})^3 = 4^{36}$$

Special rules. 1

Any number to the power of 0 is equal to 1

$$35^0 = 1 \quad 41^0 = 1$$

Special rule 2:

Any number to the power of 1 is the same as the original number

$$12^1 = 12 \quad 0.4^1 = 0.4$$

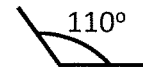


What do I need to know?

- Know and recall the basic angle facts (angles on a straight line sum to 180°/around a point sum to 360°, right angle is 90°, vertically opposite angles are equal and the definition of acute, obtuse and reflex angles).
- Recognise and apply the angle facts involving parallel lines (alternate, corresponding and co-interior angles).
- Know and use the angle rules associated with triangles and quadrilaterals.
- Know and recall formula to work out the interior and exterior angles of polygons (regular/irregular)
- Calculate bearings using angle rules involving parallel lines and know the rules of bearings.

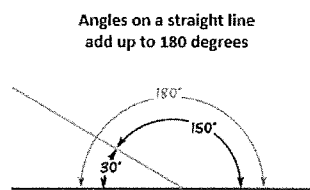
How do I recognise this topic?

- Look for key words such as "angle" and "bearing".
- There is normally a curve connecting one line to the other and is labelled.

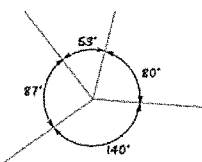


General Tips/Angle rules/Worked examples

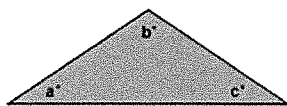
Basic rules



Angles around a point add up to 360 degrees

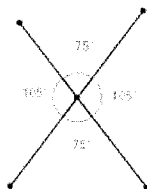


Angles in a triangle add up to 180 degrees



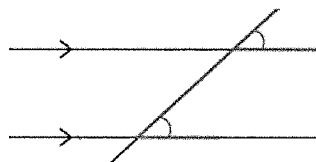
$a + b + c = 180$

Vertically opposite angles are equal

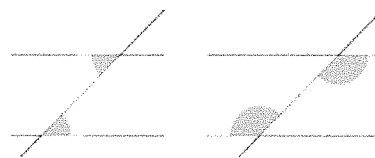


Parallel line rules

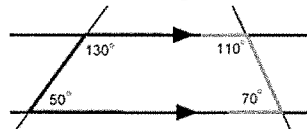
Corresponding angles are equal



Alternate angles are equal



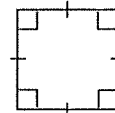
Co-interior angles add up to 180 degrees



1. Bearings are a measure of direction taken from North.
2. Bearings are always measured in a clockwise direction
3. Bearings are always written in 3 figures

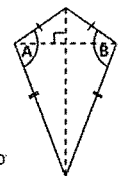
Quadrilaterals

Square
Parallelogram with equal sides & equal angles



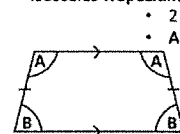
- Kite**
- 2 Pairs of equal adjacent sides
 - $A = B$
 - Longer diagonal bisects shorter at 90°

Rhombus
Parallelogram with equal sides

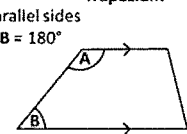


- Diagonals bisect each other at 90°
- Diagonals bisect the angles

Isosceles Trapezium

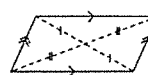


Trapezium

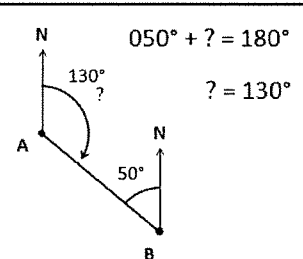


Parallelogram

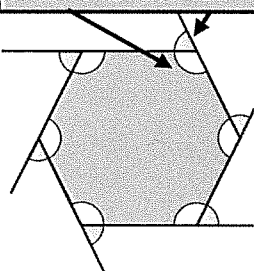
- Parallel opposite sides
- Equal opposite sides
- Equal opposite angles
- Diagonals bisect each other



Rectangle
Parallelogram with equal angles



Interior Angle + Exterior Angle = 180°



Exterior Angles of any Polygon total 360°

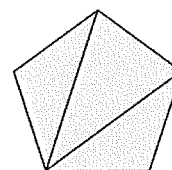
Polygons

A pentadecagon has 15 sides.
What is the size of each exterior angle?

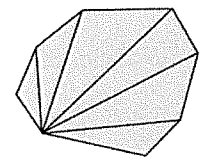
$360 \div 15 = 24^\circ$

The formula for any regular or irregular polygon is:
Sum of Interior Angles = $(n-2) \times 180$

We can see that any polygon can be divided into triangles. The amount of triangles is two less than the number of sides (n).



Regular Pentagon
Total Interior Angles = $3 \times 180^\circ = 540^\circ$



Irregular Octagon
Total Interior Angles = $6 \times 180^\circ = 1080^\circ$

C1 Knowledge Organiser

Atoms, Elements, Compounds & Isotopes.

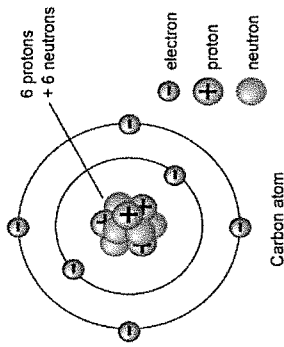
1. DEFINITIONS

- An element is **made up of one type of atom**.
- A compound are **two different elements chemically joined together**.
- A mixture are **two elements or compounds not chemically joined together**.
- Mixtures can be separated by processes such as:
 - Filtration** – separating an insoluble solid from a liquid, e.g. sand and water.
 - Simple distillation** – separating two liquids depending on their boiling point e.g. Ethanol (boiling point at 78°C) and water (boiling point at 100°C)
 - Fractional distillation** – separating a mixture of liquids depending on their boiling point e.g. crude oil
- Chromatography** – Separating small amount of soluble substances by running a solvent along a material such as absorbent paper.

2. FUNDAMENTALS

Name of particle	Relative Mass	Relative charge
Proton	1	+1
Neutron	1	0
Electron	Very small	-1

- Atoms have the same number of protons and electrons.
- Atoms have no overall charge.
- The atomic number = the number of protons and electrons in an atom.
- Number of neutrons = mass number – atomic number
- Isotopes = elements which have the same number of protons but a different number of neutrons.

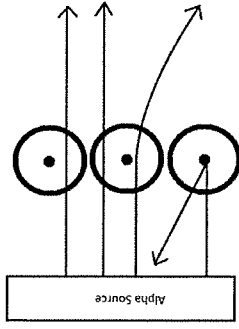


(Mass number) ²³Na

(Atomic number) 11

3. DEVELOPMENT OF THE ATOM

- Initially the atom was believed to be a **solid tiny sphere** that could not be divided.
- The discovery of the electron led to the **plum pudding model** of the atom. The plum pudding model suggested that the atom is a **solid ball of positive charge** with **negative electrons embedded** in it.
- The results from the **alpha particle scattering experiment** by Rutherford led to the conclusion that the **mass of an atom was concentrated at the centre (nucleus)** and that the nucleus was **charged** as some alpha particles were deflected. It also proved the atom was mainly empty space as most alpha particles travelled straight through. The **nuclear model** replaced the plum-pudding model.
- Neils Bohr adapted the nuclear model by suggesting that **electrons orbit the nucleus at specific distances**.
- The experimental work of James Chadwick provided evidence to show the existence of the **neutron** within the nucleus.



SOLID SPHERE MODEL

PLUM PUDDING MODEL

NUCLEAR MODEL

NEILS BOHR MODEL

Tiny sphere that could not be divided.

Ball of positive charge
Negative electrons embedded randomly
No empty space
Mass of atom evenly distributed.

Positive charge in the nucleus
Negative electrons orbiting in shells.
Lots of empty space
Mass of atom concentrated in the nucleus.

Electrons orbit the nucleus at specific distances.

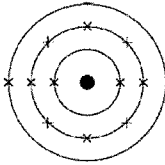
4. CALCULATING AVERAGE ATOMIC MASS

The relative atomic mass of an element is an average value that takes account of the abundance of the isotopes of the element. To calculate this, use the formula below:

$$\frac{(\text{Mass of isotope 1} \times \text{its abundance}) + (\text{Mass of isotope 2} \times \text{its abundance})}{\text{Total abundance}}$$

Total abundance

5. ELECTRONIC STRUCTURE



- The first shell can hold 2 electrons
- The second, third and fourth energy shells can hold up to 8 electrons.
- The electronic structure of sodium is shown on the right.

6. THE PERIODIC TABLE

- The elements in the modern periodic table are arranged in order of atomic number.
- Elements with similar properties are in columns known as groups.
- Elements in the same group in the periodic table have the same number of electrons in their outer shell.
- Metals are found on the left of the periodic table, non-metals are found on the right.

7. DEVELOPMENT OF THE PERIODIC TABLE

- The early periodic table was arranged by atomic weight.
- Mendeleev left gaps for elements that he thought had not been discovered and in some places changed the order to match up elements which reacted similarly E.g. Te and I
- Elements with properties predicted by Mendeleev were discovered and filled the gaps.

8. GROUP 0

- The elements in group 0 of the periodic table are called the noble gases.
- They are unreactive because their atoms have a full outer shell.
- The boiling points of the noble gases increase as you go down the group.

9. GROUP 1

Elements in group are known as the alkali metals

In group 1, the reactivity of the elements increase going down the group because:

- The outer electron gets further away from the nucleus
- The attraction between the outer electron and the nucleus decreases.
- Therefore, the outer electron is more easily lost.
- If an atom loses an electron it forms a positive ion.

Metals in group 1 react with water to form the metal hydroxide and hydrogen.

Metals in group 1 react with oxygen to form the metal oxide.

Metals in group 1 react with chlorine to form the metal chloride.

10. GROUP 7

The elements in group 7 of the periodic table are known as the halogens They all have 7 electrons in their outer shell.

Group 7 elements are non-metals and consist of molecules made of pairs of atoms (diatomic).

As you go down Group 7, the melting point and boiling point increase.

In group 7, the reactivity of the elements decrease down the group as:

The outer shell gets further away from the nucleus

The attraction between the outer shell and the nucleus decreases

Therefore, the ability for the atom to gain another electron is reduced

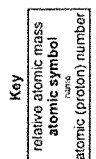
(remember all atoms want a full outer shell – therefore, a group 7 element needs to gain an electron.

If an atom gains an electron it forms a negative ion

A more reactive halogen can displace a less reactive halogen from an aqueous solution of its salt.

e.g. Sodium Bromide + Chlorine → Sodium Chloride + Bromine

Groups		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Period 1		1																		2	
Period 2		Li	Be	B	C	N	O	F	Ne												
Period 3		Na	Mg	Al	Si	P	S	Cl	Ar												
Period 4		K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr		
Period 5		Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe		
Period 6		Cs	Ba	La*	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn		
Period 7		Fr	Ra	Ac*	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts	Og		



Metals = to the left of the 'staircase'

Non-Metals = to the right of the 'staircase'

19	F	fluorine	9
35.5	Cl	chlorine	17
80	Br	bromine	35
127	I	iodine	53
[210]	At	astatine	85
[294]	Ts	tennessine	117

2-3 LEVEL CELLS: undifferentiated cell or an organism, which divides to form more cells of the same type, and can differentiate to form many other cell types.

AQA
Cell Biology B1

Stem cell type	Function	Advantages/disadvantages
Human Embryonic stem cells	Can be cloned and made to differentiate into most cell types	<ul style="list-style-type: none"> Can produce more cell types than adult stem cells Can be a risk of infection Ethical/religious issues - using embryos
Adult bone marrow stem cells	Can form many types of human cells e.g. blood cells	<ul style="list-style-type: none"> Simple procedure Only a few types of cells can be formed.
Meristems (plants)	Can differentiate into any plant cell type throughout the life of the plant.	<ul style="list-style-type: none"> Quickly and economic Clone rare species to prevent extinction Clone crop plants with pest/disease resistance

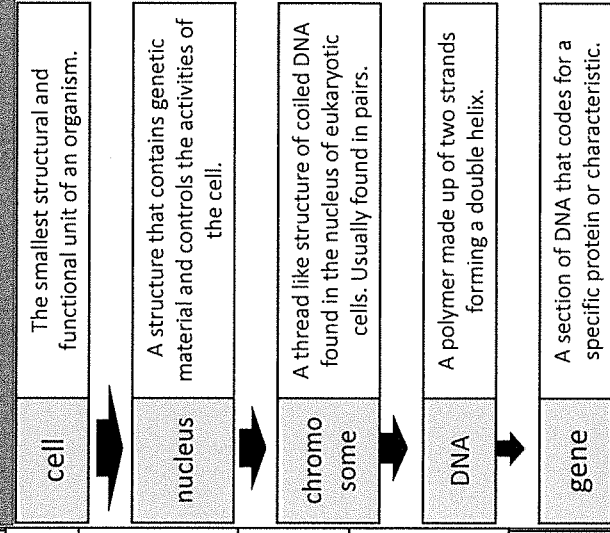
Treatment with stem cells may be able to help conditions such as diabetes and paralysis.

7. CELL TRANSPORT

Cell transport:	Definition:	Examples of cell transport:
Diffusion: <u>No</u> energy required	Movement of particles in a solution or gas from a higher to a lower concentration	<ul style="list-style-type: none"> O₂ and CO₂ in gas exchange Urea from cells into the blood plasma for excretion in the kidney.
Osmosis: <u>No</u> energy required	Movement of water from a dilute solution to a more concentrated solution, through a partially permeable membrane	<ul style="list-style-type: none"> Plants absorb water from the soil by osmosis through their root hair cells.
Active transport: <u>ENERGY</u> required	Movement of particles from a dilute solution to a more concentrated solution	<ul style="list-style-type: none"> Movement of mineral ions into roots of plants The movement of glucose from lower concentrations in the gut into the blood.

FACTORS AFFECTING THE RATE OF DIFFUSION

- Concentration gradient
- Temperature
- Surface area of the membrane (surface area to volume ratio)



6. MITOSIS AND THE CELL CYCLE

Cells divide in a series of stages; the cell cycle. During the cell cycle the genetic material is doubled and then divided into two identical cells. Mitosis occurs in growth, repair and cell replacement.

Stage 1- Growth- Increase the number of sub-cellular structures

Stage 2- DNA synthesis- DNA replicate, forming two copies of each chromosome.

Stage 3- Mitosis:

- One set of chromosomes is pulled to each end of the cell
- The nucleus divides
- The cytoplasm/cell membrane divide, forming two cells that are identical to the parent cell.

