



**The Abbey  
School**

# **Knowledge Organiser**

## **Year 11 Term 5**

2023 - 2024

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## BIG QUESTIONS

How can I revise  
for English  
Language?

How will I be  
examined for  
questions 1-4 of  
Language Paper 1?

What are the  
language  
techniques?

How do I analyse a  
writer's language?

What are the  
structural  
techniques?

How do I analyse a  
writer's structure?

What is  
evaluation?

How do I evaluate  
effectively?

## What do the questions look like?

**Q1:** List 4 things...

[4 marks]

**Q2:** How does the writer use language here  
to describe...

[8 marks]

**Q3:** How has the writer structured the text  
to interest you as a reader?

[8 marks]

**Q4:** To what extent do you agree...?

[20 marks]

## Analysis sentence starters

This **suggests** that...

This **conveys** that...

It **implies** that...

The word **presents**...

This **portrays** to the reader...

The language **connotes** that...

(The bold words are all synonyms  
for 'show')

## How do I evaluate in Question 4?

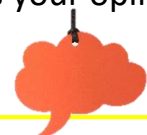
The examiner will give you an opinion about the extract. You should:

**Step 1:** Decide if you agree with the opinion or not.



**Step 2:** Find the evidence which supports your opinion.

**Step 3:** Explain to the examiner how your evidence shows your opinion.



## Language Techniques (for questions 2 and 4)

## Structure Techniques (for questions 3 and 4)

| Technique         | Definition   |
|-------------------|--|
| Adjective         | A word that describes a noun.  |
| Verb              | An action which can be physical, mental or a state of being.   |
| Adverb            | A word that describes a verb (action). These usually end with -ly.   |
| Pronoun           | These are used in the place of a name.   |
| Connective        | Words which show the relationship between ideas such as time or agreement.   |
| Simile            | A comparison using 'like' or 'as' to show the similarity between two ideas.  |
| Metaphor          | A comparison where you state something <u>is</u> something that it's not, based on a shared characteristic.                                  |
| Onomatopoeia      | Words which make their own sound.  |
| Personification   | Giving a non-human thing a human characteristic.   |
| Simple Sentence   | A sentence with one piece of information.  |
| Compound sentence | Two simple sentences joined using a connective.  |
| Complex Sentence  | A sentence which contains a subordinate clause. A subordinate clause is an extra piece of information which would not make sense on its own. |
| Semantic Field    | Where multiple words in a piece of writing suggest the same idea or theme, such as coldness, fear, isolation or excitement.                  |
| Oxymoron          | Two words which are the direct opposite next to one another.   |

| Technique                    | Definition  |
|------------------------------|---|
| Beginning                    | The starting point of the extract.  |
| Middle                       | The pivotal moment in the extract, usually the dilemma or the problem.  |
| End                          | The way in which the extract finishes.  |
| Setting                      | Where the extract takes place. There may be multiple settings in the extract.   |
| Tone                         | An emotion suggested in the extract. This could be negative, positive, happy, worried or any emotion, really. The tone can change during the extract.   |
| Introduced/ Introduction     | A first meeting with an idea/person, one added during the course of the extract.  |
| Pace                         | The speed at which the events of the extract happen. This could vary over the course of the extract to alter the mood.  |
| Narrative perspective/ voice | The viewpoint the story is being told from. Whether it is a character (first person), directed as if the reader is the character (second person) or by a narrator unrelated to the events (third person).<br>My examples: |
| Focus                        | Where the writer draws the eye of the reader to a specific event, person, place or even sense.  |
| Paragraphing                 | How the writer breaks up the events of the extract. The length of paragraphs may alter the pace as well as highlighting significant moments through depth.  |
| Foregrounding                | When the writer places a person, setting or story element at the front of the action.   |
| Characterisation             | How the writer develops the personality of a character, possibly through their appearance, actions or speech.   |

## Homework Links

- Use GCSEPod Pass4English to keep your terminology knowledge fresh.
- Answer practise questions under exam conditions

## Key Vocabulary

**Analyse** – to examine in detail, typically in order to explain and interpret.

**Evaluate** – to consider the merit, worth or reliability of something based on evidence.

**Structure** – the way that a text is put together and developed by the writer.

***All of the language and structure techniques as well as the key words for analysis.***



## Sentence Structures

- Independent Clause:** A clause that can stand alone as a sentence. E.g. *The cat sat on the mat.*  
Contains a subject and a verb.
- Subordinate Clause:** A clause that depends on an independent clause to make sense. E.g. *Without turning around, the cat sat on the mat.*
- Simple Sentence:** Contains just one clause (subject + verb) E.g. *Tom went to the shops.*
- Compound Sentence:** Independent Clause + Conjunction (**FANBOYS**) + Independent Clause (**For, And, Nor, But, Yet, So**) E.g. *Tom went to the shops and he bought some bread.*
- Complex Sentence:** Contains one main clause and one or more subordinate clause/s. E.g. *Although it looked difficult, they still pushed on with the challenge.*
- Exclamatory:** A sentence that shows great emotions. E.g. *I am appalled by your behaviour!*
- Imperative:** A sentence that gives commands. E.g. *Get out!*
- Interrogative:** A sentence that asks a question (not rhetorical questions). E.g. *How much is that?*
- Declarative:** A sentence that makes a declaration. E.g. *She sells sea-shells.*

## Sentence Openers

**A dverbs** Quickly, Carefully, Bravely, Quietly, Slowly, Suddenly, Happily,

**C onnectives** Instead, Unless, Before, Soon, Eventually, While, However

**A djectives** Happy and cheerful, Sweet and kind, Scared but excited, Tired and weary,

**R elative Pronouns** Which, That (animals and things), Who (people)

## Paragraphs



**Ti**...you move to a new period of time

**P** ... you move to a different place/location

**To** ... you move from one topic to another

**P** ... you bring a new person into your writing, or change from one person to another - including dialogue (speech)

## Homophones: words that sound the same but have different meanings

- Their** - means it belongs to them. E.g. I ate their sweets.
- They're** - short for they are. E.g. They are going to be cross.
- There** - refers to a place. E.g. I'm going to hide over there.
- Your** - refers to something that belongs to you. E.g. Your bag.
- You're** - contraction of 'you are.' E.g. You're going to win.

**P repositions** Inside, Next to, Above, Hidden in, Behind, Under, Past

**I ng Words** Eating, Crying, Thinking, Laughing, Shouting, Smiling,

**E d Words** Worried, Defeated, Scared, Flabbergasted, Shocked,

## Punctuation

- **Full stops:** remember to use a full stop at the end of every sentence.
- **Capital Letters :** make sure every name of something has a capital letter. *E.g. California has a capital letter. Also, make sure every new sentence starts with a capital letter.*
- **Apostrophes:** you can use apostrophes to connect certain words together. *E.g. It is = It's OR to express belonging or property = John's phone*
- **Exclamation marks:** used to end a sentence to show a strong feeling of emotion like surprise, anger, or shock. *E.g. I'm so frightened!*
- **Ellipses:** used to show an omission of words, a pause in thought or to create suspense. *E.g. Suddenly, there it was ... his worst nightmare.*
- **Colons:** used to precede lists or explanations. *E.g. I went to the store and bought a lot of fruit: peaches, apples, oranges and pears. Sarah wrote a story: The Hungry Fish.*
- **Semi Colons:** used to join two related independent clauses. *E.g. We made too many mistakes; we lost the game. Also, use a semi-colon instead of a comma, usually in a list. E.g. You will need many backpacking items: a sleeping bag; torch ; tent ; and pillow.*
- **Hyphens:** you can use hyphens for a number of reasons.
  - To separate sentences with added information e.g. *I enjoy English – as well as Maths.*
  - To indicate periods of time. *E.g. 2000-2006.*
  - To form hyphenated words. *E.g. self-respect.*
  - To create emphasis. *E.g. Mum loves seafood – she absolutely adores seafood.*
- **Brackets:** use brackets to indicate added information. The sentence should still make sense when removed. *E.g. I did my homework, (it took me twenty minutes) and brought it in early.*

## The 7 Main Commas Rules

- 1.) Use a comma before a conjunction, (and, but, nor, yet, or, so), to connect two independent clauses.  
*E.g. I had an English test last night, so I revised.*
- 2.) Use a comma to set off an opening phrase.  
*E.g. As such, I feel there is much I can learn.*
- 3.) Use a comma when using quotes to separate the quote from the rest of the sentence.  
*E.g. Like Bob Johnson said, "It's a great day for hockey".*
- 4.) Use a comma to separate adjectives in a descriptive list.  
*E.g. The pizza was hot, delicious and freshly cooked.*
- 5.) Use a comma to separate three or more things in a series.  
*E.g. Of Charles Dickens' novels, I have read "A Christmas Carol", "Oliver Twist", and "Great Expectations".*
- 6.) Use a comma with phrases that present a contrast.  
*E.g. Learning about Hemingway can be highly advantageous for students, not only in their secondary school studies, but also in their future careers.*
- 7.) Use a comma to set off a parenthetical element (added information that can be taken out without changing the meaning of the sentence).  
*E.g. Now, many years after their time, we as a country are faced at the starting ground where these men once were.*

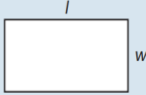
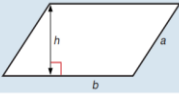

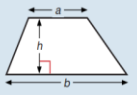


# Subject: Mathematics

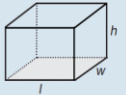
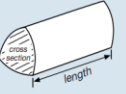

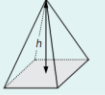
## Topic: Recall Knowledge

Year / Group: GCSE F/H  
Term: 1-6

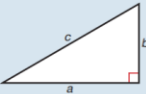
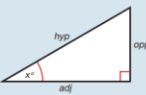
### Areas

|                                     |   |
|-------------------------------------|---|
| Rectangle = $l \times w$            |  |
| Parallelogram = $b \times h$        |  |
| Triangle = $\frac{1}{2} b \times h$ |  |
| Trapezium = $\frac{1}{2} (a + b)h$  |  |


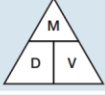

### Volumes

|  |   |
|--|---|
| Cuboid = $l \times w \times h$                                   |  |
| Prism = area of cross section $\times$ length                    |  |
| Cylinder = $\pi r^2 h$   |  |
| Volume of pyramid = $\frac{1}{3} \times$ area of base $\times$ h |  |

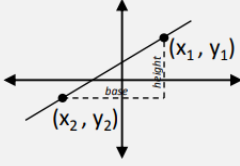
### Pythagoras

|  |   |
|--|---|
| <b>Pythagoras' Theorem</b><br>For a right-angled triangle,<br>$a^2 + b^2 = c^2$  |  |
| <b>Trigonometric ratios (new to F)</b><br>$\sin x^\circ = \frac{\text{opp}}{\text{hyp}}$ , $\cos x^\circ = \frac{\text{adj}}{\text{hyp}}$ , $\tan x^\circ = \frac{\text{opp}}{\text{adj}}$ |  |

### Compound measures

|   |   |
|---|---|
| <b>Speed</b><br>$\text{speed} = \frac{\text{distance}}{\text{time}}$    |  |
| <b>Density</b><br>$\text{density} = \frac{\text{mass}}{\text{volume}}$  |  |
| <b>Pressure</b><br>$\text{pressure} = \frac{\text{force}}{\text{area}}$ |  |

### Gradient of a Line

|  |   |
|--|---|
| $m = \frac{y_2 - y_1}{x_2 - x_1}$<br>or<br>$m = \frac{\text{height}}{\text{base}}$ |  |
|--|---|

### Midpoint of two points

|                                       |   |
|---------------------------------------|---|
| between $(x_1, y_1)$ and $(x_2, y_2)$ | $\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ |
|---------------------------------------|---|