8. DIFFUSION ADAPTATIONS

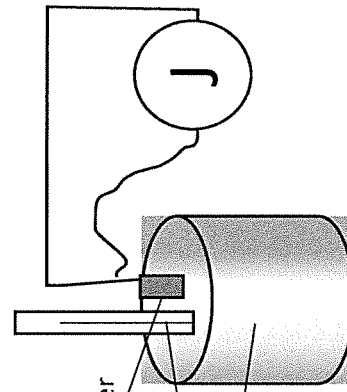
SMALL INTESTINES	LUNGS	GILLS	ROOTS	LEAVES
<ul style="list-style-type: none"> Villi - increase surface area Good blood supply - to maintain concentration gradient Thin membranes - short diffusion distance. 	<ul style="list-style-type: none"> Alveoli - increase surface area Good blood supply - to maintain concentration gradient Thin membranes - short diffusion distance. 	<ul style="list-style-type: none"> Gill filaments and lamella - increase surface area Good blood supply - to maintain concentration gradient Thin membranes - short diffusion distance. 	<ul style="list-style-type: none"> Root hair cells - increase surface area Long and thin - cover more area of soil 	<ul style="list-style-type: none"> Large surface area Thin leaves, for short diffusion path Stomata on the lower surface to let O₂ and CO₂ in and out.

OSMOSIS REQUIRED PRACTICAL

- Set up 5 boiling tubes, with 5 different concentrations of sugar solutions.
- Cut 5 pieces of potato, the same size using the cork borer & cut off the ends. Wipe with paper towel to remove excess moisture.
- Record the mass and length of each potato, then place each into a different test tube.
- After 24 hours, take and record the new mass and length of each potato.
- Record the change in mass and the change in length in your tables (if it has gone down it will have a negative value).

1. Measure and record the mass of the metal block, in kg using a balance.
2. Place a heater in the larger hole in the block and connect the heater, ammeter and power pack in series.
3. Connect the voltmeter in parallel across the powerpack.
4. Put a small amount of water in the smaller hole and place a thermometer in it to record temperature change.
5. Switch the power pack to 12V and turn it on.
6. Record the ammeter and voltmeter readings. These should not change.
7. Measure the starting temperature of the block. And start the stopwatch.
8. Record the temperature on the thermometer every minute for 10minutes.

9

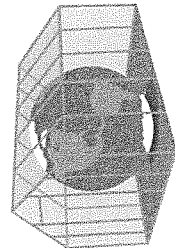


10

Prefix	Multiple	Standard form
Kilo	1,000	$\times 10^3$
Mega	1,000,000	$\times 10^6$
Giga	1,000,000,000	$\times 10^9$

11. <u>Energy resource</u>	<u>What is it?</u>	<u>Positive</u>	<u>Negative</u>
Fossil Fuels (coal, oil and gas)	Burnt to release thermal energy used to turn water into steam to turn turbines	Easy to transport, relatively cheap	Extraction can cause problems: fracking can lead to tremors. Carbon Dioxide released → Greenhouse gas → Leads to Global Warming
Nuclear	Uranium fuel undergoes Nuclear Fission	No CO ₂ produced. Lots of energy produced from small amounts of fuel.	Non-renewable. Radioactive waste remains dangerous for a long time. Possibility of disaster (Eg Chernobyl)
Biofuel	Fuel from living organisms	As plants grow, they absorb CO ₂ ; 'carbon neutral'.	Land used for fuel crops instead of farming (in developing countries). Habitats destroyed to use land for fuel crops.
Tides	"Tidal Barrage" traps water from tides to use to generate electricity.	Predictable due to consistency of tides. No greenhouse gases produced.	Expensive to set up. A barrage (dam) is built across a river estuary, flooding habitats and causing problems for ships and boats.
Waves	Up and down motion turns turbines	No waste products.	Can be unreliable depends on wave output as large waves can stop the pistons working.
Hydroelectric	Falling water spins a turbine	No waste products. Very reliable.	Habitats, farmland and houses can be flooded when dam is built.
Wind	Movement causes turbine to spin which turns a generator	No waste products.	Unreliable -- wind varies. Visual and noise pollution. Dangerous to migrating birds.
Solar	Directly heats objects in solar panels or sunlight captured in photovoltaic cells	No waste products.	Unreliable due to light intensity (Eg: Night time or cloudy days). Making and installing solar panels expensive.
Geothermal	Hot rocks under the ground heats water to produce steam to turn turbine	No greenhouse gases produced.	Limited to a small number of countries. Geothermal power stations can cause earthquake tremors.

12

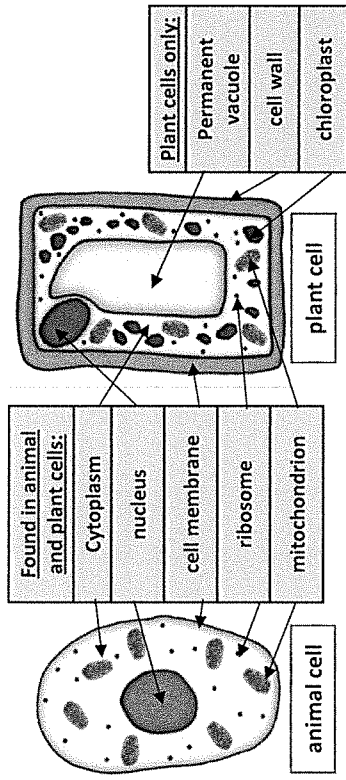


Uses of Energy Resources
Transport, Electricity
Generation, Heating

13

Non-renewable energy resource	These will run out. It is a finite reserve. It cannot be replenished.
Renewable energy resource	Replenish as they are being used

1. EUKARYOTES (plant and animal cells)- complex organisms



Cell organelle	Function of organelle
Cytoplasm	Gel substance, where chemical reactions take place. Contains enzymes to catalyse these reactions.
Nucleus	Contains genetic material and controls cell activities.
Cell membrane	Controls the movement of substances into and out of the cell. Partially permeable.
Ribosome	Site of protein synthesis, where mRNA is translated to an amino acid chain.
Mitochondrion	Site of respiration, where energy is released.
Vacuole	Contains cell sap, to keep the cell turgid.
Cell wall	Supports and strengthens the cell (made of cellulose).
Chloroplast	Site of photosynthesis. Contains chlorophyll, which absorbs sunlight.

2. Prokaryotes (bacteria)- simpler organisms. These cells are much smaller than eukaryotic cells.

cytoplasm	Gel substance, where chemical reactions take place. Contains enzymes to catalyse these reactions.
bacterial DNA	Controls the function of the cell. Unlike in eukaryotic cells, DNA not contained in a nucleus.
cell wall	Supports and strengthens the cell, not made from cellulose.
plasmid	Small rings of DNA; contain additional genes
cell membrane	Controls the movement of substances in and out of the cell. Semi-permeable.

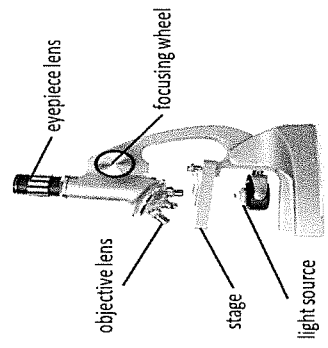
AQA Cell Biology B1

3. SPECIALISED CELLS- adapted to carry out a particular function:

Cell	Diagram	Function	Adaptation
nerve		carry electrical impulses	<ul style="list-style-type: none"> long branched connections- carry impulses over large distances
sperm		carries father's DNA, to fertilise the egg	<ul style="list-style-type: none"> streamlined with a long tail, to swim. contain enzymes large number of mitochondria, to provide energy
muscle		contracts to allow movement	<ul style="list-style-type: none"> contains a large number of mitochondria, to provide energy.
root hair		absorb water and minerals from soil	<ul style="list-style-type: none"> hair like projections to increase the surface area, to increase rate of water/nutrient uptake
xylem		carry water and minerals	<p>TRANSPIRATION - dead cells</p> <ul style="list-style-type: none"> cell walls toughened by lignin, to support the plant flows in one direction, for a continuous column of water
phloem		carry glucose	<p>TRANSLOCATION - living cells cells have end plates with holes</p> <ul style="list-style-type: none"> flows in both directions

4. Microscopy- required practical

- Place the slide on the stage
- Turn to the lowest power objective lens
- Turn the coarse focusing to move the lens towards the slide
- Look through the eyepiece, turn the coarse focusing dial to focus
- Use the fine focusing dial to bring the cells to clear focus
- Draw the cell, record the magnification



magnification $M = \frac{\text{size of image I}}{\text{real size of the object. A}}$

Resolution: smallest distance between two objects such that the two objects can be perceived as being distinct

PREFIXES	
Prefix	Multiple
centi (cm)	1 cm = 0.01 m
milli (mm)	1 mm = 0.001 m
micro (µm)	1 µm = 0.000 001 m
nano (nm)	1nm = 0.000 000 001 m
	Standard form
	1 cm = 0.01 m
	1 mm = 0.001 m
	1 µm = 0.000 001 m
	1nm = 0.000 000 001 m
	Electron microscope
	Light rays
	Electron beams
	~ 1500 times
	~ 2 000 000 times
	200nm
	0.2nm
	Small and portable
	Very large and not portable
	~£100
	Several £100,000 to £1 million

P1 - Energy

<u>Energy Store</u>	<u>Example</u>
Kinetic	Moving objects
Gravitational	High objects
Chemical	Fuel, Food and Batteries
Electrostatic	Balloons and hair
Magnetic	Fridge Magnet
Elastic	Stretched rubber band
Nuclear	The nucleus of an atom
Thermal	Hot objects

1

5

Energy Definitions

System – A group of objects
Closed system – The amount of energy in the system is constant
Wasted Energy – Energy that is dissipated (spread out) and stored in less useful ways
Specific Heat Capacity – The amount of energy required to raise the temperature of one kilogram of the substance by one degree Celsius.
Power – Rate of energy Transfer
 (1W = 1 Joule per second)

<u>Energy Transfer</u>	<u>Example</u>
Mechanically	Using forces
Heating...	...of particles
Radiation	Light, Infra-red and sound
Electrically	In a circuit

4

Conservation of Energy

Energy cannot be created or destroyed – only transferred usefully, stored or dissipated.

2

<u>Units</u>
Energy – Joules (J)
Work Done – Joules (J)
Power – Watts (W)
Distance – Metres (m)
Time – Seconds (s)
Mass – Kilograms (kg)
Spring Constant – N/m
Specific Heat Capacity – J/kg°C
Gravitational Field Strength – N/kg

3

6

Reducing Unwanted Energy Transfer

Lubrication – Reduces friction, so less energy dissipated due to heating.
Insulation – Low thermal conductivity – lower rate of energy transfer.
Efficient – Wastes a lower proportion of the energy provided.

7

Equations to Learn

$$\text{Kinetic Energy} = 0.5 \times \text{Mass} \times (\text{Speed})^2$$

$$\text{G.p.e} = \text{mass} \times \text{gravitational field strength} \times \text{height}$$

$$\text{Energy} = \text{power} \times \text{time}$$

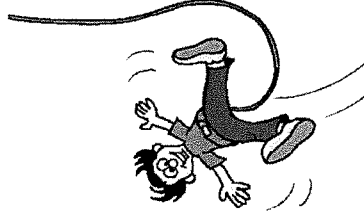
$$\text{Work done} = \text{power} \times \text{time}$$

$$\text{Efficiency} = \frac{\text{Useful output}}{\text{total input}} \quad (\text{This can be energy or power})$$

8

Equations on the Equation Sheet

Change in thermal energy = mass x specific heat capacity x temperature change
 Elastic Potential Energy = 0.5 x Spring Constant x (Extension)²

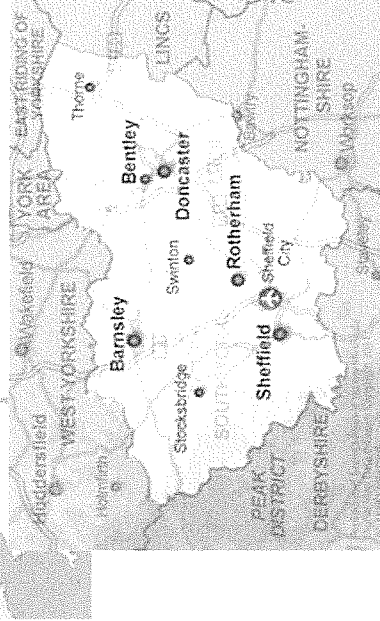
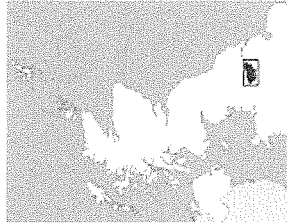


1. Urbanisation and Global Cities

Urbanisation is increasing globally, today 55% of the worlds population are living in urban areas, this number is expected to increase to 70% by the year 2050. The fastest growth in Urbanisation is in Asia and Africa.

Sheffield along with other Cities like London, New York, Beijing and Sao Paulo are classed as global cities through their migration, trade, transport, finance and cultural connections.

2. Sheffield's Location and brief history

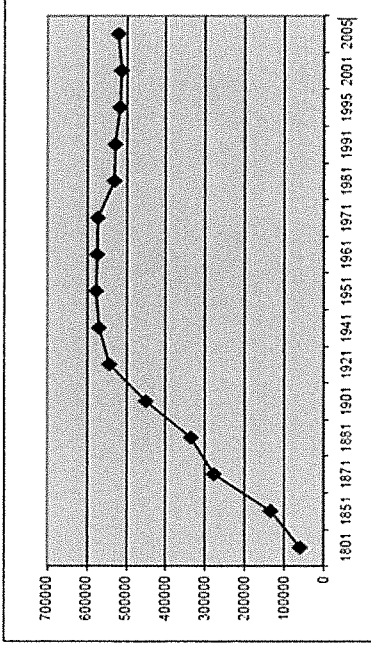


Throughout the 18th and 19th century Sheffield dominated the global steel industry. Sheffield still goes by the nickname 'Steel City' however its steel industry has declined now switching to a more service based economy.

Sheffield is the 6th largest UK city in terms of population (550,000). It is home to 2 universities, 2 professional football clubs and the 12th largest UK shopping centre, Meadowhall.

3. Sheffield's Population

Figure 5: Population development, Sheffield, 1801-2005



4. Migration

Sheffield's national migration is due to rural to urban push and pull factors.

PUSH FACTORS



- few services
- lack of job opportunities
- unhappy life
- poor transport links
- natural disasters
- wars
- shortage of food

PULL FACTORS



- access to services
- better job opportunities
- more entertainment facilities
- better transport links
- improved living conditions
- hope for a better way of life
- family links

Sheffield's international migration in the past was largely economic migrants who came to work in construction after WW2 (1948), the NHS (1948) and Sheffield's steel industry. This was helped by the British Nationality Act which allowed 800 million people in Commonwealth countries the right to claim citizenship.

Modern international migration has still seen economic EU migrants due to the free movement of people from places like Poland, educational migrants such as students from China and asylum seekers and refugees from places like Pakistan.

Burngreave in North Sheffield is a multi-cultural area, its population is made up of mostly asylum seekers/refugees and economic migrants from places like Pakistan, The Caribbean and Slovakia.

Keywords

1. Urbanisation	The growth of urban (Cities or Towns) areas
2. Suburbanisation	The outward growth of Urban areas into the suburbs
3. Infill	Using vacant land or property in an Urban area for a new development
4. Global City	A City that is well connected to the rest of the world
5. HIC	Higher Income Country, a country with wealth
6. Natural Increase	The difference between a places birth rate and death rate
7. Rural to Urban Migration	The movement of people from rural areas (countryside) into Urban areas (Cities and Towns).
8. Migration	The movement of people
9. Asylum seeker/refugee	Someone who has been forced to move from their own country due to factors such as war.
10. Economic migrant	A person who chooses to move for better job opportunities.
11. Depopulation	A decrease in population (rural areas are seeing depopulation)
12. Pull factor	Something that attracts someone to a place
13. Push factor	Something that makes someone want to leave a place

Revision Questions

1. Why is urbanisation growth rates the fastest in Africa and Asia?
2. Explain why Sheffield could be considered a Global City.
3. Give 3 features of all Global Cities
4. Describe the location of Sheffield
5. Explain why Sheffield's Steel Industry has declined
6. Give and explain 2 reasons to explain why population in cities is increasing
7. Give 3 rural push factors
8. Give 3 urban pull factors
9. What are the positives and negatives of rural to urban migration on both the rural and the urban areas?
10. Why is Burngreave often a destination for new migrants to Sheffield?
11. What are the social and economic positives of multicultural areas like Burngreave?
12. What are the social and economic negatives of multicultural areas like Burngreave?

Geography – Sheffield 2

Keywords	
1. CBD	Central Business District
2. Multipurpose Zone	An area that is serving more than one purpose
3. Pedestrianisation	A piece of land where no vehicles can access
4. Affluence	The state of having a great deal of money or wealth
5. Deprivation	The lack of basic necessities
6. Commuter Settlement	An area that is mostly residential as oppose to industrial.
7. Commuter	A person who lives in one area (usually rural) and travels to work in another (usually urban).
8. Counter urbanisation	The movement of people from urban areas to rural areas
9. Teleworking	Working from home
10. Poverty	The state of being extremely poor
11. Regeneration	Investing in something to make it better
12. Urban renewal	The redevelopment of areas within a city
13. Re urbanisation	The movement of people back into a city area that has been previously abandoned
14. Greenfield Site	A piece of land that has never previously been built on
15. Brownfield Site	A piece of land that has previously been built on
16. Sustainability	Something which is around today but will also be around for future generations
Revision Questions	
1.	Why could Sheffield's CBD be described as a multipurpose zone?
2.	Give typical features of CBD's
3.	Give features of pedestrianised zones
4.	Give the typical features of affluent and deprived zones
5.	Explain why Affluent areas tend to be in the suburbs
6.	Explain why deprived areas tend to be in the inner city
7.	What factors make up whether an area is deprived or affluent?
8.	Explain why people today don't have to live where they work
9.	Explain the positives and negatives of commuting for the commuter
10.	Explain the positives and negatives of commuting for the commuter town
11.	Which issue in Sheffield is the hardest to overcome and why?
12.	Why was regeneration in Kelham needed?
13.	Would you say the regeneration in Kelham has been successful?
14.	What factors make up a sustainable community?
15.	Explain the advantages and disadvantages of both greenfield and brownfield sites

1. CBD

Sheffield's CBD has features of a typical CBD such as...

- Good transport links – Train station and super tram
- Retail/pedestrianised zones – Fargate street
- Cultural and historic buildings – Town and City Hall

Sheffield's CBD could be described as a multi-purpose zone as people live, work and enjoy leisure in this one area.

2. Affluence and Deprivation

Affluent areas typically have...

- Large detached houses with gardens
- High employment rate
- Low social problems
- Good services and facilities

Dore in South West Sheffield is your example of an affluent area.

Deprived areas typically have...

- Terraced houses
- High Unemployment rate
- Social problems – Crime
- Lack of facilities and services e.g. supermarkets

Lowdges in South Sheffield is your example of a deprived area.

3. Commuter settlements

Sheffield's commuter settlements include Chesterfield, Rotherham, Barnsley, Doncaster and Hathersage.

Commuting has become more popular due to transport developments like the train and car as well as teleworking. There are both positives and negatives for the commuter and towns/cities involved in the commuting process.

- + for commuter = live in a cheaper, quieter location away from work
- for commuter = spend money getting to and from work
- + for settlement e.g. Hathersage = Facilities like schools and GP's have enough users to stay open
- for settlement e.g. Hathersage = busier, noisier, more pollution and increase in house prices
- + for City e.g. Sheffield = services like supermarkets are being used as people purchase their lunch
- for City e.g. Sheffield = services like pubs are not being used as people use these where they live instead

5. Sheffield's Challenges

Housing – With a large population in Sheffield housing number and quality of housing is a challenge. Deprived housing such as in Lowdges can have impacts on people's quality of life. Regeneration is a way to solve the housing issues in Sheffield.

Waste – With a large population waste in Sheffield is also a big issue. Sheffield City Council work with Veolia to manage Sheffield's waste. Waste in Sheffield is increasing but the number of recycled waste is also increasing whilst the number of waste going to landfill is decreasing.

Transport – A large population need to be able to move around the City with ease. Sheffield Supertram opened in 1994, it is run by Stagecoach. It is an affordable public transport option that is also considered more sustainable than other modes of transport as it is electric but can be unreliable.

6. Regeneration

Kelham is an area just North of Sheffield's CBD that has been regenerated. It was once famous for making steel however it became abandoned with the decline of the steel industry in Sheffield. In 1982 Kelham was given a new lease of life as the Kelham Island museum opened. Since then Kelham has been named 'the trendiest place in Sheffield' as it is now home to restaurants, bars, clubs and residential properties.

7. Sustainable Living

Urban- Little Kelham – The company behind the Little Kelham sustainable houses City have invested in houses that run 100% off renewable energy, they have garden roofs, technology such as smart meters and a lack of transport links as they are just north of Sheffield's CBD.

Rural – Hathersage – Hathersage one of Sheffield's Commuter villages has struggled to make a sustainable community as it is in a rural area (The Peak District National Park) it has very poor transport links meaning people have to use their own transport to commute.

8. Greenfield/Brownfield Sites

Greenfield Sites	Brownfield Sites
+ Room for expansion	+Services such as roads, water, electricity already in place
+ Don't have to pay to knock down existing buildings	+Does not contribute to loss of green space
-Wildlife and Scenery lost	-Tend to be more expensive as cost of taking down old buildings
-Contributes to urban sprawl	-Less room for expansion as buildings around

	Keywords
1. Retail	The sale of goods to the public
2. Catchment area	The area from which a shop gets its customers
3. Range	The distance that a consumer is willing to travel to buy a product
4. Threshold Population	The minimum population size needed to create demand for a product
5. Convenience goods	A good you buy frequently and don't shop around for e.g. bread
6. Comparison goods	A good you buy infrequently and shop around for e.g. a car
7. Leisure/Leisure User	Use of free time for enjoyment
8. Honeypot Site	A place that attracts a large amount of tourists
9. Local Resident	Someone who lives in the area

- Revision Questions**
1. Explain the differences between retail parks, shopping centres and high street shopping
 2. Explain the environmental, economic and social impacts of online shopping
 3. Explain why shopping centres, retail parks and online shopping is becoming more popular
 4. Explain the impact online shopping is having on high street shops
 5. Explain what Sheffield have done to bring back consumers to the high street
 6. Explain the positives and negatives of urban leisure for the leisure users
 7. Explain the positives and negatives of rural leisure for the local residents
 8. Explain the best way to manage rural honeypot sites
 9. Evaluate the statement 'International sport events only bring positive impacts'

1. Retail

Shopping Centres e.g. Meadowhall
Tend to have large free car parks, wide range of shops, located out of the City but with good transport links, not weather dependent as indoors.

Meadowhall was built in 1990, just off the M1, it is also on the Supertram, train and bus network. It has over 280 stores as well as a dining area and cinema. It attracts 30 million visitors per year and is getting a £300m investment to expand.

Retail Parks e.g. St James
Tend to have medium sized free car parks, large shops but less than shopping centres e.g. 10-20 units, out of the city but with good transport links.

Corner shops e.g. Londis
Parking is difficult, people have to park on the road, convenience goods only.

High streets/CBD/City Centre e.g. Fargate street
Parking is limited and very expensive, weather dependent as tend to be outside.

Online shopping e.g. Amazon, Tesco and Shein
Convenient for consumer, wide range of products can shop around to get best price with ease, often discounts. Takes toll on environment with an increase in air pollution and has social impacts like obesity.

Factors such as online shopping, retail parks, shopping centres and supermarkets offering more products have all led to a decline of the Highstreet, this has had negative impacts on employment and has led to high streets becoming 'rundown'.

Sheffield have fought back this decline on the highstreet by...

 - Pedestrianised zones
 - Pop up shops
 - Events e.g. Christmas markets
 - Increasing signage
 - Street furniture
 - Increasing car parking spaces and reducing prices

2. Leisure

Urban – Football (Sheffield United and Wednesday at Bramall Lane and Hillsborough)

Leisure Users	Local Residents
+ Get to experience good quality sports	+ Can sell parking spaces and rent houses
-Parking, accommodation, food etc. will be expensive	+Local businesses such as restaurants, bars and hotels make money
+ May enjoy watching the football	-Noise, litter, air pollution and overcrowding
	-House prices increase

Rural – Walking (Hathersage Peak District)

Leisure Users	Local Residents
+ Get to experience the Peak District's natural beauty	+ Can sell parking spaces and rent houses
-Parking, accommodation, food etc. will be expensive	+Local businesses such as restaurants, bars and hotels make money
	-Noise, litter, air pollution and footpath erosion
	-House prices increase as second homes become popular

We can manage rural honeypot sites by...

 - Information boards in car parks or in visitors centre to educate walkers
 - Good signage in village to direct walkers easily to the correct paths
 - Boulders and double yellow lines put alongside roads to prevent roadside parking
 - National Park rangers speaking to walkers or taking them on walking trips
 - Resident only parking areas on residential streets
 - Park and ride systems
 - Bins put in place and fines for not following rules
 3. The Tour De France

The international cycling event came through Sheffield in 2014, local businesses thrived off the extra income (estimated at £15 million) from the 400,000 tourists and sports fans were thrilled to see the event in a UK City. Tourists said they would return to Sheffield in the next few years and over half were inspired to be more active.

However, the event cost Sheffield taxpayers £900,000, caused road closures and altered the city e.g. by removing street furniture.

Geography – Urbanisation and Counterurbanisation

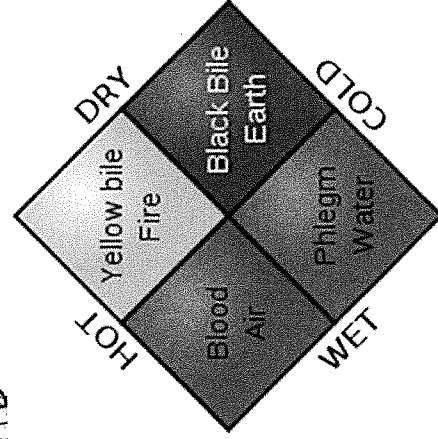
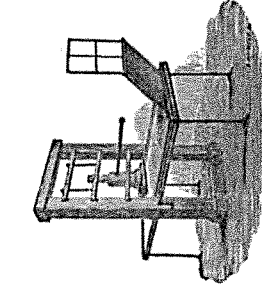
Keywords		The functions of settlements
Urbanisation	The process of physical growth and population growth of a city	<p>1. Settlement - a place where people live. A settlement may be as small as a remote single house or as a large as a mega city (a city with over 10 million residents).</p> <p>2. Residential: to give people a place to live. Known as dormitory or commuter settlements. Characteristics: -Few services, little industry. -Often close to larger towns or cities where the inhabitants work.</p> <p>3. Market centres: provides services for the local areas. Characteristics: - often found in fertile farming areas. In the past farmers would have brought their produce to sell at the weekly market in the town. Often has good transport links, many services and a weekly market.</p> <p>4. Administration: Characteristics: -often county towns that employ a large number of people as civil servants (people who work for local government and in services such as health and education). Often centres of local government.</p> <p>5. Strategic: built in a location that used the physical geography to protect them from attack. Characteristics: - on top of hills e.g. Windsor next to the River Thames, which acted as a key trading and bridging point.</p> <p>6. Industrial: to provide jobs in secondary industry. Characteristics: - Located on coalfields, often with good access to railways and canals -Newer industries tend to locate on the outskirts, near main roads. (E.g. Green Park Science Park in Reading, close to the M4 junction 11)</p> <p>7. Tourist resorts developed with the arrival of the railways. Number of different locations across the UK including coastal locations for recreational purposes by the sea (e.g. Brighton) or settlements in National Parks (e.g. Malham in the Yorkshire Dales National Park).</p> <p>8. Settlement size and services - The number of services that a settlement provides increases with settlement size.</p> <p>9. Small settlements will only provide low-order services such as a post offices and newsagents, where people only travel a short distance to visit them. Large towns, cities and conurbations will have low + high-order services.</p> <p>10. High-order services are ones have a large catchment area, such as leisure centres, chain stores and hospitals, where people may travel a longer distance (range) to access them.</p> <p>Changes to rural communities</p> <p>12. Counter-urbanisation: movement out of cities to rural areas. Process happening in MICs/HICs for the last 50 years. Three reasons for this movement :-</p> <p>13. Urban areas: less pleasant places to live due to increase in pollution, crime and traffic.</p> <p>14. Increase in car ownership and road networks: allow people to live further from their place of work or work from home (teleworking) due to internet access.</p> <p>15. There is an ageing population and people tend to move to countryside when they retire.</p> <p>Example</p> <p>Hathersage, Derbyshire Peak District (12 miles from Sheffield)</p> <p>Negative impacts:</p> <p>17. Many of the migrants still work in urban areas therefore the journey to work can cause congestion and pollution.</p> <p>18. House prices in rural areas may rise as demand increases. This means that local people cannot afford to buy a house and have to move away from their local area.</p> <p>19. Many of the migrants do not support local businesses and do their shopping in the urban areas where they work.</p> <p>Positive impacts:</p> <p>20. Local schools have an increase in pupils and are able to stay open.</p> <p>21. Some local services are supported such as public houses, local tradesmen (for example builders)</p> <p>22. Old derelict farm buildings are turned into habitable houses which add to the aesthetic value and community well-being.</p>
Suburban sprawl	The spreading outwards of a city as new suburban housing is built	
Brownfield site	When old areas of towns and cities are built on with new developments	
Greenfield Site	When areas of new development in towns and cities are built on areas which have never been built on before	
Re-urbanisation	When an area of a city sees its population grow	
Economic Migrants	People who move from one area to another for work	
Standard of living	A measure of the relative wealth of individuals or families – it can include their income, professional job	
Deprivation	Measure poverty – as well as jobs and wealth it includes health, community safety and the local environment condition	
Green belt	Area around a city which is protected from further loss or development	
Garden city	Town with a lot of open space	
Counterurbanisation	The movement of population from urban(town) areas to rural(countryside) areas	
Catchment area	The area from which a shop gets its customers	
Convenience goods	Low-cost items that consumers buy regularly (e.g. groceries)	
Comparison Goods	Expensive goods that customers buy less often and compare the prices (e.g., TVs and washing machines)	
Threshold	Minimum population size needed to create a demand for an item or service (small for bread or primary school large for cars or University)	
Central Business District (CBD)	Town centre	
Gentrification	The process by which a run-down neighbourhood is improved and becomes more desirable	
Pedestrianisation	An area of the city where traffic is banned, so the area is all paved for pedestrians to walk anywhere.	
Zones	Different areas of a city that have different characteristics.	
Range	The distance people are prepared to travel to buy items (Bread short range, TV long range)	