### Compound Growth & Decay

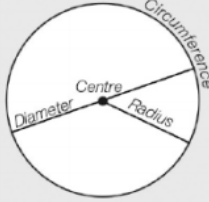
The amount after  $n$  years (or days, etc.) is:

$$\text{starting amount} \times \left(1 \pm \frac{r}{100}\right)^n$$

where  $r$  is the rate of change.  
The  $\pm$  means + for growth and - for decay

| Literacy In Maths | Command Words  |
|-------------------|--|
| Evaluate ...      | Work out and write your answer                                 |
| Work out ...      | Working out is required  |
| Calculate ...     | Working out is required. A calculator may be needed.           |
| Solve ...         | Work out the values  |
| Prove ...         | All working must be shown in steps to link reasons and values. |
| Expand...         | Multiply out of the brackets                                   |
| Draw...           | Draw accurately with a pencil and equipment.                   |
| Explain ...       | Use words to give reasons                                      |
| Factorise         | The reverse process of expanding brackets. Remove the HCF.     |
| Estimate          | Work out an approximate answer using rounded values.           |

### Circles

|   |   |
|---|---|
| Circumference = $\pi \times \text{diameter}$ , $C = \pi d$            |  |
| Circumference = $2 \times \pi \times \text{radius}$ , $C = 2\pi r$    |   |
| Area of a circle = $\pi \times \text{radius squared}$ , $A = \pi r^2$ |   |

### Area of a Sector

$$A = \frac{\theta}{360^\circ} \times \pi r^2$$

### Length of an Arc

$$A = \frac{\theta}{360^\circ} \times \pi d$$

### Set Notation

|                               |
|-------------------------------|
| $A \cup B$                    |
| Union: in A or B (or both)    |
| $A \cap B$                    |
| Intersection: in both A and B |

$$P(A \text{ or } B) = P(A) + P(B)$$

$$P(A \text{ and } B) = P(A) \times P(B)$$

### BIG QUESTIONS

How can vectors be used to solve complex geometrical problems?

### Homework Links

Sparx Maths

MathsGenie.co.uk/  
GCSE

Corbettmaths.com/  
contents

bbc.co.uk/bitesize/s  
ubjects

Adding vectors:

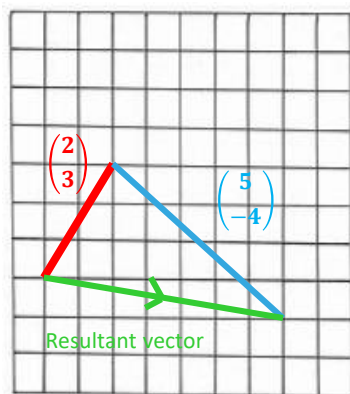
$$\begin{pmatrix} 2 \\ 3 \end{pmatrix} + \begin{pmatrix} 5 \\ -4 \end{pmatrix} = \begin{pmatrix} 2+5 \\ 3+(-4) \end{pmatrix} = \begin{pmatrix} 7 \\ -1 \end{pmatrix}$$

Subtracting vectors:

$$\begin{pmatrix} 3 \\ 9 \end{pmatrix} - \begin{pmatrix} 2 \\ -3 \end{pmatrix} = \begin{pmatrix} 3-2 \\ 9-(-3) \end{pmatrix} = \begin{pmatrix} 1 \\ 12 \end{pmatrix}$$

Vectors and scalar multipliers:

$$2 \begin{pmatrix} 8 \\ -3 \end{pmatrix} = \begin{pmatrix} 2 \times 8 \\ 2 \times -3 \end{pmatrix} = \begin{pmatrix} 16 \\ -6 \end{pmatrix}$$



Vectors notation:

$$\mathbf{a} \quad \overrightarrow{AB} \quad \underline{\mathbf{a}}$$

**Magnitude:** Length of the arrow

**Direction:** Where the arrow is pointing

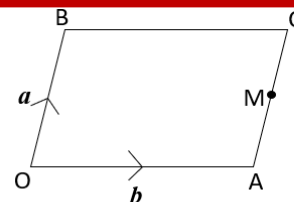
**Parallel lines of equal length** have the **same** vector.

**Parallel lines of different lengths** have a **multiple** of the vector.

**Travelling against** an arrow **changes the sign** of the vector.

**Parallel lines of different lengths** have a **multiple** of the vector.

For two vectors to form a **straight line** they must have vector values which are **multiples of one another** and must have a **common point**.



$\overrightarrow{OA} = \mathbf{b}$   $\overrightarrow{OB} = \mathbf{a}$   
OABC is a parallelogram. M is the midpoint of AC.

a) State the vector of  $\overrightarrow{OC}$ .

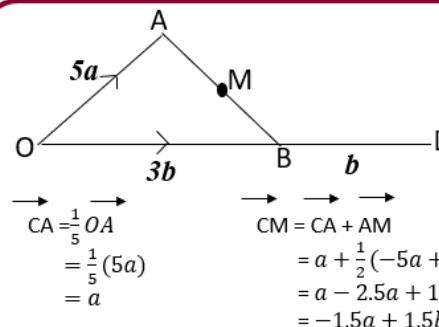
As BC is parallel and equal in length to OA, it has the vector value of  $\mathbf{b}$ .  
Therefore  $\overrightarrow{OC} = \mathbf{a} + \mathbf{b}$

b) State the vector of  $\overrightarrow{AO}$ .

As we are travelling against the arrow, the vector changes sign.  
Therefore  $\overrightarrow{AO} = -\mathbf{b}$

c) State the vector of  $\overrightarrow{OM}$ .

As  $\overrightarrow{AC}$  is parallel and equal in length to  $\overrightarrow{OB}$ , it has the vector value of  $\mathbf{a}$ . M is the midpoint of  $\overrightarrow{AC}$ .  
Therefore  $\overrightarrow{OM} = \mathbf{b} + \frac{1}{2}\mathbf{a}$



C is the point such that  $OC:CA = 4:1$   
M is the midpoint of AB.  
D is the point such that  $OB:OD = 3:4$   
Show that C, M and D are on the same straight line.

$$\begin{aligned} \overrightarrow{CA} &= \frac{1}{5}\overrightarrow{OA} \\ &= \frac{1}{5}(5\mathbf{a}) \\ &= \mathbf{a} \end{aligned}$$

$$\begin{aligned} \overrightarrow{CM} &= \overrightarrow{CA} + \overrightarrow{AM} \\ &= \mathbf{a} + \frac{1}{2}(-5\mathbf{a} + 3\mathbf{b}) \\ &= \mathbf{a} - 2.5\mathbf{a} + 1.5\mathbf{b} \\ &= -1.5\mathbf{a} + 1.5\mathbf{b} \end{aligned}$$

$$\begin{aligned} \overrightarrow{MD} &= \overrightarrow{MB} + \overrightarrow{BD} \\ &= \frac{1}{2}(-5\mathbf{a} + 3\mathbf{b}) + 4\mathbf{b} \\ &= -2.5\mathbf{a} + 1.5\mathbf{b} + \mathbf{b} \\ &= -2.5\mathbf{a} + 2.5\mathbf{b} \end{aligned}$$

C, M and D are on a **straight line** as CM and MD are **multiples** of one another and have the **common point** of M.

Sparx Maths

U660, U560,  
U632, U903,  
U564, U781



# Mathematics Recall Knowledge

Year: GCSE H  
Term: 5

## BIG QUESTIONS

BQ: [What do I need to practise and revise?](#)

[Term 5 GCSE Revision](#)

## Homework Links

Sparx Maths

[MathsGenie.co.uk/GCSE](#)

[Corbettmaths.com/contents](#)

[bbc.co.uk/bitesize/subjects](#)

Email your teacher if you need more exam questions.

After school Maths support is on a Monday.

Important words, formulae and techniques you need to know.

Higher

### Transformations of shapes

Rotation about a point,  $90^\circ$  (anti)clockwise or  $180^\circ$

Reflection through a line \*look out for  $y = x$  or  $y = -x$

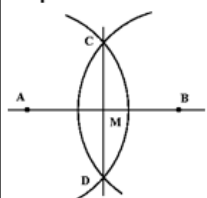
Translation through a vector  $\begin{pmatrix} x \text{ direction} \\ y \text{ direction} \end{pmatrix}$

Enlargement from a point, by a scale factor

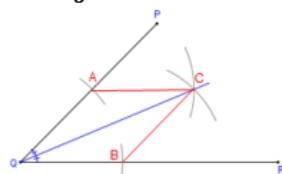
- \* if fraction: shape gets smaller
- \* if negative: shape inverted through the centre

### Constructions

Perpendicular Bisector



Angle Bisector



\* to construct from a point, start with compass on that point and mark onto the line first.

### Percentages

The multiplier always goes with the change  
Increase = higher multiplier and vice versa

New price = original  $\times$  multiplier  
To find an original price, divide by the multiplier

### Compound interest

New amount = original  $\times$  multiplier<sup>years</sup>

### f(x) Transformations of curves

$y = f(x+a)$  Move **left** (minus  $a$  from  $x$ -coordinate)  
 $y = f(x)+a$  Move **up** (add  $a$  to  $y$ -coordinate)  
 $y = af(x)$  Stretch s.f.  $a$  (multiply  $a$  by  $y$ -coordinate)  
 $y = f(ax)$  Stretch s.f.  $\frac{1}{a}$  (**divide**  $x$ -coordinate by  $a$ )  
 $y = -f(x)$  Multiply  $y$ -coordinate by  $-1$  (reflection)  
 $y = f(-x)$  Multiply  $x$ -coordinate by  $-1$  (reflection)

### Straight Line Geometry

Gradient =  $\frac{\text{difference in } y}{\text{difference in } x}$

Midpoint = add the  $x$ -coordinates and divide by 2  
add the  $y$ -coordinates and divide by 2

$y = mx + c$  ( $m$  is gradient,  $c$  is  $y$ -intercept)  
Find  $c$  by substituting  $x, y$  and  $m$

### Stratified Sampling

Sample =  $\frac{\text{interested group}}{\text{population}} \times \text{sample size}$

### The Nth Term

$dn + o$  (coefficient of  $n$  is the common difference and add the zero'th term)

### HCF and LCM

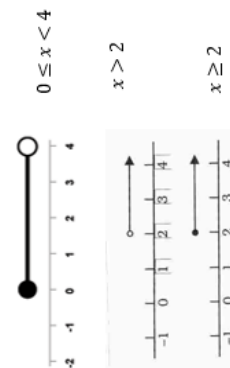
HCF = common prime factors  
LCM = HCF  $\times$  leftovers

### Division and Multiplication

$0.8 \times 0.12 = 0.096$  (3 decimal places in total)

$$\frac{0.8 \times 100}{0.12 \times 100} = \frac{80 \div 4}{12 \div 4} = \frac{10}{3} = 3\frac{1}{3}$$

### Inequalities



To draw a region, use a table of values to draw the straight lines.

### Quadratic Equations

To factorise, check the sum-product

$$x^2 - 5x + 6 \quad \text{sum} = -5 \text{ and product} = 6$$

$$(x-3)(x-2)$$

For quadratics with a co-efficient of  $x^2$

$$3x^2 + 8x - 3 \quad \text{sum} = 8 \text{ and product} = -9$$

$$3x^2 + 9x - 1x - 3 \quad \text{split the middle term}$$

$$3x(x+3) - 1(x+3) \quad \text{factorise the first 2 and last 2}$$

$$(3x-1)(x+3) \quad \text{factorise again}$$

The difference of two squares

$$x^2 - 64 = (x+8)(x-8)$$

$$4x^2 - 9y^2 = (2x+3y)(2x-3y)$$

## BIG QUESTIONS

BQ: What do I need to practise and revise?

Term 5 GCSE Revision

## Homework Links

Sparx Maths

MathsGenie.co.uk/  
GCSE

Corbettmaths.com/  
contents

bbc.co.uk/bitesize/s  
ubjects

Email your teacher if you need more exam questions.