Urbanisation and Counter urbanisation Revision Questions

<ol style="list-style-type: none"> 1. Define the terms urbanisation and counter urbanisation. 2. What is the difference between a brownfield and greenfield site? 3. Give three reasons why people often prefer to live in rural areas. 4. Define three functions of urban areas. 	<ol style="list-style-type: none"> 5. What are the negative impacts of counter urbanisation to Hathersage? 6. Why has car ownership and internet access influenced counterurbanisation? 7. What is the difference between low and high order services? 8. What is the green belt and why is it needed?
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Timeline	
1.	1348 The Black Death
2.	1440 Printing Press

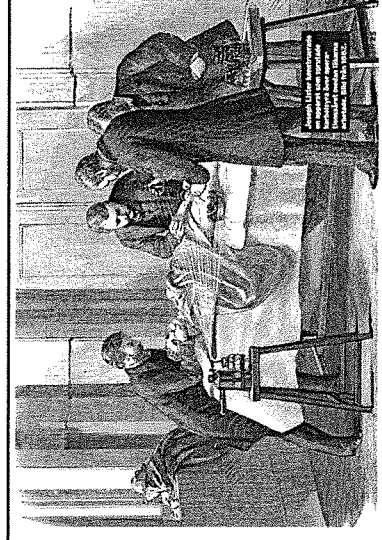
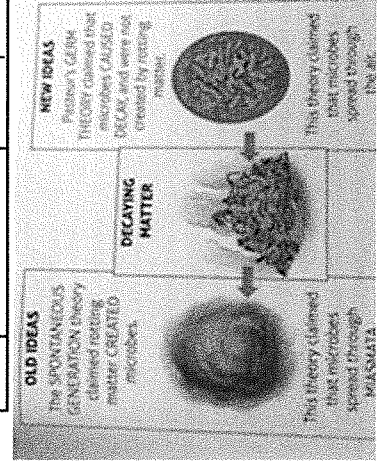
Key individuals	
1.	Hippocrates Ancient Greek doctor who looked for natural causes of disease. He developed the Theory of the Four Humours, wrote the Hippocratic Oath and encouraged clinical observation.
2.	Galen Doctor who worked in Ancient Rome. His ideas were the basis of medical training in the Medieval period. Developed the Theory of Opposites and drew detailed diagrams of the human anatomy.
3.	Johannes Gutenberg Inventor of the Printing Press
4.	The Church The Catholic Church controlled medical learning, it chose which books were copied and distributed. Supported the Theory of the Four Humours and strongly discouraged any criticism of it. Taught that disease was sent by God as a punishment for sin.



Key words	
1.	Mainnutrition An illness caused by lack of food
2.	Famine Food shortage, usually due to bad harvest
3.	Theory of the Four Humours Developed by Hippocrates. The belief that everyone has four humours in their body (blood, phlegm, black bile, yellow bile) and when they become unbalanced, the person falls ill.
4.	Theory of Opposites Developed by Galen. Treatment based on balancing the humours by giving the patient the 'opposite' of their symptoms e.g. too much phlegm, eat hot chilli's.
5.	Physician Someone who practices medicine (doctor). A medieval physician went to university to complete a medical degree and would diagnose illness.
6.	Astrology Studying the alignment of planets and stars. This was considered important when diagnosing illness
7.	Leprosy Begins as a painful skin disease, followed by paralysis and eventually death.
8.	Supernatural The belief that God/Gods were responsible for causing and curing illness
9.	Miasma Bad air that was believed to be filled with harmful fumes.
10.	The Articella Medical textbook used in European universities. Included some translated works of Hippocrates and Galen
11.	Blood letting Removing some of a patient's blood— common treatment for imbalanced humours.
12.	Purging Give something to the patient to make them vomit or a laxative to clear out the digestive system.
13.	Apothecaries Mixed and sold herbal remedies
14.	Regimen Sanitatis Set of instructions provided by physicians to help a patient maintain good health e.g. take moderate exercise.
15.	Quarantine Separating the sick from the healthy to stop the spread of disease.
16.	Hippocratic Oath Doctors swore to respect life and prevent harm, doing the best for their patients. Created by Hippocrates.
17.	Clinical observation Studying the symptoms, making notes, comparing with similar cases then diagnosing and treating. Encouraged by Hippocrates.
18.	Anatomy Study of the human body.
19.	The Black Death The bubonic plague killed about 1/3 of Britain's population.

Timeline	
1.	1796 Jenner discovers Smallpox vaccination
2.	1799 Humphrey Davy discovers aesthetic properties of Laughing Gas (Nitrous Oxide)
3.	1842 Edwin Chadwick writes his report on living conditions
4.	1846 Use of Ether as an anaesthetic in surgery
5.	1847 James Simpson discovers chloroform as an anaesthetic
6.	1847 Ignaz Semmelweis orders his students to wash their hands before surgery (but only after they had been in the morgue).
7.	1848 First Public Health Act
8.	1852 The government makes smallpox vaccination compulsory
9.	1854 Florence Nightingale improves hospitals in the Crimean war
10.	1854 John Snow makes the link between cholera and dirty water
11.	1854 Hannah Greener dies of chloroform overdose
12.	1857 Queen Victoria publicly advocates use of Chloroform after birth of her eighth child.
13.	1859 Nightingale publishes 'Notes on Nursing'.
14.	1861 Louis Pasteur's Germ theory
15.	1867 Joseph Lister begins using carbolic Acid spray in surgery- antiseptic.
16.	1870 John Tyndall gives a lecture linking Pasteur's, Lister's and his own work on germs
17.	1870's Dr Henry Bastian continues to promote spontaneous generation
18.	1875 Second Public Health Act- compulsory
19.	1881 Robert Koch discovers the bacteria which causes anthrax
20.	1889 Isolation hospitals set up
21.	1895 William Rontgen discovers X-rays

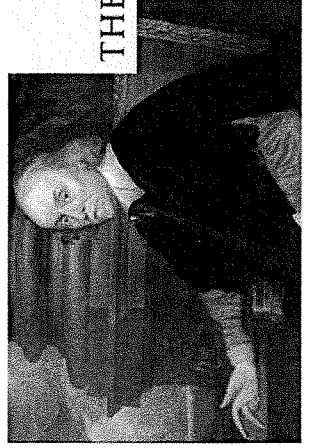
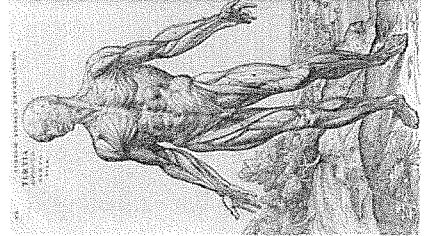
Key words	
1.	Anaesthetic Drugs given to make someone unconscious before or after surgery
2.	Antiseptic Chemicals used to destroy bacteria and prevent infection
3.	Bacteriology The study of bacteria
4.	Spontaneous Generation The idea that germs were caused as a result of decay
5.	Germ Theory The idea that germs cause disease (or decay)
6.	Vaccine A weakened version of a similar disease is injected to cause the body to develop immunity to that disease.
7.	Smallpox A dangerous disease causing fever that was beaten by vaccination
8.	Cholera A bacterial infection caused by drinking water
9.	Epidemic A widespread outbreak of a disease
10.	Sanitation Providing disposal of human waste and dispensing clean water to improve public health
11.	Chloroform A liquid whose vapour acts as an anaesthetic and produces unconsciousness
12.	Medical Officer A person appointed to look after the public health of an area
13.	Laissez-Faire French term to 'leave be'. Governments attitude towards getting involved with the lives of the population.
14.	Aseptic surgery Surgery where microbes are prevented from entering the wound in the first place rather than being killed by antiseptics.



History

Year 9

Timeline	
1. 1440	The Printing Press was invented by Johannes Gutenberg.
2. 1536	Dissolution of the monasteries in England, under the command of King Henry VIII.
3. 1537	Vesalius published his first work <i>Six Anatomical Tables</i> . It showed parts of the human body, labelled in four different languages.
4. 1543	Vesalius published his most famous book, <i>De Humani Corporis Fabrica</i> , or <i>On the Fabric of the Human Body</i> .
5. 1546	Henry VIII re-founded Saint Bartholomew's hospital in London, which was originally founded in 1123.
6. 1628	William Harvey published <i>Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus</i> (Anatomical Exercise on the Motion of the Heart and Blood in Animals). This outlined how blood flows around the body.
7. 1653	Harvey's book was published in English.
8. 1660	The Royal Society met for the first time at Gresham College in London.
9. 1662	The Royal Society received its royal charter from King Charles II.
10. 1665	The Royal Society began publishing their journal <i>Philosophical Transactions</i> .
11. 1665-66	The Great Plague.
12. 1660s-70s	Thomas Sydenham worked as a highly respected doctor in London. He believed observing a patient's symptoms was more reliable than relying on medical textbooks when diagnosing patients.
13. 1685	Charles II died. His physicians continued to use methods such as bleeding and purging to treat him, showing little change.



THE ROYAL SOCIETY

Topic: Renaissance Medicine

Key words	
1. Secular	Not religious or in any way connected to spiritual beliefs.
2. Alchemy	An early form of chemistry. Alchemists tried to turn one material into another.
3. Printing press	A machine used to print text or pictures. The letters were moveable so that many copies of the same text could be printed.
4. Dissolution of the monasteries	Henry VIII split from the Catholic Church in 1533 and created the Church of England. In 1536 he got rid of religious institutions such as monasteries and confiscated their land.
5. Circulation	The flow of blood around the body.
6. Astrology	The study of the movements and relative positions of planets interpreted as having an influence on human affairs and the natural world.
7. The Great Plague	Lasted from 1665 to 1666, was the last major epidemic of the bubonic plague to occur in England. The Great Plague killed an estimated 100,000 people—almost a quarter of London's population—in 18 months.
8. Miasma	A name for 'bad air', that people believed was filled with harmful fumes, which caused illness.
9. Quarantine	A place of isolation in which people who have been exposed to infectious or contagious disease are placed.
10. Quack Doctor	Someone with no medical qualifications, who sold their services as a doctor or apothecary.
11. Royal Society	An association founded in England by Charles II in 1660 to promote research in the sciences.
12. Anatomy	the branch of science concerned with the bodily structure of humans, animals, and other living organisms, especially as revealed by dissection.
Key people	
1. Andreas Vesalius	The most famous anatomist of the Renaissance period. He studied medicine in Paris in 1533, and went on to be a lecturer in surgery at Padua University. Vesalius was able to dissect human bodies as opposed to animals, and therefore found around 300 mistakes in Galen's work on the anatomy.
2. William Harvey	Harvey was born in England in 1578. He studied medicine at both Cambridge and Padua University. In 1615 he became a lecturer of anatomy, and by 1618 was a royal doctor for James I. Harvey disproved Galen's theories of how blood flows around the human body. He proved that veins and arteries work together in one system to circulate blood around the body.
3. Thomas Sydenham	Nicknamed 'the English Hippocrates'. He was a well-respected London doctor in the 1660s and 1670s, and was very influential in moving British medicine away from the ideas of Hippocrates and Galen. He refused to rely on medical books for diagnosing patients, and felt that it was important to observe their symptoms.
4. Charles II	Had a keen interest in science. The Royal Society was established in 1660, and in 1662 Charles II gave it a royal charter to show his support of the establishment.

History

Year : 9

Topic : Modern Medicine 1900 to present.

Timeline		
1	1896	First medical use of X-rays.
2	1909	Japanese scientist, Hata created the first 'magic bullet' named Salvarsan 606.
3	1911	National Insurance Act introduced.
4	1928	Alexander Fleming identified penicillin in his laboratory.
5	1929	Fleming published his findings
6	1932	Gerhard Domagk discovered prontosil.
7	1939	Florey & Chain revived Fleming's research into penicillin.
8	1941	Florey & Chain trialled penicillin on a human with some success.
9	1942	US pharmaceutical companies began to mass produce penicillin.
10	1942	Government introduced the diphtheria vaccination.
11	1948	The National Health Service was established.
12	1950	Government introduced the poliomyelitis & whooping cough vaccinations.
13	1950	British Medical Research Council prove there is a link between smoking and lung cancer.
14	1951	Franklin & Wilkins created images of DNA using x-rays.
15	1953	Crick & Watson discovered the double helix structure of DNA.
16	1956	Jonas Salk's polio vaccination was introduced in the UK.
17	1956	Clean Air Act introduced following London's Great Smog of 1952.
18	1956	First successful kidney transplant in the USA, between identical twins.
19	1957	John C. Sheehan creates a chemical copy of penicillin, this drug could now target different diseases.
20	1961	Government introduced tetanus vaccination.
21	1962	A more effective polio vaccination was introduced.
22	1963	First successful lung transplant.
23	1967	First successful liver and heart transplants.
24	1968	Government introduced measles vaccination.
25	1968	Another Clean Air Act was introduced.
26	1970	Government introduced rubella vaccination.
27	1984	The last case of someone contracting polio in the UK.
28	1990	Human Genome Project was launched.

Key words			
1	Hereditary	A disease caused by genetic factors—it can be passed from parents to their children.	
2	DNA	Deoxyribonucleic acid—carries genetic information, this information determines characteristics such as hair and eye colour.	
3	Antibiotic	Any treatment that destroys or limits the growth of bacteria in the human body.	
4	NHS	The National Health Service—launched by the government in 1948. Provided medical care for the whole population of Britain and was funded by National Insurance contributions.	
Key people			
1	Francis Crick & James Watson	Discovered the DNA had a double helix structure.	
2	Franklin & Wilkins	X-ray photos of DNA .	
3	Jonas Salk	Developed and discovered one of the first polio vaccinations.	
4	Howard Florey & Ernst Chain	Worked together at Oxford University, and were pioneers in the mass production of penicillin.	
5	Aneurin Bevan	The Labour Minister of Health between 1945–51. He oversaw the creation and implementation of the National Health Service in 1948.	
6	Alexander Fleming	Discovered the bacteria 'penicillin'.	
7	Paul Ehrlich	His laboratory discovered arsphenamine (Salvarsan), the first effective medicinal treatment for syphilis. He popularized the concept of a magic bullet.	
Common technologies used to make a diagnosis.			
Blood tests (since 1930s)	Blood pressure monitoring (since 1880s)	Endoscopes (since 1900s)	
ECGs (since 1900s)	Blood sugar monitoring (since 1960s)	MRI scans (since 1970s)	
X-rays (since 1890s)	Ultrasound scans (since 1940s)	CT scans (since 1970s)	
Medical treatments		Treatment made possible	
	Advanced x-rays	Can target and shrink tumours (radiotherapy).	
	Smaller, cheaper machines	Dialysis and heart bypasses.	
	Robotics	Better prosthetic limbs.	
	Microsurgery	Organ transplants.	
	Laparoscopic (key hole) surgery	Can operate inside the body through a tiny cut = quicker healing.	

1.1.1 Architecture of the CPU

The purpose of the CPU:

- The fetch-execute cycle
- Data and instructions **FETCHED** from main memory.
- They are then **DECODED** and **EXECUTED**.
- This is carried out in a continuous cycle.

Von Neumann

Architecture:

- MAR (Memory Address Register)
- MDR (Memory Data Register)
- Program Counter
- Accumulator

John Von Neumann was a Hungarian mathematician who developed the idea that a computer could be used for many purposes and not just one.

- This was called the **stored program concept**.

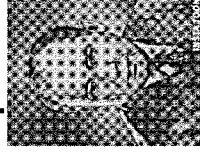
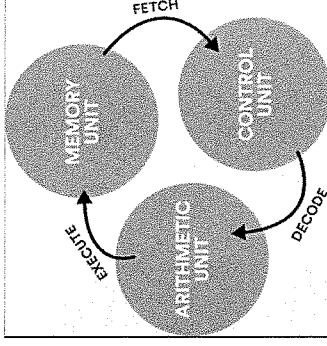
- A processor based on **Von Neumann's architecture** would use memory to store data and instructions and would use the **fetch execute cycle** to retrieve and process instructions.

Common CPU components and their function:

- ALU [Arithmetic and Logic Unit]
- CU [Control Unit]
- Cache
- Registers

- ALU performs calculations and logic checks.
- It may take several F-E-Cycles for a calculation to be finished.
- Intermediate results are stored in the **Accumulator**.
- **Cache** is VERY FAST memory.
- Instructions that are carried out frequently are stored there so that they don't have to be **FETCHED** (saving time).
- **Registers** = small amounts of high speed memory contained within the CPU.
- Registers store data that is needed during the F-E-C.

REVISION NOTE:
You should learn what each register does and its role in the fetch execute cycle.



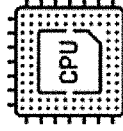
Accumulator
— Holds the data while it is being processed.

PC — Holds the memory address of the next instruction to be fetched from primary memory.

1.1.2 CPU Performance

How common characteristics of CPUs affect their performance:

- Clock speed
- Cache size
- Number of cores



- Each processing unit inside a CPU is called a **CORE**.
- Each core can carry out the **fetch execute cycle**.
- The more cores a CPU has, the more instructions it can process in a given time. (i.e. **Parallel Processing**)



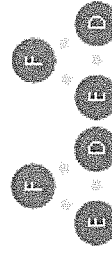
- The **Clock** coordinates all the computer's components.
- It sends out a pulse that synchronises each component – the **FREQUENCY** of this is known as **CLOCK SPEED**.
- It is measured in **HERTZ**.
- The higher the frequency, the more instructions can be processed in a given time

single core CPU
= 1 instruction



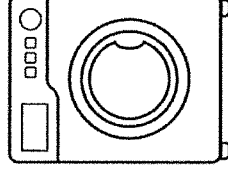
VS

dual core CPU
= 2 instructions



1.1.3 Embedded Systems

The purpose and characteristics of embedded systems Example of embedded systems:



- **Embedded Systems** are small computer systems built inside larger devices or pieces of equipment.
- they are designed to do one task (rather than a range of tasks).
- Embedded systems have a simple user interface.
- In addition, the software used to control or run the system is also basic.

As they are a dedicated to a single task, embedded systems are usually easier to design, cheaper to produce, and more efficient at doing their tasks than a general purpose computers.

Cache is very fast (and expensive) memory that can store frequently used data or instructions.

Which of these is NOT an Embedded systems?



DOES ONE TASK



DOES ONE TASK



DOES MANY TASKS

R093: Creative iMedia in the media industry

Physical Media

CD/DVD Characteristics: A small plastic, easily transportable disc that can be played in a computer, DVD player, games console or CD player. Content is downloaded (Burnt) directly on to the surface of the disc so it can be read by the player	
Advantages: <ul style="list-style-type: none"> Audiences can keep a physical copy and access it over and over again Does not rely on the internet Can be sent directly to the target audience 	Disadvantages: <ul style="list-style-type: none"> Costly to produce Takes time to make Fixed size and space for content Requires a disc player Flimsy and fragile

Memory stick Characteristics: Removable USB device that can connect to computers and TVs. They store different amounts of data depending on the size of the memory stick	
Advantages: <ul style="list-style-type: none"> Small so easy to transport Physical copy, so no worries about content being taken away Does not rely on the internet Allows the user to share and transfer data 	Disadvantages: <ul style="list-style-type: none"> Requires a computer or TV to work File compatibility can be a problem Content can be erased or over written Easily lost or broken

Paper based Characteristics: The oldest and most traditional physical media form. Paper based media products can be printed and distributed by hand or by vehicle to their location. Includes posters, newspapers and other printed content.	
Advantages: <ul style="list-style-type: none"> Physical copies have a visual impact Print quality Professional looking Can be placed in a range of location 	Disadvantages: <ul style="list-style-type: none"> Expensive to produce Often some wastage Can be easily damaged Costly to transport and get to the audience Can be difficult to track the impact of the print advert

4.2. Properties of media files

Static images

Properties of static images

The main two properties of static image files that affect the quality are DPI/PPI and pixel dimension

DPI

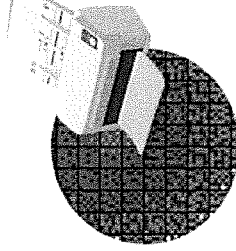
Dots per inch describes the number of dots of ink or toner that are printed onto one inch of the image.

This relates to printed images

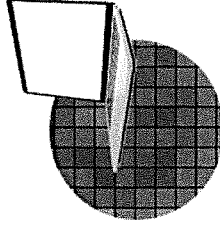
PPI

Pixels per inch describes the number of pixel in one inch of the screen, this relates to digital images rather than printed images

DPI



PPI



Pixel Dimensions

The pixel dimensions of an image are what we would usually call its size. Instead of using inches/centimetres, pixels are usually used for images

To convert the pixel dimensions of an image to inches you need to know the PPI

$$\text{Pixel height} \div \text{images PPI} = \text{height in inches}$$

To convert from inches to pixel dimensions you do the calculation the other way round

$$\text{Height in inches} \times \text{image PPI} = \text{pixel height}$$

Native image file types

File format	Properties	Limitations
.psd Photoshop file	<ul style="list-style-type: none"> Accessible only on graphic design software Large file containing layers 	<ul style="list-style-type: none"> Not easily opened without specialist software Large file size When sending to someone the fonts and images need to be sent to
.xcf GIMP file	<ul style="list-style-type: none"> Uncompressed Edit and store layers 	<ul style="list-style-type: none"> Only openable by using GIMP Only deals with RGB colour mode
RAW	<ul style="list-style-type: none"> Processed directly from a camera Lossless or no compression used Often automatically converted to JPEG 	<ul style="list-style-type: none"> Not easily used by most software Very large file

Native image file types

File format	Properties	Limitations
JPEG	<ul style="list-style-type: none"> Lossy raster image file Compression rate can be adjusted Can be used for print and digital work 	<ul style="list-style-type: none"> Quality is lost over time and through use
TIFF	<ul style="list-style-type: none"> Flexible raster image format Lossless uncompressed raster file Retains layers in a similar way to native file types High quality and good colour depth 	<ul style="list-style-type: none"> Large file size Can take a long time to open and download Not all programs can open TIFF files
BMP	<ul style="list-style-type: none"> Uncompressed Very high quality Supports various colour palettes Colour data is stored for every pixel 	<ul style="list-style-type: none"> Very large file size Does not scale up very well
PNG	<ul style="list-style-type: none"> Lossless compression Designed for images on the internet Good for images with blocks of colour Can handle millions of colours 	<ul style="list-style-type: none"> Some internet browsers do not support it File size still large after compression Only supports RGB colour mode

R093: Creative iMedia in the media industry

4.1 Distribution Platforms

Description: Once a product has been finalised the product will need to be distributed. Distribution methods and platforms are the way the product is going to be accessed/sent to the audience.

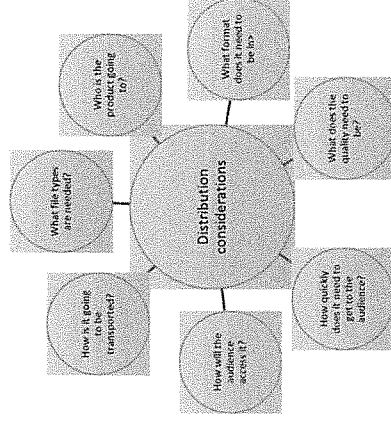
Online Platforms	
Apps	Downloadable from an app store and accessed instantly from mobile devices. They are updated frequently via the internet. Files can be embedded in the app.
Advantages:	<ul style="list-style-type: none"> • Quick and easy to update • Potentially free to access • Users can watch/interact anywhere • Only requires phone or tablet • Easy to interact with
Disadvantages:	<ul style="list-style-type: none"> • Consumers must have the app to access content • Limited file sizes • Limited to app shape and structure • Likely to need internet to access

Multimedia	Characteristics: Multimedia spaces are used to make, share and view content. They are delivered digitally, directly to the audience. They are digital packages of audio, video, text and images
Advantages:	<ul style="list-style-type: none"> • Allows a range of content • Great interactivity
Disadvantages:	<ul style="list-style-type: none"> • Content tends to need sending to the consumer before they can access it. • May also need the internet for external links.

Web	Characteristics: Websites can have content embedded for its audiences to access. They can show a combination of audio, video, text and images and allow content to be streamed
Advantages:	<ul style="list-style-type: none"> • Easy to access using the internet • Can be searched for using a search engine • Moving content is easy to embed • Quick to upload and update
Disadvantages:	<ul style="list-style-type: none"> • Specific sizes and dimensions often needed • Requires the internet • Can get lost among all other web content • May require coding • Will not take large file sizes and file types may be restricted

Distribution consideration

Before you can make any decisions about how a product is distributed there are some things that need to be considered



Physical Platforms	
Computer	Characteristics: Can be used to run video, audio, multimedia products, eBooks and games independently or in a network
Advantages:	<ul style="list-style-type: none"> • Can show products with complex levels of interactivity • Will show most media products • Internet not always needed • Powerful with few limits • Can be monitored
Disadvantages:	<ul style="list-style-type: none"> • Expensive products to buy so not all members of the target can afford • Not always portable • Relies on being set up correctly

Interactive TV	Characteristics: Streams and can save downloadable audio and video content, can play video games
Advantages:	<ul style="list-style-type: none"> • Access many different apps and channels • Highly interactive • Speed of delivery • Content can be sent directly to the TV • Content can be matched to the target audience
Disadvantages:	<ul style="list-style-type: none"> • Not portable]too much choice content could be missed • Expensive to buy so not everyone has one

Kiosk	Characteristics: Static product that can show an interactive media presentation, video or game. Usually used independently or part of a small network. Sometimes uses the internet
Advantages:	<ul style="list-style-type: none"> • Can be set up anywhere • Easy for consumers to use • Highly interactive • Can process many file types • Can have multiple users
Disadvantages:	<ul style="list-style-type: none"> • Target audience is limited to who can get to the kiosk • Generally not portable • Often limited in what it can present needs maintenance • May not have speakers

Mobile devices	Characteristics: Applies to tablets, mobiles and watches. Allows a range of digital content to be downloaded or accessed through the internet.
Advantages:	<ul style="list-style-type: none"> • Mass audiences • Fast-moving technology • Highly interactive • Portable • Can come with accessories such as headsets • Quick distribution • Good range of compatible file types
Disadvantages:	<ul style="list-style-type: none"> • Huge competition • Relies on internet/Bluetooth • Can have limited memory • Android/MAC operating systems require different setup/content

2.1.2 Designing, Creating And Refining Algorithms

Identify common errors

Trace tables

Common Errors

Syntax errors—where the program code syntax is not correct. For example not using a capital letter, a space or colon. These errors stop a program running.

Logic errors—incorrect code that causes the program to run but, produce an incorrect output or result.

Trace Tables

A trace table is used to test algorithms and programs for logic errors that appear when an algorithm or program executes.

The trace table simulates the steps of algorithm/program.

Each stage of the algorithm/program are executed step by step.

Inputs and outputs, variables and processes can be checked for the correct value when the stage is completed.

Let's trace the following algorithm:

```
START
a ← 5
b ← 1
c ← a + b
a ← c
b ← c
c ← c + a + b
END
```

1. This algorithm includes three variables: a, b and c. They are added to the top of the trace table:

a	5
b	1
c	

2. Starting at the top row of the table and working left to right, input the variable information. If completed correctly, the trace table should look like this:

a	5	1	6
b	1	6	18
c	6	6	18

2.1.3 Searching And Sorting Algorithms

Standard searching algorithms:

- Binary search
- Linear search

Standard sorting algorithms:

- Bubble sort
- Merge sort
- Insertion sort

Linear search – Each item in the list is checked in order from the start of the list until the item is found.

- A linear search allows us to search for values even if the values are not in order.
- Linear search:
 - Check the first value
 - Celebrate and stop
 - IF it is the value you are looking for
 - ELSE move to the next value and check
 - REPEAT UNTIL you have checked all the elements and not found the value you are looking for

Insertion Sort – each item is take in turn, compare to the items in a sorted list and placed in the correct position.

Element 1 is a 'sorted' list.

The rest of the elements are an 'unsorted' list.

Compare the first element in the 'unsorted' list to each element in the sorted list.

IF it is smaller, put it in front of that element (move the others along).

ELSEIF it is larger, compare with the next.

ELSEIF there are no more elements in the 'sorted' list put it in the final position.

REPEAT UNTIL all element in the 'unsorted' list are in the 'sorted' list

Binary Search – An ordered list (i.e. smallest to largest) is split into two each time a comparison is made.

- The list needs to be in order for a binary search
- Take the middle value.
- Compare to the value you are looking for.
- IF it is the value you are looking for.
 - Celebrate, and stop.
- ELSEIF it is larger than the one you are looking for.
 - Take the list to the left of the middle value.
- IF it is smaller than the one you are looking for.
 - Take the list to the right of the middle value.
- REPEAT with the new list.

Bubble Sort – moving through a list repeatedly, swapping elements that are in the wrong order.