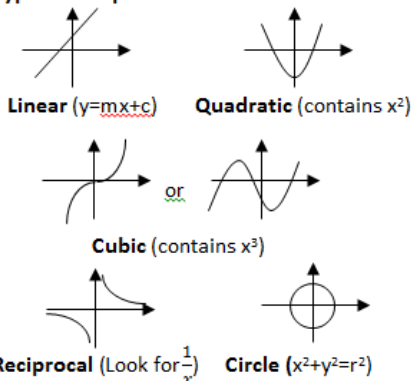
After school Maths support is on a Monday.

### Laws of Indices

$$y^a \times y^b = y^{a+b} \quad y^a \div y^b = y^{a-b} \quad y^0 = 1$$

$$(y^a)^b = y^{ab} \quad y^{-n} = \frac{1}{y^n} \quad y^{\frac{a}{b}} = \sqrt[b]{y^a}$$

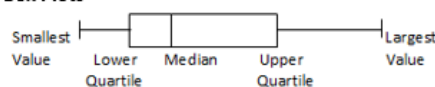
### Types of Graph



**Histograms** – the area of the bars represents the frequency. Frequency Density is  $\frac{\text{Freq}}{\text{FD} \mid \text{CW}}$

**Cumulative Frequency** – plot the upper bound of the class interval and the frequency.

### Box Plots



### Estimating Mean from a table

| Intervals  | Frequency   | Midpoint x F |
|--|-------------|--------------|
|  | Sum of this | Sum of this  |
| Mean = $\frac{\text{sum of (mid} \times \text{freq)}}{\text{sum of freq}}$ |             |              |

**Frequency Polygons** – plot the midpoint and the frequency/

**Comparing datasets** – comment on an average (median or mean) and the spread (IQR or range).

### Surds

$$\sqrt{a} \times \sqrt{a} = a \quad \sqrt{a} \times \sqrt{b} = \sqrt{ab} \quad \sqrt{a} \times b = b\sqrt{a}$$

Rationalise the denominator  $\frac{4}{\sqrt{2}} = \frac{4 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$

### Converting recurring decimals to fractions -

Let  $x =$  the decimal written out ...  
 $\times 10, 100$  or  $1000$  (check how many digits recur)  
Subtract by aligning the decimal points

### Direct/Inverse Proportion

$$y = kx^2 \leftrightarrow y \text{ is (directly) proportional to } x^2$$

$$y = \frac{k}{x^2} \leftrightarrow y \text{ is inversely proportional to } x^2$$

Don't forget to re-write this after finding  $k$

### Upper Bounds & Lower Bounds

Margins =  $\pm$  half what it has been rounded to

|    |    |
|----|----|
| UB | LB |
| UB | LB |

Go across the table when dividing or subtracting.  
Go down the table when adding/multiplying.

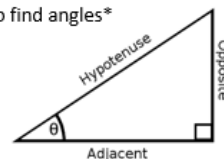
**Pythagoras' Theorem** – for right-angled triangles  
Square, add and square-root for the longest side  
Square, subtract and square-root for a shorter side

**Basic Trigonometry** – for right-angled triangles only

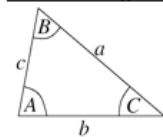
SOH  $\frac{\text{Opp}}{\sin \theta \mid \text{Hyp}}$  \*press shift to find angles\*

$$\text{CAH} \frac{\text{Adj}}{\cos \theta \mid \text{Hyp}}$$

$$\text{TOA} \frac{\text{Opp}}{\tan \theta \mid \text{Adj}}$$



**Advanced Trigonometry** – for any triangle



**Sine Rule** – for sides/angles opposite each other.

**Cosine Rule**

(i) two sides and angle between them is given.

(ii) re-arrange to make  $\cos$  the subject to find an angle given three sides.

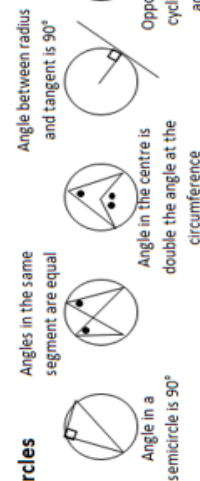
Speed is distance/time  $\frac{D}{S \mid T}$   
Density is mass/volume  $\frac{M}{D \mid V}$

Area of a circle is  $\pi r^2$  \*for sectors  $\times \frac{\theta}{360}$   
Circumference is  $\pi d$  \*for arcs  $\times \frac{\theta}{360}$

### Angle Facts

Sum of interior angles in polygon =  $(n - 2) \times 180$   
One exterior angle of a regular polygon =  $\frac{360}{n}$   
(Z-angles) Alternate angles are equal  
(F-angles) Corresponding angles are equal  
(C-angles) Co-interior angles are supplementary

### Circles



# Mathematics Recall Knowledge

Year: GCSE F  
Term: 5

## BIG QUESTIONS

BQ: What do I  
need to practise and  
revise?

Term 5 GCSE  
Revision

## Homework Links

Sparx Maths

MathsGenie.co.uk/  
GCSE

Corbettmaths.com/  
contents

bbc.co.uk/bitesize/s  
subjects

Email your teacher  
if you need more  
exam questions.

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## NUMBER

### BIDMAS

Operations must be completed in a certain order, starting from the top of the list.

|                |              |
|----------------|--------------|
| Brackets       | ( )          |
| Indices        | <sup>2</sup> |
| Division       | ÷            |
| Multiplication | ×            |
| Addition       | +            |
| Subtraction    | -            |

Important words, formulae and techniques you need to know. Foundation / Crossover

### Standard form

$$5.6 \times 10^3 = 5600$$

A number 10 to a power.  
greater than or equal to 1 but Positive powers →  
less than 10. Negative powers →  
small numbers.

### Rounding

#### To place values

|       |                               |      |
|-------|-------------------------------|------|
| 27.06 | To the nearest 10 →           | 30   |
|       | To the nearest whole number → | 27   |
|       | To 1 decimal place →          | 27.1 |

#### To significant figures

The first significant figure is the highest place value that is **NOT** a zero.

|       |                                |      |
|-------|--------------------------------|------|
| 27.06 | To 1 significant figure →      | 30   |
|       | To two significant figures →   | 27   |
|       | To three significant figures → | 27.1 |

### Estimation

When asked to **estimate**, you must round all numbers to 1 significant figure then calculate.

Example

$$\frac{19.8 \times 5.1}{0.5}$$

$$\frac{20 \times 5}{1} = 100$$

### Keywords

| Word       | Meaning  | Example                              |
|------------|--|--------------------------------------|
| Sum        | Add the numbers together.  | $1 + 2 + 3 = 6$                      |
| Difference | Biggest number subtract smallest number.   | $3 - 2 = 1$                          |
| Product    | Multiply the numbers.  | $2 \times 3 = 6$                     |
| Even       | A number that divides by 2 without leaving a remainder.                                    | 2, 4, 6, 8                           |
| Odd        | A number that <b>WILL NOT</b> divide by 2 without leaving a remainder.                     | 1, 3, 5, 7, 9                        |
| Multiple   | The result of multiplying by a whole number.   | Multiples of 3<br>3, 6, 9, 12, 15    |
| Factor     | A whole number that will divide another number without leaving a remainder.                | Factors of 6<br>1, 2, 3 and 6        |
| Square     | The <b>result</b> of multiplying a number by itself.                                       | $3^2 = 3 \times 3 = 9$               |
| Cube       | The <b>result</b> of multiplying a number by itself twice.                                 | $3^3 = 3 \times 3 \times 3 = 27$     |
| Root       | A number that multiplies by itself a given number of times to make the number in the root. | $\sqrt{9} = 3$<br>$\sqrt[3]{27} = 3$ |
| Prime      | A number with only 2 factors, 1 and itself.  | 2, 3, 5, 7, 11                       |
| Integer    | A whole number.  | 1                                    |

## ALGEBRA

### Straight line graphs

$$y = mx + c$$

Gradient  
y-intercept  
(where the line crosses the y-axis)

Example  
The line  $y = 2x + 3$ , has a gradient of 2 and crosses the y-axis at +3.

### Keywords

| Word       | Meaning  | Example   |
|------------|--|---|
| Simplify   | Write in a more simple way.  | $2x - 3y + 4x + 5y = 6x + 2y$   |
| Expand     | Multiply what is inside the brackets by the number and/or letter on the outside. | $2(3a + 4) = 6a + 8$  |
| Factorise  | Put into brackets.   | $10z^2 - 15z = 5z(2z - 3)$  |
| Solve      | Work out the value of the letter.  | $2b - 1 = 5$<br>$2b = 6$<br>$b = 3$   |
| Substitute | Replace the letter(s) with the number(s) provided.                               | Work out the value of $2x + 3y$<br>when $x = 6$ and $y = 7$<br>$2 \times 6 + 3 \times 7 = 33$ |

### Laws of Indices

#### Multiplication

$$a^2 \times a^3 = a^{2+3} = a^5$$

$$5y^4 \times 3y = 5 \times 3y^{4+1} = 15y^5$$

#### Division

$$x^7 \div x^3 = x^{7-3} = x^4$$

$$12c^9 \div 3c^4 = 12 \div 3c^{9-4} = 4c^5$$

#### Brackets

$$(b^2)^5 = b^{10}$$

$$(2z^4)^3 = 2^{1 \times 3} z^{4 \times 3} = 8z^{12}$$

$$\text{Zero Law: } x^0 = 1$$

### RATIO, PROPORTION & RATES OF CHANGE

| Fraction      | Decimal | Percentage |
|---------------|---------|------------|
| $\frac{1}{2}$ | 0.5     | 50%        |
| $\frac{1}{3}$ | 0.3     | 33.3%      |
| $\frac{1}{4}$ | 0.25    | 25%        |
| $\frac{1}{5}$ | 0.2     | 20%        |
| $\frac{1}{8}$ | 0.125   | 12.5%      |

### Compound Measures

| Speed                                 | Density                               | Pressure                              |
|---------------------------------------|---------------------------------------|---------------------------------------|
|                                       |                                       |                                       |
| S = Speed<br>D = Distance<br>T = Time | D = Density<br>M = Mass<br>V = Volume | P = Pressure<br>F = Force<br>A = Area |

## BIG QUESTIONS

BQ: What do I need to practise and revise?

Term 5 GCSE Revision

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## GEOMETRY & MEASURES

### Quadrilaterals



#### Square

- 4 equal length sides.
- 2 pairs of opposite parallel sides.
- 4 right angles.



#### Rectangle

- 2 pairs of opposite parallel sides of equal length.
- 4 right angles.



#### Rhombus

- 4 equal length sides.
- 2 pairs of opposite parallel sides.
- 2 pairs of opposite equal angles.



#### Parallelogram

- 2 pairs of opposite parallel sides
- 2 pairs of opposite equal angles.



#### Trapezium

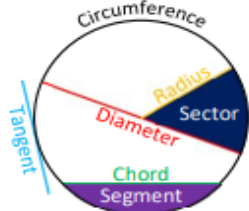
- 1 pair of opposite parallel sides.



#### Kite

- 2 pairs of adjacent sides of equal length.
- 2 equal opposite angles.