Take the first element and second element from the list

Compare them

IF element 1 > element 2 THEN

Swap then

ELSE

Do nothing

Repeat: Move along the list to the next pair

IF no more elements: Go to 1

ELSE: Got 2

Until: you have moved through the entire list and not made any changes

Merge Sort – a list is split into individual lists, these are then combined (two lists at a time).

- Compare the first element in both lists.
- Put the smallest into a new list.
- Compare the next element of 1 list with the second element of the 2nd list.
- Put the smallest into a new list.
- Repeat until merged.

2.1.1 Computational Thinking

Principles of computational thinking:

- Abstraction
- Decomposition
- Algorithmic thinking



ALGORITHMIC THINKING

Abstraction

Removing any unnecessary detail from a problem in order to solve it. Identifies the information that can be removed from the problem without changing it.
Using symbols, variables etc. to represent a 'real world' problem in a computer program...

...and removing/hiding unnecessary elements

Decomposition

Breaking a large problem down with no known solution into smaller steps and stages.

- smaller problems are easier to solve:
 - they can be solved independently of the other problems
 - they can be tested independently
 - then combined to produce the full problem

Algorithmic Thinking

Algorithmic thinking is a way of getting to a solution through the clear definition of the steps needed – nothing happens by magic.

2.1.2 Designing, creating and refining algorithms

Identify the inputs, processes, and outputs for a problem Structure diagrams

Create, interpret, correct, complete, and refine algorithms using:

- Pseudocode
- Flowcharts
- Reference language/high-level programming language

Pseudocode – simplified, not language specific style used to design algorithms.

- Pseudocode uses short English words/statements to describe an algorithm.
- It would generally look a little more structured than just writing English sentences.
- However it is very flexible.
- It is less precise than using a reference language, or a programming language.

Example Pseudocode:

```
IF Age is equal to 14 THEN
  Stand up
ELSE Age is equal to 15 THEN
  Clap
ELSE Age is equal to 16 THEN
  Sing a song
ELSE
  Sit on the floor
END
```

mark = input("Input mark")

```
if mark < 50 then
  print ("Fail")
elseif mark < 70 then
  print ("Pass")
elseif mark < 90 then
  print ("Merit")
else
  print ("Distinction")
endif
```

Algorithm – the series of steps to solve a problem or perform an action. Can be represented using a **flowchart** or **Pseudocode**.

Flowchart – a diagram that shows the inputs, outputs and processes in an algorithms.

	Terminal Start/Stop		Input/output Requires input from the user or outputs on screen
	Line Show flow of data		Decision Often a yes or no question
	Process Goes on behind the scenes		Sub Program Reusable code, can be called at any time.

Exam Reference Language – a more formal 'code like' way of writing algorithms that is used within the examination.

- This looks like pretend code.
- It's defined in a more formal way to represent an algorithm.
- It looks much more like a programming language – but will not "compile".
- It can be read more easily by programmers.
- It can be easier to then write the program in a chosen language, e.g. Java, Python, VB.

1.2.3 Units

The units of data storage:

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

How data needs to be converted into a binary format to be processed by a computer

Data capacity and calculation of data capacity requirements

Computer are electrical devices; their components are made up of millions of circuits. Each circuit contains switches which can be Either 'on' or 'off'. These can be represented by values 1 and 0. **This is called BINARY.**



ALL data is stored and processed in binary form – this includes text, images, sound and video.



1.2.4 Data Storage

Numbers

- How to convert positive denary whole numbers to binary numbers (up to and including 8 bits) and vice-versa
- How to add two binary integers together (up to and including 8 bits) and explain overflow errors which may occur
- How to convert positive denary whole numbers into 2-digit hexadecimal numbers and vice versa
- How to convert binary integers to their hexadecimal equivalents and vice versa
- Binary shifts

2 ⁷	2 ⁶	2 ⁵	2 ⁴	2 ³	2 ²	2 ¹	2 ⁰
128	64	32	16	8	4	2	1

To convert 25 to binary:

- ✓ Start with the column nearest 25 (i.e. 16 or 2⁴)
- ✓ Put a one in that column
- ✓ Check each remaining column, adding either a 1 or 0 onto the end of our number
- ✓ In this case 16 + 8 + 1 = 25 (2⁴ + 2³ + 2⁰)
- ✓ So... 25 in binary is 11001

To convert 101010 into decimal:

- ✓ Work which column the left digit is in (i.e. 32 or 2⁵)
- ✓ Work left to right – add up the column value each time there is a 1
- ✓ For example: 32 + 8 + 2 = 42

Rules for binary addition	
00 + 00 =	No remainder
00 + 01 =	No remainder
01 + 01 =	Carry 1
10 + 01 =	Carry 1

If there are insufficient bits to store the answer, this causes **OVERFLOW**

Binary arithmetic
Use binary shift to:

- **Multiply**
00110111 x 2 =
01101110
[Left shift by 1]
- **Divide**
00110111 / 2 =
00011011
[Right shift by 1]

Hex	Dec
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
A	10
B	11
C	12
D	13
E	14
F	15

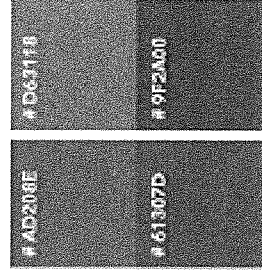
Converting software Hex

To convert decimal to hex:

- ✓ First convert the number to binary:
i.e. 25 in binary = 00011001
- ✓ Then spill the number into two groups of 4 bits:
i.e. 0001 1001
- ✓ Then convert each group of 4 bits to HEX:
i.e. 0001 = 1
1001 = 9
- Then join (don't add) both digits together:
i.e. 1 + 9 = 19

To convert hex to decimal, just work through this process backwards

Hexadecimal numbers can be represented in fewer digits than in binary making them easier for humans to remember and more economical in terms of storage



Hexadecimal has many uses in computing:

- **assembly language**,
- to store a **MAC Address**
- representing colour codes

1.2.1 Primary Storage (Memory)

The need for primary storage

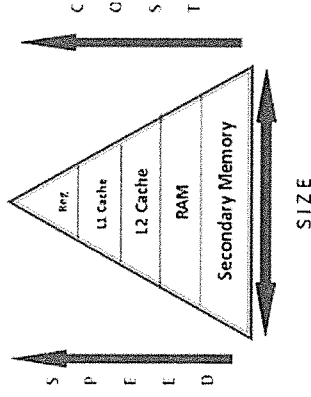
The difference between RAM and ROM

The purpose of RAM in a computer system

The purpose of ROM in a computer system

Virtual memory

This shows speed vs capacity of primary/secondary storage



Primary storage is used to store programs and data currently used by the computer. When a user needs to run a program, it is loaded from disk to primary storage.

Another term for primary storage is **RAM** or **Random Access Memory**. It is given this name because data can be stored anywhere within the available memory.

RAM is **Volatile** (i.e. any data stored in RAM is lost when the device is powered off).

ROM or **Read Only Memory** is **non-volatile** (i.e. any data stored in RAM is not lost when the device is powered off) – it is stored **permanently**.

ROM can be used to store the **BIOS** (i.e. the program that boots up and loads the **Operating System** when the computer turned on).

VIRTUAL MEMORY is used when the computer is short of RAM. This involves the hard disk being used as memory instead of RAM. This is not ideal as the speed of hard disk is MUCH slower than RAM.

1.2.2 Secondary Storage

The need for secondary storage

Common types of storage:

- Optical
- Magnetic
- Solid state



OPTICAL STORAGE includes CD, DVD and Blu-ray. Data is written to optical storage media using laser.

The capacity of this type of media ranges from 640 megabytes (CD) to 50 gigabytes (Blu-ray). Since it involves the use of moving parts access/data transfer speeds are slower than for other types of media.

Examples – CD, DVD, Blu-ray

SOLID STATE media is also known as electrical or flash storage. Solid state has the fastest transfer speed out of all the three types of media, since it features no moving parts. This also makes it more robust than other forms of storage and addition they consume less power. However this form of storage offers lower capacity than other forms of media and is still comparatively expensive

Examples – Solid State, Flash drive, SD card

Magnetic storage media include hard drive and tape and can have a huge capacity (100's of terabytes).

Magnetic storage media devices involve the use of moving parts. This means that they have comparatively slow data read and write speeds and can be prone to damage.

Examples – Hard Drive, Magnetic tape, external hard drive

REVISION NOTE
When recommending a methods of secondary storage, always consider the context in which the data is being used

Criteria for choosing secondary storage

Criteria	Meaning
Cost	How much does it cost per GB of storage?
Capacity	How much is there to store files?
Speed	How fast can it read/write data?
Portability	Can it be carried easily or is it a device that is hard or impractical to carry/move?
Durability	How robust is it? Will it break or damage easily?
Reliability	How likely to fail is it? How long will it last?

Year 9 French Half-Term 1 – Relationships with Family & and Future Plans

Quiz 1.1 – saying who is in your family

In my family, there are four people	Dans ma famille, il y a quatre personnes
Including my mum, my dad and me	Y compris ma mère, mon père et moi
I have a brother who is called Luc	J'ai un frère qui s'appelle Luc
He is called Bob and she is called Juliette	Il s'appelle Bob et elle s'appelle Juliette
He is (has) ten years old / she is (has) ten years old	Il a <u>10</u> ans / elle a 10 ans
Unfortunately, I don't have any brothers and sisters	Malheureusement, je n'ai pas de frères et soeurs

Quiz 1.2 – describing people's personalities

I am very generous	Je suis très généreux (m)
I am not sporty	Je ne suis pas sportif
He is really kind	Il est vraiment aimable
She is quite intelligent	Elle est assez intelligente
We are extremely chatty	Nous sommes extrêmement bavards
They are a bit naughty	Ils sont un peu méchants
They are naughty (girls)	Elles sont méchantes

Quiz 1.3 – using avoir (to have) for looks, age and pets

I have blue eyes	J'ai les yeux bleus
I don't have a dog	Je n'ai pas de chien
He has hair browns	Il a les cheveux bruns
She has hair blonds	Elle a les cheveux blonds
We have a cat	Nous avons un chat
They have (are) 12 years (old)	Ils ont douze ans
They (girls) have a big family	Elles ont une grande famille

Quiz 1.4 – getting on with people

I get on well with my mum	Je m'entends bien avec ma mère
I get on badly with my dad	Je m'entends mal avec mon père
Because he / <u>she</u> is too strict	Car il / <u>elle</u> est trop stricte
He / she respects me	Il / elle me respecte
He / she treats me like an adult	Il / elle me traite comme un e adulte
We have the same interests	Nous avons les mêmes intérêts

Year 9 French Half-Term 2 – Relationships with Family & and Future Plans

Quiz 2.1 – future plans and ideal partner

In the future, I would like to get married	Dans le futur, je voudrais me marier
In the future, I would like to have two children	A l'avenir, j' aimerais avoir deux enfants
I want a luxury apartment	Je veux un appartement de luxe
I intend to travel abroad	J'ai l' intention de voyager à l'étranger
I will stay single	Je vais rester célibataire
I hope to have a job	J' espère avoir une carrière
My ideal partner would be rich	Mon partenaire idéal serait riche
My ideal partner (f) would have blue eyes	Ma partenaire idéale aurait les yeux bleus

Quiz 2.2 - key family verbs

he/she criticises me	il/elle me critique
he/she respects me	il/elle me respecte
I like to support my family	j' aime soutenir ma famille
to make a mistake	se tromper
I feel happy	je me sens content
it depends	ça dépend

Quiz 2.3 - using negatives

I don't watch	je ne regarde pas
I no longer watch	je ne regarde plus
I never watch	je ne regarde jamais
I watch nothing	je ne regarde rien
no one watches	personne ne regarde

Quiz 2.4 - steps to success

I would say that	je dirais que
as far as I'm concerned	en ce qui me concerne
due to the fact that	dû au fait que
I must admit that	je dois admettre que
if I had the money	si j' avais de l'argent

Quiz 1.5 – future plans and ideal partner

In the future, I would like to get married	Dans le futur, je voudrais me marier
In the future, I would like to have two children	A l'avenir, j'aimerais avoir deux enfants
I want a luxury apartment	Je veux un appartement de luxe
I intend to travel abroad	J'ai l'intention de voyager à l'étranger
I will stay single	Je vais rester célibataire
I hope to have a job	J'espère avoir une carrière
My ideal partner would be rich	Mon partenaire idéal serait riche
My ideal partner (f) would have blue eyes	Ma partenaire idéale aurait les yeux bleus

Parallel texts

<p>In my family there are three people, including my dad, my mum and me. My dad is called Jean and he has 40 years and hair brown. At home, we have a dog but unfortunately I don't have a cat.</p> <p>In my opinion I am very generous and a bit intelligent. I think that my dad is really kind, however my mum is quite lazy.</p> <p>I get on particularly well with my mum because she me treats like an adult, however I get on badly with my dad because he is too strict.</p> <p>In the future I would like to marry and have two children. In addition I hope to have a career because I want an apartment of luxury. My ideal partner would be rich and he would have eyes blue.</p>	<p>Dans ma famille, il y a trois personnes y compris mon père, ma mère et moi. Mon père s'appelle Jean et il a quarante ans et les cheveux bruns. À la maison, nous avons un chien mais malheureusement je n'ai pas de chat.</p> <p>À mon avis, je suis très généreuse et un peu intelligente. Je pense que mon père est vraiment gentil, cependant ma mère est assez paresseuse.</p> <p>Je m'entends particulièrement bien avec ma mère vu qu'elle me traite comme une adulte, toutefois je m'entends mal avec mon père car il est trop stricte.</p> <p>À l'avenir, je voudrais me marier et avoir deux enfants. En plus, j'espère avoir une carrière parce que je veux un appartement de luxe. Mon partenaire idéal serait riche et il aurait les yeux bleus!</p>
<p>In my family there are three people, including my dad, my mum and me. My dad is called Jean and he has 40 years and hair brown. At home, we have a dog but unfortunately I don't have a cat.</p> <p>In my opinion I am very generous and a bit intelligent. I think that my dad is really kind, however my mum is quite lazy.</p> <p>I get on particularly well with my mum because she me treats like an adult, however I get on badly with my dad because he is too strict.</p> <p>In the future I would like to marry and have two children. In addition I hope to have a career because I want an apartment of luxury. My ideal partner would be rich and he would have eyes blue.</p>	<p>Dans ma famille, il y a trois personnes y compris mon père, ma mère et moi. Mon père s'appelle Jean et il a quarante ans et les cheveux bruns. À la maison, nous avons un chien mais malheureusement je n'ai pas de chat.</p> <p>À mon avis, je suis très généreuse et un peu intelligente. Je pense que mon père est vraiment gentil, cependant ma mère est assez paresseuse.</p> <p>Je m'entends particulièrement bien avec ma mère vu qu'elle me traite comme une adulte, toutefois je m'entends mal avec mon père car il est trop stricte.</p> <p>À l'avenir, je voudrais me marier et avoir deux enfants. En plus, j'espère avoir une carrière parce que je veux un appartement de luxe. Mon partenaire idéal serait riche et il aurait les yeux bleus!</p>

Key skills

1. Use 'avoir and 'être' confidently
2. Know how to use quantifiers with regular/irregular adjectives
3. Communicate coherently through speaking and writing
4. Conjugate present tense verbs
5. Use the future tense

Parallel texts

<p>Normalement je m'entends vraiment bien avec ma mère car elle est compréhensive.</p> <p>Je dirais qu'elle est plus intelligente que mon beau-père aussi.</p> <p>Il est un peu difficile car il me critique toujours et il n'aime pas me soutenir quand je veux sortir.</p> <p>On se dispute quelquefois dû au fait que je ne fais pas mes devoirs et c'est un grand problème chez nous.</p> <p>Je me sens content la plupart du temps dans ma famille.</p>	<p>Normally I get on really well with my mum because she is understanding.</p> <p>I would say that she is more intelligent than my step-dad as well.</p> <p>he is a bit difficult because he me criticises always and he doesn't like me to support when I want to go out.</p> <p>We argue sometimes due to the fact that I don't do my homework and it's a big problem at ours.</p> <p>I feel happy the majority of the time in my family.</p>
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Key skills

1. Use 'avoir and 'être' confidently
2. Know how to use quantifiers with regular/irregular adjectives
3. Communicate coherently through speaking and writing
4. Know challenging reading and listening vocabulary
5. Use the future tense



Quiz 1.1 – saying who is in your family

In my family there are 4 people	In meiner Familie gibt es 4 Personen
There is my mum, my dad and me.	Es gibt meine Mutter, meinen Vater und mich.
Also we have a dog	Außerdem haben wir einen Hund
I have a brother but I don't have a sister	Ich habe einen Bruder aber ich habe keine Schwester
However I would like a sister	Jedoch möchte ich eine Schwester
My brother is called Benny	Mein Bruder heißt Benni

Quiz 1.2 – describing personality

I am very patient	Ich bin sehr geduldig
I am not at all shy	Ich bin gar nicht schüchtern
She is really kind	Sie ist wirklich lieb
He is extremely lazy	Er ist unheimlich faul
We are friendly and helpful	Wir sind freundlich und hilfsbereit
They are adventurous	Sie sind unternehmungslustig

Quiz 1.3 – saying who you get on with

I get on well with my mum	Ich verstehe mich gut mit meiner <u>Mutter</u>
I get on well with my dad	Ich verstehe mich gut mit meinem <u>Vater</u>
I don't get on well with my brother	Ich komme nicht gut mit meinem Bruder aus
because we often fall out	, weil wir uns oft streiten
because he annoys me / because she always has time for me	denn er nervt mich / denn sie hat immer Zeit für mich
I like spending time with my family	Ich verbringe gern Zeit mit meiner Familie

Quiz 1.4 – describing your family situation

My parents are divorced	Meine Eltern sind geschieden
My mum and dad are separated	Meine Mutter und mein Vater sind getrennt
My mum is a single parent	Meine Mutter ist Alleinerziehende
I only live with my mum / my dad	Ich wohne nur mit Mutti / mit Vati
My mum and my step dad live together	Meine Mutter und mein Vater leben zusammen
My mum / dad has remarried	Meine Mutti / Mein Vati hat wieder geheiratet

Quiz 1.5 – future plans

In the future I will get married	In der Zukunft werde ich heiraten
In 10 years time I would like to have 2 children	In zehn Jahren möchte ich Kinder haben
I would like to live with my girlfriend / with my boyfriend	Ich möchte mit meiner Freundin / mit meinem Freund zusammenleben
In 5 years I want to live abroad	In fünf Jahren will ich im Ausland wohnen
Marriage is a waste of money	Heiraten ist eine Geldverschwendung
I want to stay single	Ich will ledig/single bleiben



Quiz 2.1 – key family verbs

Ich besuche oft meine Großeltern	I often visit my grandparents
Ich feiere gern meinen Geburtstag	I like celebrating my birthday
Ich werde in 10 Jahren heiraten	I will get married in 10 years
Ich streite ziemlich oft mit meinem Bruder	I argue quite often with my brother
Wir sprechen oft über Probleme	We often talk about problems
Wir teilen ein Schlafzimmer, obwohl es nervig ist	We share a bedroom, although it's annoying

Quiz 2.2 – key family verbs

Ich rufe meine Mutter immer an	I always ring my mum
Ich gehe an Wochenende mit Freunden aus	I go out at the weekend with friends
Ich lade viele Freunde und Familie ein	I invite lots of friends and family
Ich komme sehr gut mit meinem Vater aus	I get on well with my dad
Ich kümmere mich um meinen kleinen Bruder	I take care of my little brother
Wir vertrauen uns	We trust each other

Quiz 2.3 - DIV WAZ DUM JO T

daher	therefore (v2)	um...zu	in order to...
ich denke, daß	I think that (vs)	meiner Meinung nach	in my opinion (v2)
vielleicht	perhaps (v2)	jedoch	however (v2)
weil/ wenn	because/if (vs)	obwohl	although (vs)
außerdem	in addition (v2)	trotzdem	nevertheless (v2)
zum Beispiel	for example (v2)		
da	because (vs)		

Quiz 2.4 – using key verbs “haben” and “sein”

haben = to have	sein = to be
ich habe	ich bin
du hast	du bist
er / sie hat	er / sie ist
wir haben	sie sind
Sie / sie haben	Sie / sie sind

Quiz 2.5 – Steps to Success

Um mich zu entspannen	In order to relax
Meiner Ansicht nach ist meine Familie super	In my opinion my family is super
Im Großen und Ganzen finde ich meine Familie ausgezeichnet	All in all I find my family excellent
Wenn ich Zeit habe gehe ich mit Freunden aus	If I have time I go out with friends
Ehrlich gesagt	Honestly speaking...

Parallel texts

<p>In my family there are four people. There's my mum, my step dad, my sister and and me. In addition have we a dog, who Boris is called. I love my little family.</p> <p>In my opinion, get on I very well with my mum because she always time for me has. However is my step dad quite mean and stupid therefore have I not a good relationship to him</p> <p>In the future want I to marry and I will 2 or 3 children have. In 10 years when I older am want I a fantastic career to have as I would like to lots of money earn.</p>	<p>In meiner Familie gibt es vier Personen. Es gibt meine Mutter, meinen Stiefvater, meine Schwester und mich. Außerdem haben wir einen Hund, der Boris heißt. Ich liebe meine kleine Familie.</p> <p>Meiner Meinung nach verstehe ich mich sehr gut mit meiner Mutter, weil sie immer Zeit für mich hat. Jedoch ist mein Stiefvater ziemlich gemein und blöd daher habe ich keine gute Beziehung zu ihm</p> <p>In der Zukunft will ich heiraten und ich werde 2 oder 3 Kinder haben. In 10 Jahren, wenn ich älter bin, will ich eine tolle Karriere haben denn ich möchte viel Geld verdienen</p>
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Key skills

- | | |
|--|----------------------------------|
| 1. Use 'haben' and 'sein' confidently | 4. Conjugate present tense verbs |
| 2. Know how to use quantifiers with adjectives | 5. Use the future tense |
| 3. Communicate coherently | |

Parallel texts

<p><u>Zu Hause</u></p> <p>Wenn ich zu Hause bin, besuche ich oft meine Großeltern, weil wir eine gute Beziehung haben. Außerdem sprechen wir oft über Probleme. Jedoch streite ich ziemlich oft mit meinem Bruder, da er total nervig ist. Auf der anderen Seite komme ich sehr gut mit meinem Vater aus und wir vertrauen uns. Am Wochenende gehe ich mit Freunden aus, obwohl es teuer ist. Morgen habe ich Geburtstag vielleicht werde ich mit Freunden feiern daher werde ich viel Spaß haben. Vielleicht werden wir in die Stadt gehen, um einkaufen zu gehen. Ehrlich gesagt möchte ich ein neues T-Shirt kaufen denn das Wetter sehr schön ist.</p>	<p>If I at home am, visit if often my grandparents, because we a good relationship have. In addition speak we often over problems. However argue I quite often with my brother, because he totally annoying is. On the other side get I very well with my dad on and we trust each other. At the weekend go I with friends out, although it expensive is. Tomorrow have I birthday perhaps will I with friends celebrate therefore will I lots of fun have. Perhaps will we in the town go, in order shopping to go. Honestly speaking would like I a new T shirt buy because the weather very nice is.</p>
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Section A overview:

- Section A – 4 questions
- All multiple choice
- 5 minutes on this section
- Write the answers in answer booklet, not on question booklet
- Write the answer as the letter. E.g if the answer to Q1 is option C, write 1 = C
- Questions will be on roles and responsibilities in the theatre, staging types or staging positions

Thrust stage:

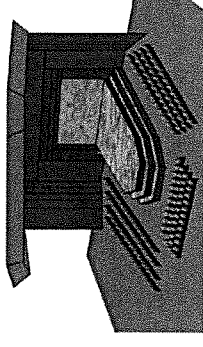
The main feature of this stage is that the audience are on three sides

ADVANTAGES:

- Can have set / backdrop on the fourth side of the stage at the back
- The audience feel 'included' and an intimate atmosphere is created
- Having one end which is visible creates a 'back' to the stage

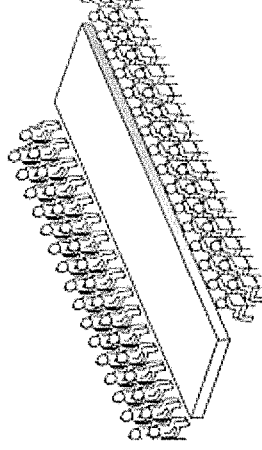
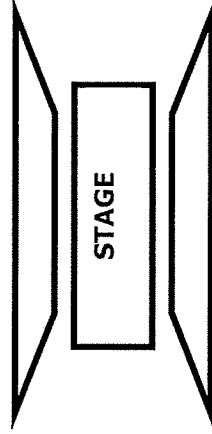
THINGS TO CONSIDER:

- Sight lines can still be an issue
- The audience on the right and left sides of the auditorium have each other in their view
- Box sets (where three sides of a room are constructed) cannot be used as this would block views for much of the audience



Traverse stage:

The main feature of this stage is where the audience sits on two sides



ADVANTAGES:

- The audience on either side can clearly see work that happens at both sides.
- Good if there is a play that shows two sides of a story / argument.
- Sometimes extreme ends of the stage can be used to create extra acting areas.

THINGS TO CONSIDER:

- Big pieces of scenery, backdrops or set can block sightlines
- The acting area is long and thin and can make some blocking challenging
- Actors must be aware of making themselves visible to both sides of the audience
- Lighting for traverse needs to be arranged carefully to avoid shining lights into the audience's eyes or light spilling onto them unnecessarily

En Promenade:

The audience stand or follow the actors through the performance. It may be site specific



ADVANTAGES:

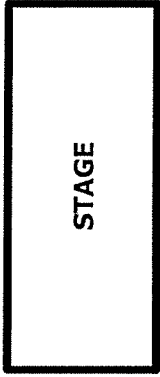
- This is an exciting and interactive type of theatre
- Audience feel very involved

THINGS TO CONSIDER:

- The audience may find moving around the space difficult or get tired standing
- Actors need to be skilled at moving the audience around
- Health and safety risks

Proscenium arch:

The main feature of this stage is where the audience faces one side of the stage



ADVANTAGES:

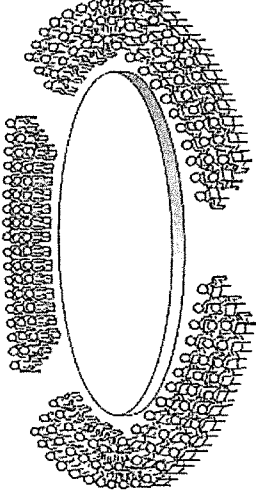
- The actors only have to think about facing one direction so work is easy to stage
- Backdrops and other pieces of set can be easily used
- Actors can be off stage and make surprise entrances
- The frame around the stage adds the effect of a fourth wall, giving the effect of a self-contained world
- There may be fly and wing space for storing scenery

THINGS TO CONSIDER:

- The actors can feel removed from the action
- Actors still need to make sure they don't look or speak upstage
- Some audience members may feel distant from the stage
- The auditorium could seem very formal and rigid
- Audience interaction may be more difficult

In the round:

The stage is positioned at the centre of the audience – i.e there is audience around the whole stage



ADVANTAGES:

- The audience is all around the action
- There are numerous exits and entrances in the audience
- Actor and audience are closer together and the audience feel part of the action
- Creates an intimate atmosphere

THINGS TO CONSIDER:

- There will always be some backs to the audience so skilful blocking / positioning is needed
- Large parts of set cannot be used as they will block the audience's view

All Saints' absolute 2.3 Preventing injury in physical activity and training



Warm up: The five components of a warm-up are as follows.

1. **Pulse raising.** This includes exercises that slowly increase heart rate and gradually increase body temperature, for example jogging, cycling, skipping or gentle running.
2. **Mobility.** Exercises that take the joints through their full range of movement (ROM), for example arm swings, hip circles, ankle rotations, heel flicks, open/close the gate/lunges/rotations/groin walk.
3. **Stretching.** This can include developmental stretches, gradually increasing the difficulty of each stretch or dynamic stretches that include more ballistic movements (for example, lunges) or static stretches where the body remains still or static while stretching. Examples of stretches include open and close the gate, groin walk for more dynamic exercises and slowly trying to touch your toes for more static stretches.

TIP: Ensure when providing an example, it must be sport-specific. For example a 100m Sprinter will perform jogging around a track twice (800m) gradually increasing the speed to enable more blood/oxygen to be delivered to the working muscles)

4. **Dynamic movements.** This involves movements that show a change of speed and direction, for example shuttle runs, skipping, running in and out of cones, zig zag running, high knees, heel flicks, agility ladders.
5. **Skill rehearsal.** This involves practising or rehearsing common movement patterns and skills that will be used in the activity, for example dribbling drills for football or passing drills for netball.

Physical benefits of a warm-up (why we perform a warm up)

1. The warm-up enables the body to prepare for exercise and decreases the likelihood of injury and muscle soreness.
2. Increase heart rate (release of adrenaline). Increased respiratory rate.
3. Increase flexibility of muscles and joints.
4. Increase pliability of ligaments and tendons.
5. There is also a release of adrenaline that will start the process of speeding up the delivery of oxygen to the working muscles.
6. An increase in muscle temperature will help to ensure that there is a ready supply of energy and that the muscle becomes more flexible to prevent injury.
7. Increase speed of muscle contractions.



Cool down

The key components of a cool-down are:

1. **Low-intensity exercises** – gradually lower the pulse rate and the heart rate and reduce the body's temperature, for example easy movement exercises or light running/jogging.
2. **Stretching** – includes steady and static stretches, for example hamstring stretch, quadriceps stretch.