### Circles



$$\text{Circumference} = \pi \times \text{diameter}$$

$$\text{Area} = \pi \times \text{radius}^2$$

Important words, formulae and techniques you need to know. Foundation / Crossover



### Angles facts



**Acute**  
Less than 90°



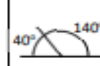
**Obtuse**  
Greater than 90° less than 180°



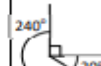
**Reflex**  
Greater than 180°



**Right-angle**  
90°



**Angles on a straight line**  
Add up to 180°



**Angles round a point**  
Add up to 360°



**Angles in a triangle**  
Add up to 180°



**Angles in a quadrilateral**  
Add up to 360°

### Keywords

|           |  |
|-----------|--|
| Perimeter | The distance around the outside of a shape.      |
| Area      | The amount of space contained within a 2D shape. |
| Volume    | The amount of space contained within a 3D shape  |
| Face      | A flat surface on a 3D shape.                    |
| Edge      | The line where 2 faces meet                      |
| Vertex    | The point where two or more edges meet.          |

### Pythagoras' Theorem

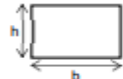
$$a^2 + b^2 = c^2$$



### Area

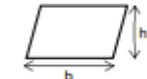
#### Rectangle

$$A = b \times h$$



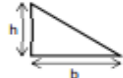
#### Parallelogram

$$A = b \times h$$



#### Triangle

$$A = b \times h \div 2$$



#### Trapezium

$$A = h \times (a + b) \div 2$$



### Trigonometry

**Hypotenuse** – opposite the right angle.

**Opposite** – opposite the angle.

**Adjacent** – between the angle and right angle.



$$\sin \theta = \frac{O}{H}$$

$$\cos \theta = \frac{A}{H}$$

$$\tan \theta = \frac{O}{A}$$

### Triangles



#### Equilateral

- All sides of equal length.
- All angles equal.



#### Isosceles

- 2 sides of equal length.
- 2 equal base angles.



#### Scalene

- **NO** equal sides.
- **NO** equal angles.



#### Right angled

- 1 right angle

### Angles on parallel lines

#### Alternate



#### Corresponding



#### Vertically Opposite



## STATISTICS

### Keywords

|        |  |
|--------|--|
| Mode   | The value that appears the most.                     |
| Median | The middle value in an ordered list.                 |
| Mean   | Add up all the values, divide by how many there are. |
| Range  | Highest value minus the lowest value                 |

### Converting Units

|        |       |        |
|--------|-------|--------|
| Length | 1km   | 1000m  |
|        | 1m    | 100cm  |
|        | 1cm   | 10mm   |
| Mass   | 1 ton | 1000kg |
|        | 1kg   | 1000g  |
| Volume | 1L    | 1000ml |
|        | 1cl   | 10ml   |

1 mile = 1.6 kilometres

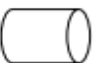
### 3D Shapes



Cube



Cuboid



Cylinder



(Triangular) Prism



Cone



Square-based Pyramid



Triangular-based Pyramid



Sphere

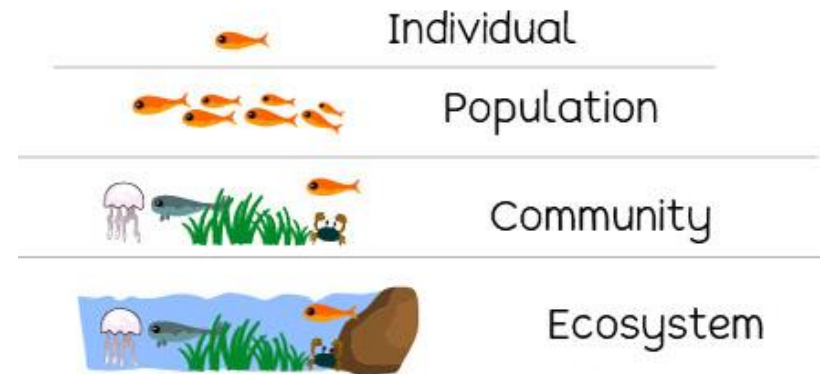


Don't forget to smile, while you do maths!

## Biology 7: Ecology Knowledge Organiser

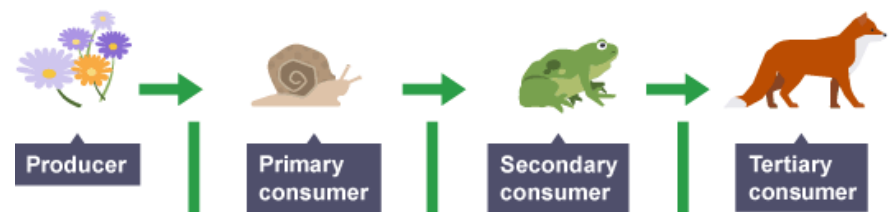
### A) interdependence, competition and adaptation

| Key term/question                    | Definition/answer   |
|--------------------------------------|---|
| 1. Habitat                           | The place where an organism lives   |
| 2. Population                        | All the organisms of one species living in a habitat  |
| 3. Community                         | The populations of different species living in habitat  |
| 4. Stable community                  | Population sizes remain roughly constant  |
| 5. Abiotic factors                   | Non-living factors  |
| 6. Examples of abiotic factors (5)   | <b>1.</b> Moisture level <b>2.</b> Light intensity <b>3.</b> Temperature <b>4.</b> Carbon dioxide levels for plants <b>5.</b> Oxygen levels for aquatic organisms |
| 7. Biotic factors                    | Living factors  |
| 8. Examples of biotic factors (4)    | <b>1.</b> New predators arriving <b>2.</b> Competition <b>3.</b> New pathogens <b>4.</b> Availability of food   |
| 9. Ecosystem                         | The interactions in a community of the biotic factors with the abiotic factors  |
| 10. Interdependence                  | Each species depends on other species for survival (e.g. food, shelter, pollination)  |
| 11. What do plants compete for? (4)  | <b>1.</b> Light <b>2.</b> Space <b>3.</b> Water <b>4.</b> Nutrients   |
| 12. What do animals compete for? (4) | <b>1.</b> Food <b>2.</b> Territory <b>3.</b> Water <b>4.</b> Mates  |
| 13. Adaptation                       | Features that helps an organism survive in the conditions of their natural environment  |
| 14. Types of adaptation (3)          | <b>1.</b> Structural <b>2.</b> Behavioural <b>3.</b> Functional   |
| 15. Behavioural adaptation example   | The actions an organism takes (e.g. species migrating to warmer climates during winter)   |
| 16. Functional adaptation example    | How an organism works (e.g. desert animals conserve water by producing little sweat and concentrated urine)   |
| 17. Structural adaptation example    | How an organism is built (e.g. arctic animals have white fur for <b>camouflage</b> )  |
| 18. Extremophiles                    | Microorganisms adapted to live in extreme conditions of high temperature, pressure and salt concentrations  |



### B) Organisation within and ecosystem

| Key term/question        | Definition/answer  |
|--------------------------|--|
| 19. Producer             | Green plants and algae that photosynthesis                           |
| 20. Food chain structure | Producer → Primary consumer → Secondary consumer → Tertiary consumer |
| 21. Biomass              | Mass of living material in an organism                               |
| 22. Quadrat              | Square frame with known area   |
| 23. Transect             | Line across a habitat (often string/rope)                            |

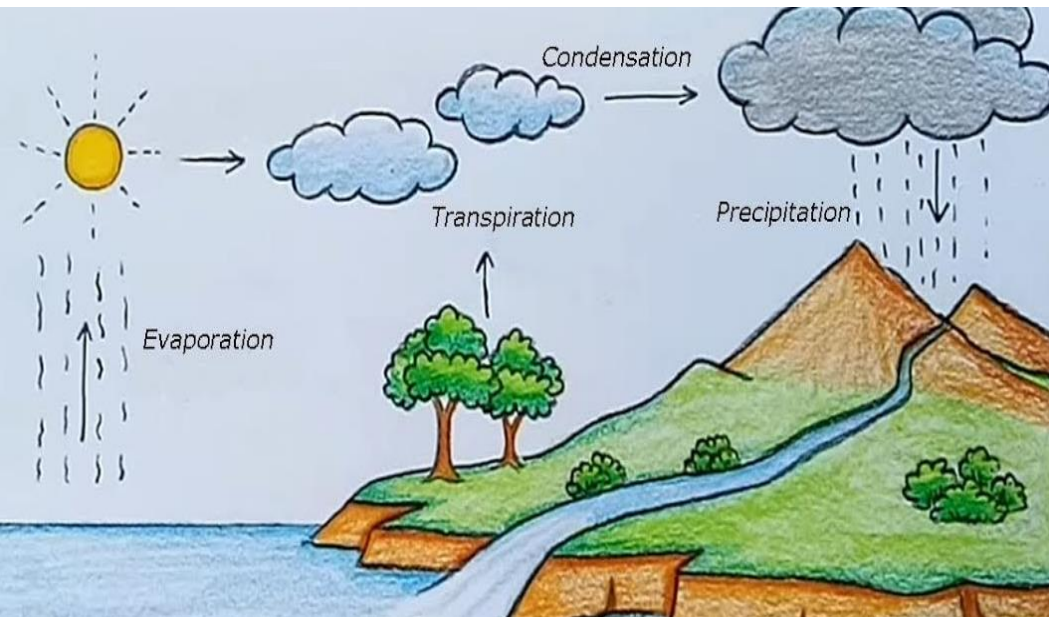




## Biology 7: Ecology Knowledge Organiser

### C) The water cycle

| Key term/question | Definition/answer  |
|-------------------|--|
| 24. Evaporation   | Sun heats earth's surface causing water to go from (liquid → gas)            |
| 25. Transpiration | Water loss from surface of leaves  |
| 26. Condensation  | Water vapour cools forming clouds (gas → liquid)                             |
| 27. Precipitation | As water droplets get heavier in the cloud they fall as snow, sleet and rain |

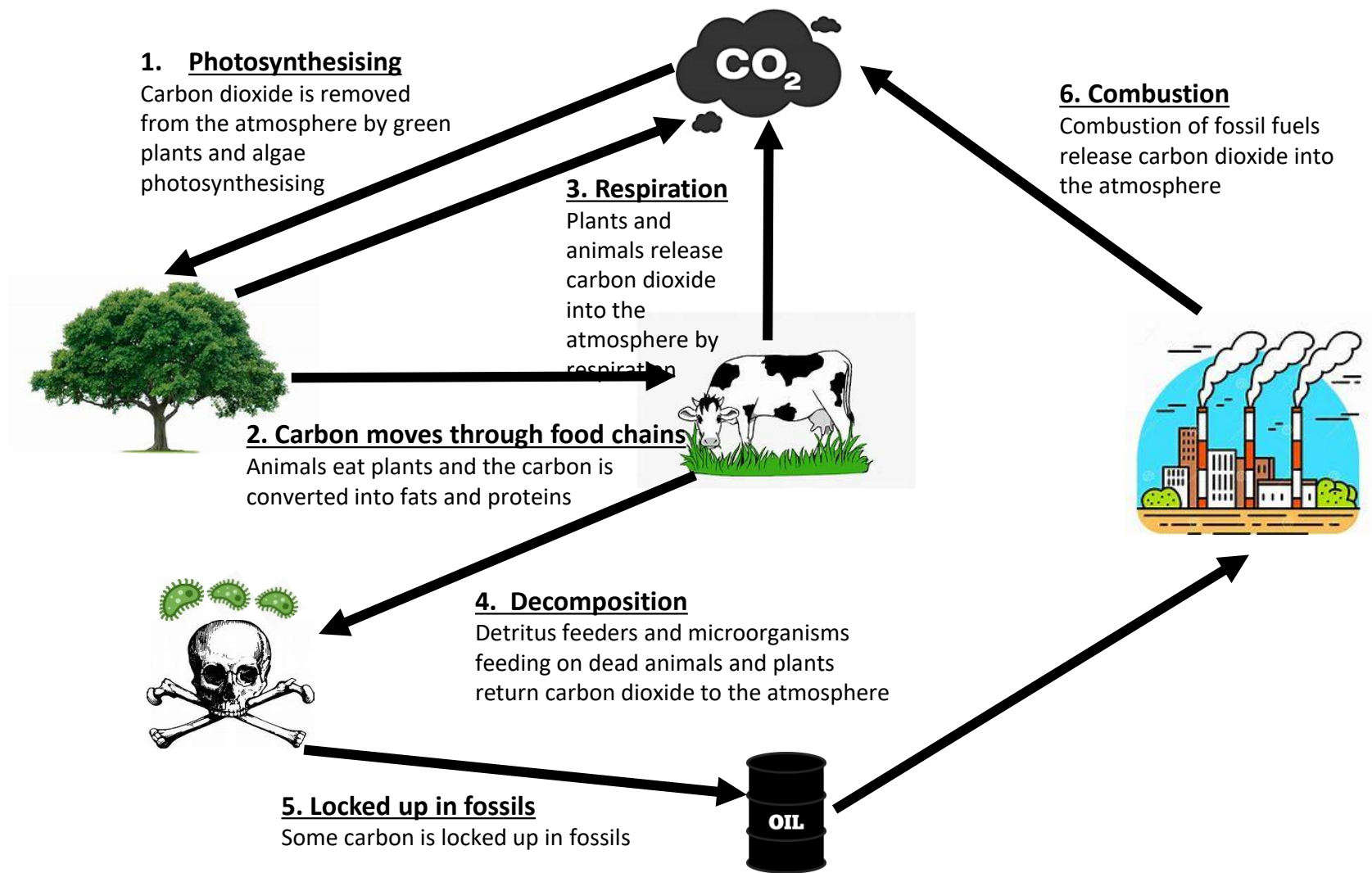


### D) Biodiversity and the effect of human interaction on ecosystems

| Key term/question   | Definition/answer   |
|---|---|
| 28. Biodiversity  | Variety of different species within an ecosystem  |
| 29. Why has the demand on the environment increased? (2)  | <b>1.</b> The human population is increasing <b>2.</b> People want a higher standard of living  |
| 30. Greenhouse gases (3)                                  | <b>1.</b> Methane <b>2.</b> Carbon dioxide <b>3.</b> Water vapour   |
| 31. How do greenhouse gases work?                         | Absorb and reemit infra-red radiation back to Earth, causing the temperature of the Earth to increase   |
| 32. Pollution   | Introduction of harmful materials into the environment  |
| 33. Types of pollution (3)                                | <b>1.</b> Water <b>2.</b> Land <b>3.</b> Air  |
| 34. Global warming  | Increase in temperature of Earth  |
| 35. Climate change  | Impact of global warming on the climate patterns  |
| 36. Examples of climate change (4)                        | <b>1.</b> Ice caps melting <b>2.</b> Sea levels rising <b>3.</b> Changes to migration patterns <b>4.</b> Less biodiversity  |
| 37. Deforestation   | Cutting down of forests   |
| 38. Consequences of deforestation (3)                     | <b>1.</b> Less biodiversity <b>2.</b> More carbon dioxide released <b>3.</b> Less carbon dioxide taken in   |
| 39. Bog   | Area of land that is acidic and waterlogged   |
| 40. Peat  | Partly rotted plants, which have not fully decayed  |
| 41. Uses of peat bogs (3)                                 | <b>1.</b> Drained for farmland <b>2.</b> Dried to use as a fuel <b>3.</b> Compost   |
| 42. Why do plants not fully decay in bogs?                | Absence of oxygen   |
| 43. Ways of maintaining biodiversity (4)                  | <b>1.</b> Breeding programmes for endangered species <b>2.</b> Protection of rare habitats <b>3.</b> Government regulations to reduce deforestation <b>4.</b> Recycling |
| 44. Conflicting pressures of maintaining biodiversity (3) | <b>1.</b> Expensive to protect biodiversity <b>2.</b> Increase of unemployment <b>4.</b> Increase in demand of land to build housing                                    |

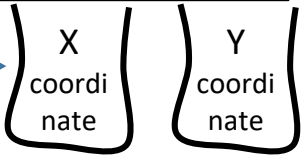


The Carbon Cycle

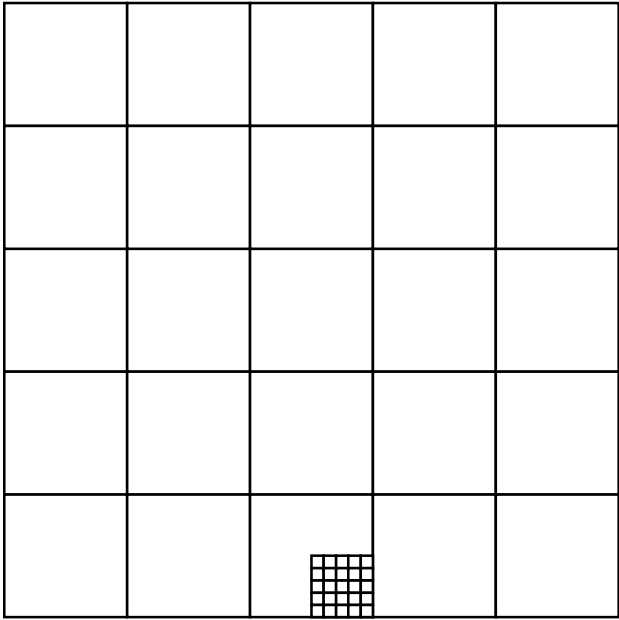


Required practical: Investigating distribution of organisms using a quadrat

1 Select random coordinates



2 Using tape measure, find location in survey area



3 Lay down quadrat

6 Calculate estimated population size (eps)

5 Repeat for 1 to 4 for 10 locations

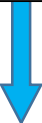
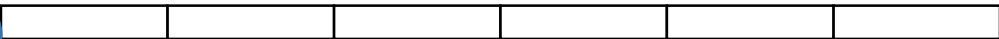
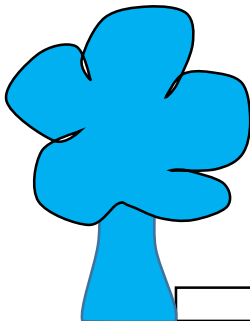
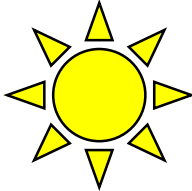
4 Count species

$$eps = \frac{total\ area}{sampled\ area} \times total\ counted\ organisms$$

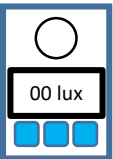


Required practical: Investigating distribution of organisms using a transect

1 Lay out 30 m tape measure from base of tree to open ground



2 Quadrat at  
0 m 5 m  
10 m 15 m 20 m  
25 m  
30 m



3 Measure and record light reading

4 Count and record number of plants in quadrat

1 Repeat 2 to 4 for all distances

## Chemistry 10: Using Resources Knowledge Organiser

### A) Resources and Sustainability

| Key term/question  | Definition/answer  |
|--|--|
| 1. Why do humans use the Earth's resources for? (4)                | <u>1.</u> Warmth <u>2.</u> Shelter <u>3.</u> Food <u>4.</u> Transport  |
| 2. What are natural resources?                                     | Form without human input (e.g. wind and solar energy)  |
| 3. Synthetic products  | Products made by humans.   |
| 4. Examples of synthetic products to replace natural products. (3) | <u>1.</u> <b>PVC</b> window frames used to replace wooden frames.<br><u>2.</u> <b>Rubber polymers</b> used in tyres to replace natural rubber extracted from tree sap.<br><u>3.</u> <b>Plastic corks</b> used as a wine stopper to replace natural cork made from tree bark. |
| 5. Renewable resource  | A resource that <b>can be replenished</b> at the <b>same rate</b> as it is <b>used</b> .   |
| 6. Non-renewable (finite) resource                                 | A resource that <b>cannot be replenished</b> at the <b>same rate</b> as it is <b>used</b> , so there is a <b>limited</b> supply  |
| 7. Examples of renewable resources (3)                             | <u>1.</u> Wood <u>2.</u> Vegetable crops <u>3.</u> Sustainable fishing   |
| 8. Examples of non-renewable resources                             | <u>1.</u> Fossil fuels <u>2.</u> Nuclear fuels <u>3.</u> Metals  |
| 9. Fossil fuels (3)  | <u>1.</u> Coal <u>2.</u> (Crude) Oil <u>3.</u> Natural gas   |
| 10. Sustainable development  | Takes into account the needs of present society, while not damaging the lives of future generations.   |
| 11. Agriculture  | The science and <b>practice of cultivating plants and livestock</b> .  |
| 12. What is agriculture's role in sustainable development?         | Provides conditions where natural resources can be enhanced (e.g. using fertilisers to increase crop yield).   |
| 13. Reusing a product  | Using a product more than once for the same purpose, or putting a used product to a new purpose (e.g. reusing a shopping bag).   |
| 14. Recycling a product  | Using waste products to make new products (e.g. metal cans be melted and moulded into different metal items).  |
| 15. Why is it important to recycle? (4)                            | <u>1.</u> Uses less energy <u>2.</u> Saves money <u>3.</u> Conserves finite resources <u>4.</u> Reduces the amount of rubbish on landfills   |
| 16. What is a life cycle assessment? (LCAs)                        | Assesses the environmental impact of the entire lifetime of a product.   |
| 17. Stages of a LCA (4)  | <u>1.</u> Extracting the raw materials <u>2.</u> Manufacturing the product <u>3.</u> Using the product <u>4.</u> Disposal of the product   |
| 18. Things to consider for LCAs. (4)                               | <u>1.</u> Damage to the environment <u>2.</u> Using large amounts of energy resources <u>3.</u> Greenhouse gases emissions <u>4.</u> How long the product lasts  |

### HIGHER TIER

| Key term/question                                 | Definition/answer  |
|---|--|
| 19. Methods for extracting copper from ores (2)   | <u>1.</u> Bioleaching <u>2.</u> Phytomining  |
| 20. Bioleaching                                   | Using bacteria to separate copper from its ore   |
| 21. Phytomining                                   | Extracting copper from soil by using plants  |
| 22. Advantages of bioleaching and phytomining (4) | <u>1.</u> Uses less energy <u>2.</u> Reduces the use of fossil fuels <u>3.</u> Reduces greenhouse gas emission <u>4.</u> reduces habitat destruction |
| 23. Disadvantage of bioleaching and phytomining   | Processes take a long time   |

## Chemistry 10: Using Resources Knowledge Organiser

### B) Treatment of Fresh Water

| Key term/question                         | Definition/answer  |
|---|--|
| 24. Potable Water                         | Water that is safe to drink. It contains low levels of dissolved salts.    |
| 25. Pure water / distilled water          | Only contains H <sub>2</sub> O molecules                                   |
| 26. How is fresh water collected?         | From surface water or as ground water.                                     |
| 27. What is surface water? (3)            | <u>1.</u> Lakes <u>2.</u> Rivers <u>3.</u> Reservoirs                      |
| 28. What is ground water?                 | Water found in rocks called <b>aquifers</b> which traps water underground. |
| 29. How is fresh water treated? (2)       | <u>1.</u> Filtration <u>2.</u> Sterilisation                               |
| 30. Filtration                            | A wire mesh screens out solid objects.                                     |
| 31. Sterilisation                         | Kills harmful microorganisms   |
| 32. Substances used for sterilisation (3) | <u>1.</u> Chlorine gas <u>2.</u> Ozone <u>3.</u> Ultraviolet light         |

### C) Treatment of Waste Water

| Key term/question  | Definition/answer   |
|--|---|
| 33. Stages for treatment of waste water (sewage water) (4) | <u>1.</u> Screening <u>2.</u> Sedimentation <u>3.</u> Aerobic digestion <u>4.</u> Anaerobic digestion   |
| 34. Screening  | Large bits of material are removed (e.g. twigs, plastic bags and grit)  |
| 35. Sedimentation stages (3)                               | <u>1.</u> The screened waste enters into a settlement tank.<br><u>2.</u> The heavier solids sink to the bottom to produce sludge.<br><u>3.</u> The less dense effluent floats on the top. |
| 36. Aerobic digestion                                      | Air is pumped into the effluent to encourage aerobic bacteria to break down the organic matter  |
| 37. Anaerobic digestion                                    | Sludge is broken down by anaerobic bacteria, releasing methane gas.   |
| 38. Effluent   | Liquid sewage waste   |
| 39. Aerobic  | With oxygen   |
| 40. Anaerobic  | Without oxygen  |