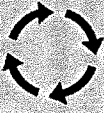
Physical benefits of a cool-down

1. The cool-down is important for effective training. If light exercise follows training, then the oxygen can more effectively be flushed through the muscle tissue and will oxidise any lactic acid, which needs to be dispersed.
 2. Cool-downs also prevent blood pooling in the veins, which can cause dizziness.
 3. The cool-down is crucial in: You must use the word **gradually to gain the mark.**
 4. Helping the body's transition back to a resting state
 5. **Gradually** lowering heart rate, returns pulse back to a resting state.
 6. **Gradually** lowering temperature - slowly returns body temperature back to normal
 7. Circulating blood and oxygen, Reducing the risk of blood pooling, maintains blood / oxygen flow to muscles that have been working
Reduces blood pooling
 8. **Gradually** reducing breathing (respiratory) rate. Number of breaths taken is slowly reduced and helps reduce feelings of nausea and dizziness.
 9. Increasing the removal of waste products such as lactic acid
 10. Reducing the risk of muscle soreness (or delayed onset of muscle soreness – DOMS) and stiffness. Less likely to feel aches and pains.
 11. Aiding recovery by stretching muscles, i.e. lengthening and strengthening muscles for next workout/use. Maintenance stretches to return muscle to normal length. Lengthening and strengthening muscles for next work-out .Reduces risk of damage to joints
- Developed points:
For example a Footballer would perform low intensity exercises, to gradually lower HR and get more oxygen to the working muscles to flush out the lactic acid. This will allow them to not be as sore after the competition. Therefore allowing them to train sooner.

Physical Education – Types of training

Continuous training

1. **Continuous training**
Involves a steady but regular pace at a moderate intensity (aerobic) which should last for at least 20 minutes- 2 hours.
Ensures there is no build up of lactic acid because oxygen is present i.e. running, walking, swimming, rowing or cycling.
Used by a **marathon runner, rower, cyclist, footballers.**



Continuous training

2. **Fartlek training** – Referred to as ‘speed play’
This is a form of continuous training, due to having no rests
Improves both aerobic and anaerobic system (endurance and speed)
Involves a variety of changing intensities over different distances, terrains, speeds and gradients
i.e. 1 lap at 50% max, 1 lap walking, 1 lap at 80% (aerobic and anaerobic used)
Used by **games players – Hockey players, Footballers to develop their aerobic and anaerobic performance,**

Interval training

4. **Interval training** - Involves periods of work followed by periods of rest. *i.e. Sprint for 20 metre + walk back to start.*
Used by a **200m sprinter, Footballer, Handballer, Netball player.**
This can be adapted to improve speed or endurance. E.g. to train for endurance an athlete would perform long interval training. E.g. 400m X8 reps X3 sets.

Interval training

5. **Plyometrics training**
Involves high-impact exercises that develop power. *i.e. bounding/hopping and Jumping.*
e.g. squat jumps, Single leg hops, bounding, box jumps, depth jumps.

Used by **long jumpers, 100 m sprinters**
basketball players, High Jumpers.



Interval training

3. **Weight/Resistance training** – A form of training that uses progressive resistance against a muscle group. Used by **cyclists.**
Muscular strength: High weight x low repetitions
Muscular endurance: Low weight x high repetitions

E.g. Rugby players would need weights to improve their strength when tackling.

E.g. Weight lifters, to be able to lift a heavier weight.

E.g. Rowers to improve their endurance to go for longer.



Interval training

6. **Circuit training** - A series of exercises completed one after another. Each exercise is called a station. Each station should work a different area of the body to avoid fatigue. It involves repetitions of exercises, the bodyweight is usually the resistance, each station is timed, there is a rest period between each station.

i.e. press ups, sit ups, squats, shuttle runs, lunges, box jumps.

Interval training

7. HIIT Training




These are High Intensity Interval Training activities where short bursts of speed and recovery are used throughout the session.

Exertion levels are high (7/10) for between 30 secs and 3 mins.

Work output is much shorter than recovery time

Helps burn fat and develop the cardio respiratory system.

Examples might be Body pump, High Impact Aerobics, Spinning.

<p>Frequency</p> 	<p>How often training takes place.</p>	<p>Increase training from once a week to two</p>
<p>Intensity</p> 	<p>How hard the exercise is.</p>	<p>Increase resistance from 10kg to 15kg or increase incline on the treadmill.</p>
<p>Time</p> 	<p>The length of the session.</p>	<p>Increase training session from 45 minutes to 55 minutes.</p>
<p>Type</p>	<p>The method of training used.</p>	<p>Change to from interval training to Fartlek training.</p>

Training Zones

- Calculating Maximum Heart Rate (MHR)
 $220 - \text{age} =$
 e.g. $220 - 14 = 206$
- Aerobic Zone:** When training to improve our cardiovascular endurance you will need to ensure you are working in the aerobic zone. This is 60-80 % of you MHR
- e.g. If I am 20 years of age my Max HR will be 200. Therefore I will need to ensure my HR does not exceed 160 and must be above the minimum threshold of 60% therefore over 120 bpm.
- Anaerobic Zone:** When training to improve our speed or anaerobic fitness we will need to train in our Anaerobic zone above 85 MHR
- e.g. if I am 14 years old. My Max HR would be 206. If I need to develop my anaerobic endurance id will need to work above 206 bpm. Therefore above 175 bpm.

4 Principles of training [SPOR]

Principles of training - Guidelines that ensure training is effective and results in positive adaptations. These principles are used when planning an Exercise/ training Programmes

1. Specificity

Training showed be **matched** to the requirements of the sport or position the performer is involved in. Training must be specifically designed to develop the right aspect:

- Muscles e.g. Build biceps do bicep curls
- Type of fitness e.g. To improve strength do weights/ To improve power do plyometrics
- Skills e.g. to improve dribbling in Basketball work on your technique
- Developed e.g. A long jumper would need to perform **plyometrics**, such as box jumps.to develop their power, which will create a larger jump

2. Progression: Training should gradually Increasing over time

Using overload in a progressive way over the course of a programme. Once adaptations have happened overload needs to be applied to make gains again. Training gradually becomes more difficult / challenging, Because body has made adaptations / got stronger, Must be gradual to avoid injury.

e.g. lifting more in week 12 than in week 2 of the programme.
 e.g. Gradually progress the sessions by 10 minutes at a time.

3. Overload: Working the body harder than normal

This is required to put the body under stress so that we can improve our component of fitness or skill. Work harder than normal / puts body under stress, So that fitness adaptations / improvements will occur. Links with FITT principle

Increase frequency / intensity / duration or time of training / or change type of training

e.g. bench press 50kg x 10 repetitions and increase to 55kg x5 repetitions.

Links with FITT- Frequency- Lift weights for longer/ Intensity- work harder e.g. 50kg instead of 40kg/ Time- longer training sessions.

4. Reversibility

if training is not regular, adaptations will be reversed. This can happen when:

- Suffering from illness and cannot train
- Injury
- Working too hard (too much overload applied without progression)
- After an off-season.

PAPER 1 ALL SAINTS ABSOLUTE 2.1 GCSE Physical Education – Components of Fitness

Component of fitness	Definition	Practical examples
1. Cardiovascular endurance	The ability to continuously exercise without tiring.	Cross country running, to continue till the end of the race, Swimming 800m, road walking, cross-country skiing, cycling, invasion games and outdoor activities.
2. Muscular endurance	The ability of the muscle or group of muscles in the body to repeatedly contract or keep going without rest.	In boxing to continue to throw hard punches for the entire round. Cross country running, cycling, swimming, rugby, football and hockey.
3. Speed	This is the ability of the body/ limbs to move quickly.	For a footballer to quickly sprint down the wing after a forward pass, to outwit the defending player, gaining an advantage.
4. Strength	The ability of a muscle to exert force for a short period of time.	A Handball player will require strength to effectively block a playmaker to prevent them from scoring a goal. A Rugby player will need strength to successfully tackle a player to the ground in Rugby to prevent a try. Sprinting, games activities such as rugby and American football, cycling and rowing. A gymnast holding the crucifix position (static), A rower in a race (dynamic). Cricket throw or hit the ball further. Weightlifter being able to lift a heavier weight than your opponents.
5. Power	This is a combination of strength and speed.	Having good power will enable a high jumper to apply strength explosively to gain a higher jump Triple jump in athletics, games activities such as rugby, sprinting, throwing events in athletics.
6. Flexibility	This is the amount or range of movement that you can have around a joint.	Gymnastics, dance, table tennis, tennis and games activities such as hockey and football.
7. Agility	How quickly you can change direction under control and maintaining speed, balance and power.	A football player will need agility to successfully dodge a defender when on the attack. Trampolining and gymnastics, netball and rugby, volleyball and basketball.
8. Balance	This is the ability to keep your body mass or centre of mass over a base of support.	A Gymnast requires balance to allow them to perform a complex move, such as a somersault and land this on the beam without falling off. Games players such as netball, rugby and hockey, athletics activities such as the pole vault, dance activities.
9. Co-ordination	This is the ability of repeating a pattern or sequence of movements with fluency and accuracy. Doing more than one task at a time effectively	Dance, tennis and other racquet sports, gymnastics, team games such as football and netball, martial arts such as Karate. Moving different limbs/body parts to make a tackle in football OR running AND passing a football OR use hands AND eyes to catch the ball in cricket OR putting a racket in the right place to hit the ball. Use both feet to score in football = TV
10. Reaction time	The ability to respond to a stimulus quickly.	For a goal keeper to rapidly respond to a ball to improve the chances of saving the ball from going in/ gain an advantage over your opponents. Having good reaction time will allow a 100m

ABSOLUTE 2.1 GCSE Physical Education – Fitness Testing

Fitness Test	Component	Equipment	Prior to the test	The test
1. Multistage fitness test	Cardiovascular Endurance	Flat non-slip surface/ 30-metre tape measure/ Marking Cones/ The Multi-Stage Fitness Test/ CD Player or app	Measure 20 meters, Perform a warm up/ Ensure audio test works	Run a 20-meter shuttle as many times as possible. You must turn at each end of the run when the bleep sounds. The time between the bleeps gets progressively shorter. If you fail to make the cone you must stop.
2. 12 Minute Cooper run	Cardiovascular Endurance	Tape measure/ Stopwatch/ 100m indicator posts or an athletics track.	Perform a warm up/ Ensure assistant is ready/ perform a warm-up.	Complete as many laps as possible around 100m track in 12 minutes/ You need a stop watch to time and count how many laps you complete/Multiply the number of laps by 100 to find out the distance in metres
3. Maximal press up test	Muscular Endurance	Press up test (metronome)	Perform a warm-up/ Non-slip surface/ Assistant/ ensure the metronome is ready.	Position on a mat with hands shoulder width apart and arms fully extended. Lower body until elbows bend to 90 degrees. Return to starting position with arms fully extended – do not hold feet. Continuous press-up action – complete as many as you can and record. Modified press-up can be used too.
4. Maximal Sit-up test	Muscular Endurance	sit up test (metronome)/Mat/ assistant/ stop watch.	Perform a warm-up/ ensure the metronome is ready. The athlete lies on the mat with the knees bent, feet flat on the floor and their hands on their ears where they must stay throughout the test.	The assistant holds the athlete's feet on the ground. The assistant gives the command "GO" and starts the stopwatch. The athlete sits up touching the knees with their elbows, then returns back to the floor and continues to perform as many sit-ups as possible in time to the recording. The assistant keeps the athlete informed of the time remaining. The assistant counts and records the number of correct sit-ups completed.
5. Sit and reach	Flexibility	Box/ Metre ruler/ Assistant.	Perform a warm up and stretch/ Take shoes off and place heels on the box.	Legs need to be straight / knees flat on floor. No footwear / bare feet. Reach as far forward as possible. Move slowly / no bouncing. Maintain position for two seconds
6. Grip strength dynamometer	Strength	Grip dynamometer/ Assistant/ Stop watch.	Perform a warm up. Calibrate the grip dynamometer to your age. Hold parallel to your body.	The athlete using their dominant hand applies as much grip pressure as possible on the dynamometer. The assistant records the maximum reading (kg). The athlete repeats the test 3 times. The assistant uses the highest recorded value to assess the athlete's performance.
7. One Rep Max	Strength	Bench press, Leg press...etc	Perform a warm up	Select appropriate exercise, e.g. squats for lower body strength or bench press for upper body strength. Select realistic weight. Continue to increase the weight until weight can no longer be lifted, The last weight you can lift is your 1RM
8. 30 m Sprint	Speed	Flat non-slip surface/ Stopwatch/ An assistant/ Marking cones	Measure 30 meters with a tape measure and place the cones to indicate the distance. Perform a warm up.	Sprint should be from a flying start from the beginning of the marked out stretch of running surface/ When your partner is ready, they will set you off and you sprint over a distance of 30 metres. Record time when the torso crosses the line.
9. Stork Stand	Balance	Stop watch/ Warm dry location (Gym) Assistant	Hands on hips, lift right leg and place sole of right foot against the side of the left kneecap	On GO your partner will start the stopwatch and performer raises heel of left foot to stand on toes Aim is to hold this position for as long as possible – repeat with other leg Four attempts – 2 on each leg and record the best time achieved
10. Wall throw test	Coordination	Ruler or tape measure/ Stop watch/ Assistant.	A mark on the floor 2 metres from the wall, the subject then stands behind the line and faces the wall.	Stands two metres away from a smooth wall. Assistant shouts "GO" and starts the stopwatch. The athlete throws a tennis ball with their right hand against the wall and catches it with the left hand, throws the ball with the left hand and catches it with the right hand. This cycle of throwing and catching is repeated for 30 seconds. The assistant counts and records the number of catches.
11. Illinois Agility Test	Agility	Flat non-slip surface/ 8 cones/ Stopwatch/ Assistant.	Measure out a box 10m by 5m with 4 cones placed in the centre of the box. Perform a warm up.	Lay on floor at start cone. On GO jump to feet and begin the course, assistant starts the stopwatch. The athlete jumps to his/her feet and negotiates the course around the cones following the red line route as shown in the diagram to the finish. The assistant stops the stopwatch and records the time when the athlete passes the "Finish" cone.
12. Ruler drop	Reaction Time	Ruler	Elbow at 90 degrees/ with the assistant holding the ruler parallel to the wall.	Legs need to be straight / knees flat on floor. No footwear / bare feet. Reach as far forward as possible. Move slowly / no bouncing. Maintain position for two seconds
13. Vertical Jump (Sargent Jump)	Power	Vertical jump board or Wall/Tape measure/ Chalk/ Assistant	Ensure you have all equipment and Perform a warm up. The athlete chalks the end of his/her fingertips. The athlete stands side onto the wall, keeping both feet remaining on the ground, reaches up as high as possible with one hand and marks the wall with the tips of the fingers (M1). The athlete from a static position jumps as high as possible and marks the wall with the chalk on his fingers (M2). The assistant measures and records the distance between M1 and M2.	
14. Broad Jump	Power	Tape measure, assistant.	Perform a warm up.	Stand with your feet behind the line. Swing your arms and try and jump as far as