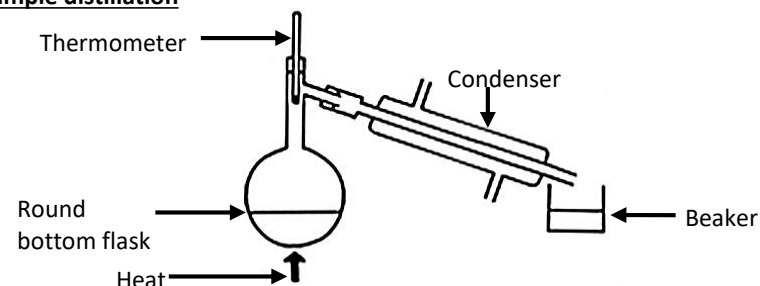
### D) Treatment of Sea Water: Required Practical 13 – Simple Distillation

| Key term/question                         | Definition/answer  |
|---|--|
| 41. How is sea water treated? (2)         | <u>1.</u> Desalination by simple distillation <u>2.</u> Reverse osmosis                                  |
| 42. Desalination                          | The process of removing the salt from sea water  |
| 43. Reverse Osmosis                       | Sea water is passed through a membrane that allows water molecules to pass through, but traps salt ions. |
| 44. Simple distillation                   | Separates a liquid from a mixture when their boiling points are greatly different.                       |
| 45. What is simple distillation used for? | To remove salt from sea water  |
| 46. What is pure water                    | Water that has been distilled and only contains H <sub>2</sub> O molecules                               |
| 47. What is the pH of pure water?         | 7 (neutral)  |
| 48. How to test for pure water            | Boil the water. Pure water will boil at 100 °C. Impure water will have a higher boiling point.           |

#### 49. How simple distillation works to separate salt from water

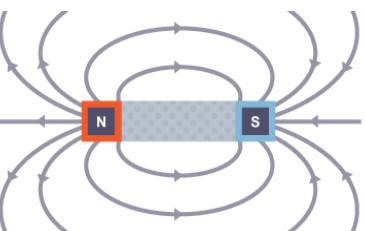
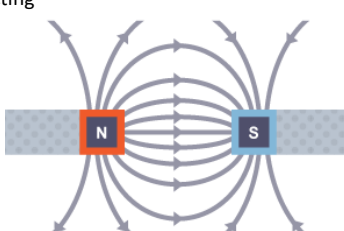
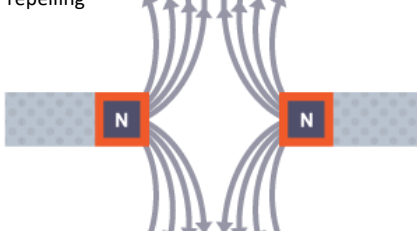
1. Solution of salt and water is placed into a round bottom flask.
2. As the solution is heated, the water will evaporate and pass into a condenser.
3. The water vapour will cool and condense in the condenser.
4. The pure distilled water is collected in a beaker.

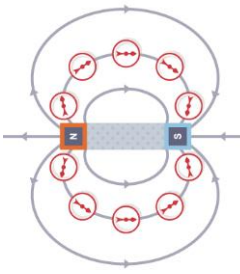
#### 50. Set up for simple distillation



## Physics 7: Magnetism and Electromagnetism Knowledge Organiser

### A) Magnetic fields

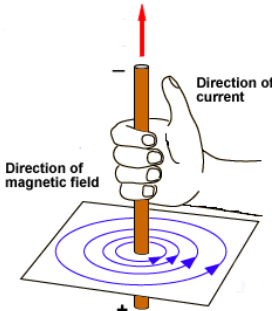
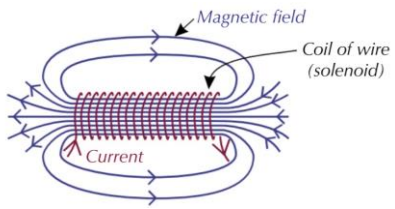
| Key term/question   | Definition/answer  |
|---|--|
| 1. Magnetic field   | A region around a magnet where a force acts on another magnet or magnetic material   |
| 2. Define pole on a magnet  | The place where the magnetic force is the strongest  |
| 3. What do two magnets next to each other do?                                     | Exert a force on each other  |
| 4. What type of force is a magnetism?   | Non-contact force (forces that act without needing to touch)   |
| 5. What is the effect of two like poles on each other? (e.g. N-N)                 | Repel  |
| 6. What is the effect of two unlike poles on each other? (e.g. N-S)               | Attract  |
| 7. Name 4 magnetic materials  | Iron, steel, cobalt, nickel  |
| 8. Magnetic field diagrams  | A series of lines, that show a magnetic field and its direction  |
| 9. Rules of magnetic field diagrams   | <b>1.</b> The arrows show the direction of force from north to south <b>2.</b> the closer the lines, the stronger the magnetic field   |
| 10. Magnetic field lines on a magnet  | 11. Magnetic field lines for unlike poles attracting   |
|  |    |
|   | 12. Magnetic field lines for like poles repelling  |
|   |   |
| 13. State one factor that effects the strength of a magnetic field                | Distance from magnet   |
| 14. How does a compass work? (3)  | <b>1.</b> The Earth has a magnetic field <b>2.</b> A compass contains a small bar magnet <b>3.</b> The compass needle points in the direction of the Earth's magnetic field. |
| 15. What is the evidence that the Earth's core is magnetic?                       | When a compass is not near a magnet, it always points north.   |

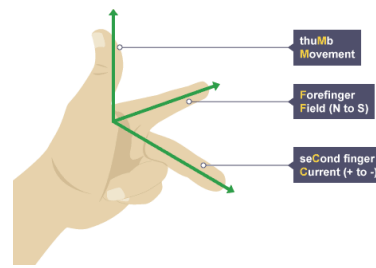
| Key term/question   | Definition/answer  |
|---|--|
| 16. How to use a compass to plot the magnetic field lines around a magnet? (4)    | <b>1.</b> Place the plotting compass near the magnet on a piece of paper<br><b>2.</b> Mark the direction the compass needle points<br><b>3.</b> Move the plotting compass to many different positions in the magnetic field, marking the needle direction each time<br><b>4.</b> Join the points to show the field lines |
|   |   |
| 17. What are the two types of magnets? (2)  | <b>1.</b> Permanent magnet <b>2.</b> Induced magnet  |
| 18. Permanent magnet  | Always produces its own magnetic field. The magnetism can not be turned on or off  |
| 19. Induced magnet  | A material that becomes a magnet when placed in a magnetic field (e.g. iron nail, electromagnet)   |
| 20. What happens to an induced magnet when it is removed from the magnetic field? | Loses all of its magnetism   |
| 21. What is the force between a permanent and induced magnet?                     | Always attractive  |

### B) Electromagnetism

| Key term/question  | Definition/answer                                  |
|--|--|
| 22. What happens when a current flows through a wire?                        | A magnetic field is produced around wire           |
| 23. Factors that effect the strength of the magnetic field around a wire (2) | <b>1.</b> Current <b>2.</b> Distance from the wire |
| 24. Current  | The flow of electrical charge                      |



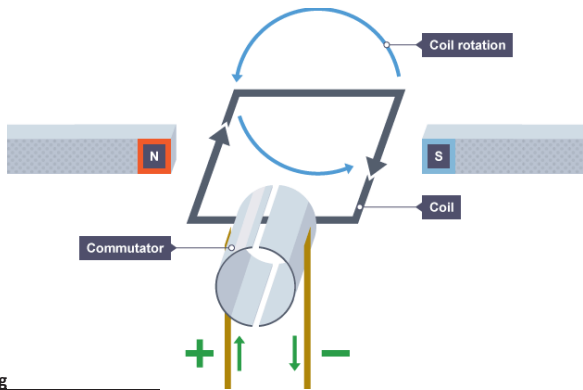
| B) Electromagnetism   |  |
|---|--|
| Key term/question   | Definition/answer  |
| 25. How do you determine the direction of the magnetic field around a wire?       | Flemings right hand rule (thumb = current direction, fingers = magnetic field direction)<br>  |
| 26. What is a solenoid?   | A coil of wire<br>   |
| 27. Behaviour of magnetic field inside a solenoid                                 | Strong and uniform   |
| 28. Behaviour of magnetic field outside the solenoid                              | Same as a bar magnet   |
| 29. How can you increase the strength of a solenoid? (3)                          | <u>1.</u> Increase current <u>2.</u> increase number of coils <u>3.</u> add an iron core   |
| 30. Electromagnet   | Solenoid (coil of wire) with an iron core. Can switch on and off.  |
| 31. Uses of an electromagnet (3)  | <u>1.</u> Used in cranes in scrap yards <u>2.</u> Speaker <u>3.</u> headphones   |
| 32. Why is a electromagnet useful in a scarp yard and a permanent magnet not? (4) | <u>1.</u> Electromagnet can be switched on and off to lift and release cars to move them <u>2.</u> Permanent magnets cannot be turned on and off so cannot release cars <u>3.</u> Strength of magnetic fields of electromagnets can be varied to lift different masses <u>4.</u> Strength of magnetic fields of permanent magnets cannot be varied so can only lift certain masses |
| 33. How can an electromagnet be used to move a magnetic material (5)              | <u>1.</u> Turning the electromagnet on completes the circuit <u>2.</u> Current flows through the coil <u>3.</u> Magnetic field is produced around the coil and iron core becomes magnetised <u>4.</u> magnetic material is attracted to the electromagnet <u>5.</u> Switching off the current turns off the electromagnet and block is released                                    |

| C) HIGHER TIER – The motor effect   |  |
|---|--|
| Key term/question   | Definition/answer  |
| 34. What is the motor effect?   | The force exerted by a conductor and a permanent magnet on each other  |
| 35. What does each part of Fleming's left-hand rule stand for?                | <u>1.</u> First finger – Field <u>2.</u> seCond finger – Current <u>3.</u> ThuMb - thrust ( <b>M</b> otion)  |
| 36. How to use Fleming's left-hand rule                                       | <u>1.</u> Hold your thumb, first finger and second finger at right angles to each other.<br><u>2.</u> The first finger is lined up with magnetic field lines pointing from north to south<br><u>3.</u> The second finger is lined up with the current pointing from positive to negative<br><u>4.</u> The thumb shows the direction of the motor effect force on the conductor carrying the current<br> |
| 37. How to increase the size of the force? (3)                                | <u>1.</u> Increasing the strength of the magnetic field <u>2.</u> increasing the current through the wire <u>3.</u> Increasing the length of the conductor   |
| 38. What is meant by magnetic flux density                                    | Expresses the strength of a magnetic field. How many field (flux) lines are in an area   |
| 39. Equation for calculating the size of a force acting on a conductor        | Force (N) = magnetic flux density (T) x current (A) x length (m)<br>$F = BIl$  |
| 40 Unit for force   | Newtons (N)  |
| 41. Unit for magnetic flux density  | Tesla (T)  |
| 42. Unit for current  | Amp (A)  |
| 43. Unit for length   | Meters (m)   |
| 44. What tends to happen to a coil of wire when placed into a magnetic field? | It rotates   |

D) HIGHER TIER – Explaining how the motor effect works

45. Using a simple dc motor

- 1. When a direct current (dc) flows through a coil of wire, the current in the left hand part of the coil causes a downward force and current in the right hand part of the coil causes an upward force.
- 2. The coil rotates anti-clockwise because the forces are acting in opposite directions.
- 3. When the coil reaches a vertical position, it moves parallel to the magnetic field, producing no force. This would tend to make the motor come to a stop, but two features allow the coil to continue rotating:
  - The **momentum** of the motor carries it on round a little
  - A **split ring commutator** reverses the current direction every half turn



46. How a split ring

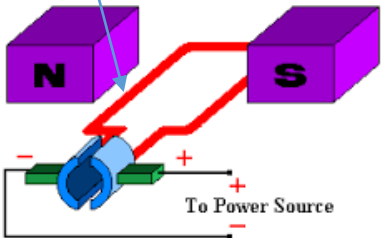
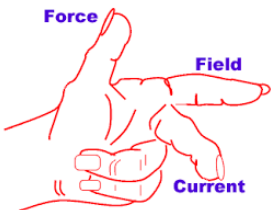
A split ring commutator reverses the current direction, which reverses the direction of the force. This is how it works:

- 1. A split ring commutator is a conducting ring with a gap between the two halves.
- 2. The direct current reaches the commutator by graphite or metal brushes, which maintains the connection while the commutator rotates freely.
- 3. By linking each end of the coil of wire to one half of the split ring commutator, you change the electrical contacts of the coil every half turn. This changes the direction of the current every half turn.
- 4. Therefore, the force acting on each arm of the loop will swap every half turn, allowing rotation to continue in the same direction.

47. Determining the direction that the motor will spin using Fleming's Left-Hand Rule

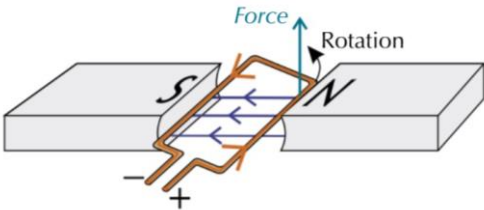
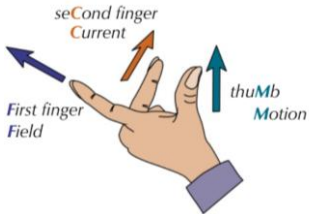
Example one for motor turning clockwise: Looking at the wire next to the North seeking pole of the magnet...

- **Magnetic field** (first finger) is pointing to the **right** (North to south).
- **Current flow** (second finger) is pointing **towards you**. (Remember, conventional flow is + to -)
- **Force/Motion** of the wire will be **upwards**
- So in this case, because the direction of force is upwards, the motor is turning **clockwise**



Example two for motor turning anti-clockwise: By swapping over the magnetic poles the motor will turn anti-clockwise

- **Magnetic field** (first finger) is pointing to the **left** (North to south).
- **Current flow** (second finger) is pointing **away from you**. (Remember, conventional flow is + to -)
- **Force/Motion** of the wire will be **upwards and away from you**.
- So in this case, the motor is turning **anti-clockwise**



| Key term/question  | Definition/answer   |
|--|---|
| 48. Direct current   | Current that always flows in the same direction   |
| 49. Split ring commutator                                  | A conducting ring with a gap between the two halves   |
| 50. How to increase the speed on an electrical motor? (3)  | <u>1.</u> Increasing the current <u>2.</u> increasing the strength of the magnetic field <u>3.</u> Increasing the number of coils |
| 51. Name two pieces of equipment that use the motor effect | Loudspeakers and headphones   |

# Paper 1

## Western Front



|   |   |   |
|---|---|---|
| <p><b>QUESTION 1: AO1</b><br/><b>Describe two features of....</b><br/>(4 MARKS)</p> <p>One feature of.....<br/>(P)</p> <p>This means.....<br/>(E)</p> <p>Another feature of<br/>(P)</p> <p>This is because...<br/>(E)</p> | <p><b>QUESTION 2a: AO3</b><br/><b>How useful are sources A &amp; B into an enquiry into...?</b><br/>(8 MARKS)</p> <ol style="list-style-type: none"> <li>1. Explain why Source A is useful...</li> <li>2. Give examples of what you can learn...</li> <li>3. Analyse reliability (Nature, Origin, Purpose)</li> <li>4. Own knowledge – How accurate is the source?</li> </ol> <p><b>Repeat for Source B</b></p> | <p><b>QUESTION 2b: AO3</b><br/><b>How could you follow up Source (A/B) to find out more about....</b><br/>(4 MARKS)</p> <p>Detail in Source B that I would follow up.....</p> <p>The Question I would ask.....</p> <p>What type of source I would look for....</p> <p>How this might help answer my question...</p> |
|---|---|---|

## Medicine



|   |  |  |
|---|--|--|
| <p><b>QUESTION 3: AO1&amp;2</b><br/><b>Explain one way that X was (similar / different) to Y.</b><br/>(4 MARKS)</p> <p>Give an example of a difference or similarity</p> <p>Use your own knowledge to support your answer using an example from BOTH time periods given and explaining why that difference occurred</p> | <p><b>QUESTION 4: AO1&amp;2</b><br/><b>Explain why...</b><br/>(12 MARKS)</p> <p>P = Make a valid point in response to the question<br/>E = Give examples to support the point you made<br/>E = Explain your examples, analysing <b>why</b> in relation to the question<br/>L = Link your answer back to the focus of the question</p> <p><b>3 x P.E.E.L paragraphs</b></p> <p>You may use the stimulus material and at least one example of your own</p> | <p><b>QUESTION 5: AO1&amp;2</b><br/><b>(Statement) How far do you Agree?</b><br/><b>Explain your answer.</b><br/>(16 MARKS, 4 for SP&amp;G)</p> <p>3 x P.E.E.L paragraphs that agree and disagree with the statement</p> <p>1 x Overall Judgement to evaluate both sides of the argument you put forward – firm conclusion about how far you agree</p> |
|---|--|--|

# Paper 2

## Superpower Relations

|  |   |  |
|--|---|--|
| <p><b>QUESTION 1: AO1&amp;2</b><br/><b>Explain two consequences of....</b><br/>(8 MARKS)</p> <ol style="list-style-type: none"> <li>1. Give a consequence...</li> <li>2. Give detail about it</li> <li>3. Explain how and why the event in the question lead to the consequence you have stated</li> </ol> <p><b>Repeat for a second consequence</b></p> | <p><b>QUESTION 2a: AO3</b><br/><b>Write a narrative Account of...</b><br/>(8 MARKS)</p> <p><i>Focus needs to be on how events link together in a chain of causation</i></p> <p>Three paragraphs</p> <ol style="list-style-type: none"> <li>1) Causes</li> <li>2) Main Events</li> <li>3) Consequences /Results</li> </ol> | <p><b>QUESTION 3: AO1&amp;2</b><br/><b>Explain two of the following: The importance of X for Y</b><br/>(16 MARKS)</p> <p><b>2xPEEL paragraphs</b></p> <p>At the simplest level, you need to write 2x PEEL paragraphs explaining importance of an event for whatever the <b>focus of the question is</b> e.g. for superpower relations/the development of the Cold War</p> <p><b>Repeat for a second question</b></p> |
|--|---|--|

## Anglo-Saxons

|   |   |  |
|---|---|--|
| <p><b>QUESTION 1: AO1</b><br/><b>Describe two features of...</b><br/>(4 MARKS)</p> <p>One feature of.....</p> <p>This was/meant.....</p> <p>Another feature of...</p> <p>This is was/meant...</p> | <p><b>QUESTION 2: AO1 +AO2</b><br/><b>Explain why...</b><br/>(12 MARKS)</p> <p>3 x P.E.E.L paragraphs</p> <p>You may use the stimulus material and at least one example of your own</p> | <p><b>QUESTION 3: AO1&amp;2</b><br/><b>(Statement) How far do you agree? Explain your answer.</b><br/>(16 MARKS)</p> <p>1 x Intro stating in two sentences the line of argument and</p> <p>1 x paragraph on the factor/aspect in the question</p> <p>2xparagraphs evaluating alternate factors/aspects</p> <p>1 x Conclusion -Overall Judgement linked to the statement in the Q and evaluation of why, that refers to all aspects/factors</p> |
|---|---|--|

# Paper 3

## Germany

|   |  |   |
|---|--|---|
| <p><b>QUESTION 1: AO3</b><br/> <b>Give two things you can infer from Source A about....</b><br/> <b>(4 MARKS)</b></p> <ol style="list-style-type: none"> <li>One thing I can infer is.</li> <li>The detail in the source that tells / shows me this is...</li> <li>Another thing I can infer is....</li> <li>The detail in the source that tells / shows me this is...</li> </ol> | <p><b>QUESTION 2: AO1&amp;2</b><br/> <b>Explain why...</b><br/> <b>(12 MARKS)</b></p> <p>P = Make a valid point in response to the question<br/> E = Give examples to support the point you made<br/> E = Analyse and explain the examples ensuring this is directly focussed on the question<br/> L = Link your answer back to the focus of the question</p> <p><b>3 x P.E.E.L paragraphs</b></p> <p>You may use the stimulus material and at least one example of your own</p> | <p><b>QUESTION 3a: AO1&amp;2</b><br/> <b>How useful are sources B &amp; C into an enquiry into...?</b><br/> <b>(8 MARKS)</b></p> <ol style="list-style-type: none"> <li>Explain why Source B is useful...</li> <li>Give examples of what you can learn...</li> <li>Add detail from your own knowledge... How does your OK support/contradict the source?</li> <li>Provenance: Who? When? Why? How does this impact upon reliability?</li> </ol> <p><b>Repeat for Source C</b></p>   |
| <p><b>QUESTION 3b: AO4</b><br/> <b>What is the main difference between the views?</b><br/> <b>(4 MARKS)</b></p> <p>The main difference is about...<br/> Interpretation 1 talks about...<br/> This can be seen where it says "quote"</p> <p>Whereas, interpretation 2 talks about... This is where it says "quote"</p>   | <p><b>QUESTION 3c: AO4</b><br/> <b>Suggest one reason why Interpretations 1 &amp; 2 give different opinions about...</b><br/> <b>(4 MARKS)</b></p> <p>A main reason for the different views is the historian may give different weight to different sources.</p> <p>Interpretation 1 talks about... which links to source... Whereas interpretation 2 gives more weight to... which is represented in Source ... as...</p>   | <p><b>QUESTION 3d: AO4</b><br/> <b>How far do you agree with interpretation 1/2 about...? Explain your answer.</b><br/> <b>(16 MARKS, 4 for SP&amp;G)</b></p> <p><u>Intro</u> – Judgement - How far do you agree with the statement with brief statement of why, making reference to the other interpretation and any other relevant factors<br/> <u>Para 1</u> – Evaluation of how valid/correct the interpretation in the question is – give evidence in support and any relevant evidence against. Link back with a judgement<br/> <u>Para 2</u> - Evaluation of how valid/correct the other interpretation is – give evidence in support and any relevant evidence against. Link back with a judgement<br/> <u>Para 3</u> – If relevant introduce any other relevant factor and why it may be more or less valid than those in the interpretations<br/> <u>Conclusion</u> – Re-iterate the judgement about how far you agree with the interpretation in the question with a clear evaluation of why</p> |

## BIG QUESTIONS

### Paper 1: Physical

1. How do we compare the two earthquakes from a HIC and LIC?
2. Why was the damage in the Philippines from Typhoon Haiyan so bad?
3. Why is the UK's weather becoming so extreme?
4. When will the Amazon Rainforest become respected and protected?
5. Why is human activity in cold environments both opportunistic and disadvantageous?
6. What coastal management techniques work to protect the coastline?
7. What flood managements techniques work to prevent flooding?

## Homework Links

1. GCSE pods
2. CGP revision guides
3. GCSE BBC Bitesize
4. Internet Geography
5. Seneca
6. Physicsandmathstutor.com
7. Quizzlets

### Paper 2: Human

1. What are the social, economic and environmental challenges to living in Lagos?
2. How has Shoreditch in London gone through gentrification?
3. How did the Olympics change London?
4. How can tourism reduce the development gap in Jamaica?
5. How have trading relationships changed Nigeria's economy?
6. What are the impacts of sustainable industry in the UK?
7. What are the positives and negatives of growing food using a large-scale agricultural system?
8. Can food supply be made more sustainable?

## Step Up Geography Exam Preparation

### Unit 1: Physical Geography



This paper is divided into 3 sections.  
You DO NOT answer all the questions.

#### Section A – The Challenge of Natural Hazards

- Tectonic Hazards
  - Examples: Nepal 2015 and Chile 2010 earthquakes
- Weather Hazards
  - Examples: Typhoon Haiyan 2013
- Climate Change
  - Example: Storm Gerrit 2023

Q.1

#### Section B – The Living World

- Ecosystems
  - Example: Blean Woods, Canterbury
- Tropical Rainforests
  - Case Study: Amazon Rainforest, Brazil
- Cold Environments
  - Case Study: Svalbard



DO NOT answer Hot Deserts

Q.2

#### Section C – Physical Landscapes in the UK

- Coastal Landscapes
  - Example: Swanage landforms
  - Example: Reculver Management
- River Landscapes
  - Example: River Severn Estuary
  - Example: Banbury Flood Management

Q.3

Q.4



DO NOT answer Q.5. Glacial Landscapes

#### Online Revision Links

[GCSE Geography - AQA - BBC Bitesize](#)  
[AQA GCSE Geography - Internet Geography](#)  
[Seneca - Learn 2x Faster \(senecalearning.com\)](#)  
[AQA GCSE Geography Revision \(physicsandmathstutor.com\)](#)



## Strategies

Key  
word Flash  
Cards

Example  
Fact Files

Case Study  
Mind Maps

AQA  
practice  
exams



## Unit 2: Human Geography

This paper is divided into 3 sections.  
You DO NOT answer all the questions.



### Section A – Urban Issues and Challenges

- Urbanisation and Megacities
  - Case Study: LIC/NEE Lagos, Nigeria**
  - Example urban planning: Makoko, Lagos
  - Case Study: HIC London, UK**
  - Example regeneration: Olympic Legacy

Q.1

### Sustainable Urban Living

### Section B – The Changing Economic World

- Development Gap
  - Example tourism: Jamaica
- Case Study: NEE Nigeria**
- Economy of the UK
  - Example: Tor Quarry, Somerset

Q.2

### Section C – The Challenge of Resource Management

- Global resource management
- Resource demand in the UK: Food, Water and Energy

#### > Food Option

- Food security and deficit
- Increase food supply
  - Example: IBIS
  - Example UK: Thanet Earth, Kent
- Sustainable food supplies
  - Example LIC: Makueni country, Kenya

Q.4

Q.3



DO NOT answer Option 5 Water  
DO NOT answer Option 6 Energy

### Paper 3 – Geographical Skills: Fieldwork Whitstable, Kent

#### Physical Enquiry

- The dominant direction of longshore drift is from east to west.
- Pebble roundness increases with distance from the sea.

#### Human Enquiry

- Whitstable high street is not a clone high street.
- The harbour area performs two functions (tourism and fishing) that are of equal importance.

- Geographical Skills and Issue Evaluation (Released April 2023)

### Top tips for exam success

- Understand the specification
- Understand command words
- Understand the question types
- Deconstruct questions – BUG
- Understand the marking
- Make full use of the resources
- Learn and use your examples and case studies
- Write to the space and time available
- Think and plan before you write
- Look after yourself!

### GCSE command words and what they mean

|                   |  |
|-------------------|--|
| Assess...         | Consider all the relevant factors/arguments, weigh them up and come to a conclusion                            |
| Calculate...      | Work out the value of something  |
| Compare...        | Describe similarities and differences  |
| Complete...       | Finish the task by adding information  |
| Describe...       | Write what you can see in a figure (pattern, distribution or process) OR set out the main points of something. |
| Discuss...        | Present key points about different ideas, or strengths and weaknesses of an idea                               |
| Evaluate...       | Write about the good and bad points about something, and come to an overall conclusion about it.               |
| Explain...        | Give reasons why or how  |
| Give...           | Write an answer from recalling information   |
| Identify...       | Name/point out   |
| Justify...        | Give reasons for the validity of a view/idea and support with evidence   |
| Outline...        | Summarise the main points of something   |
| State...          | Write in clear terms   |
| Suggest...        | Give possible reasons  |
| To what extent... | Form and express a view. What is the importance/success of a strategy, scheme, project etc.                    |

**KEY:** A01 – Recall and knowledge  
A02 – Explaining and linking  
A03 – Applying knowledge  
A04 – Geographical skills

## BIG QUESTIONS

Can you identify words that link to your chosen exam question?

How can the study of other artists help you find your own direction in the development of ideas?

Explain why primary sources are the richest form of research.

How can Secondary sources enrich the development of ideas?

Can you list 5 different ways you could record your observations of the subject matter?

Why should you plan a wide range of ideas before selecting a final one?

How can the refining process help you to fully realise intentions?

### Overarching Big Question

*The externally set assignment provides students with the opportunity to demonstrate, through an extended creative response, their ability to draw together different areas of knowledge, skill and/or understanding from initial engagement with their selected starting point through to their realisation of intentions in the 10 hours of supervised time.*



## RECORD

### I will independently record...

- images and information appropriate to my chosen exam question
- using wet, dry and digital media
- examples of artists work appropriate to my chosen exam question
- information about artists, showing appreciation of how they use media and techniques to create meaningful work.

## DEVELOP

### I will independently develop...

- my observation skills using a range of media, techniques and processes.
- artwork and ideas from primary sources
- my knowledge and understanding of artist styles and techniques
- my drawing and planning skills
- ideas in response to a given theme, linking to artists work
- my higher order thinking skills

## REFINE

### I will independently...

- experiment making the most of media and techniques relevant to my intentions
- select ideas to adapt and improve e.g. adjustments to size, colour and composition.
- develop a piece of work from one media into another

## EVALUATE

### I will independently...

- analyse and reflect on the development of my own work, through annotation making connections to artists and suggesting ways I could improve.
- evaluate artists using analytical writing skills and forming opinions.

## PRESENT OUTCOMES

### I will independently...

prepare a plan for a final piece to be completed during the 10-hour exam.



## Homework Links

*Develop preparatory work at home for a minimum of 2 hours per week...*

- Research of artists *including studies, info, evaluation*
- Research of images (*using mind map*)
- Collect primary sources
- Drawings
- Annotation
- Ideas



## Key Vocabulary

*Tone/Texture/Shape/  
Colour/Form/Scale/  
Media/Technique/  
Composition/Research/  
Primary source/  
Secondary Source*

I will be expected to recall keywords learned in previous projects and use them in the appropriate context.

### EVALUATING ARTISTS' WORK

1. Describe the piece of art you are looking at
2. What is the name of the artist or type of art?
3. What art movement or culture does the art link to?
4. Research and list 5 or more things about the artist or culture?
5. What important things have happened in the country that the art comes from?
6. What has influenced the art E.g. other artists, people, personal experiences, society, culture, politics, gender, colour, pattern, movement, religion, travel, places, objects etc.
7. Describe the materials used to make the art
8. How has the art been produced?
9. What is being communicated through the art?
10. Which of these words best describes the mood of the picture? EMOTIONAL/POWERFUL/BUSY/SLOW/PEACEFUL/WARM/COLD/HAPPY/SAD/CALM/INTENSE/SCARY can you think of any other words?
11. What do you like or dislike about the picture? Explain your reasons...

### ANNOTATING YOUR OWN WORK

- In this artwork I was trying to...
- The artist/culture that has influenced my work is...
- The source I have used is...
- I found the source I used at...
- In this artwork I used the technique of...
- The media I have used is...
- I like/dislike this piece because...
- My idea links to the theme because...
- I can improve this piece by...
- I could develop this work further by...

**Annotate means to explain your own creations**

**Artist evaluation is when you write about the artist**

**Project evaluation is written about the whole project at the end**

### END OF PROJECT EVALUATION

1. Describe each stage of the project from start to finish
2. What media did you use to produce your work? E.g. Paint/Pencil/Clay etc.
3. Describe how you used different techniques in your project? E.g. painting/drawing/modelling with clay etc.
4. Which artist's culture have you looked at?
5. Write down 2 or more similarities between your work and the artist's work.
6. Which piece of your work best shows the Artist's style or the influence of another culture and why?
7. Describe some of your own ideas...
8. Have you used a primary or a secondary source?
9. Have you included the secondary source in your work? Where did you find it?
10. Imagine your final piece was displayed in a public place.... Describe the effect looking at your work might have on people and society. E.g. relax them, make them feel sad, curious, happy, angry, thoughtful, surprised, confused, nostalgic etc. explain why e.g. because of your use of colour, images, content, arrangement? etc.
11. Explain any other influences on your work e.g. personalities (*including your own*), places, memories, objects, politics, events, activities, religion, fact, fiction etc.
12. Describe how your work links to the project theme?
13. Explain what you have done well...
14. Explain how you could improve...
15. What would you do differently, if you were to repeat any part of this project?



## Big Questions

- 1) How do different extrinsic factors influence the risk and severity of injury?
- 2) How do different intrinsic factors influence the risk and severity of injury?
- 3) What are the key components of a warm up?
- 4) What are the physiological and psychological benefits of a warm up?
- 5) What are the key components and physiological benefits of a cool down?
- 6) What are the types and causes of acute injuries?
- 7) What are the types and causes of chronic injuries?
- 8) How can you reduce the risk and severity of an injury or medical condition?
- 9) What are common responses and treatments to medical conditions?
- 10) What are the common causes, symptoms and treatments of medical conditions?

## Topic Area 1: Different factors which influence the risk and severity of injury

### Key Terms:

- ✓ **Extrinsic factors** – where the factor or risk of injury comes from outside the body
- ✓ **Intrinsic factors** – where the factor or risk of injury comes from within the body
- ✓ **Contact sports** – sports where physical contact between performers is an accepted part of play
- ✓ **Non-contact sports** – sports where participants compete alternately, or are physically separated, or the rules detail no contact.
- ✓ **Hypothermia** – a dangerous drop in body temperature below 35°C.
- ✓ **Veterans** – performers above a certain age that is specific to the sport.
- ✓ **Psychological factors** – mental factors that affect a performer.
- ✓ **Motivation** – the drive to do something.
- ✓ **Arousal** – level of activation or excitement.
- ✓ **Anxiety** – negative emotional state due to nervousness.
- ✓ **Stress** – the feelings we get when we find it difficult to cope with the demands placed on us.
- ✓ **Confidence** – belief in your own ability to master a situation.
- ✓ **Aggression** – Intention to cause harm.
- ✓ **Mental rehearsal** – going over a skill in the mind before performance.

## Topic Area 2: Warm up and cool down routines

### Key Terms:

- ✓ **Warm up** - exercises to prepare the body for exercise so that the chances of injury or ill effects are reduced.
- ✓ **Dynamic stretches** – active stretching exercises.
- ✓ **Adrenaline** - hormone that prepares the body for exercise.
- ✓ Lactic Acid - waste product of anaerobic exercise; it causes fatigue.
- ✓ **Anaerobic** – without oxygen; oxygen is not used to produce energy during high-intensity, short-duration anaerobic exercise.
- ✓ **Cool down** - easy exercise done after a more intense activity to allow the body to gradually move to a resting condition.
- ✓ **Maintenance stretches** - stretches designed to just maintain flexibility.
- ✓ **Static stretches** – stretches where the stretched position is held for many seconds in an attempt to improve flexibility.
- ✓ **Proprioceptive neuromuscular facilitation (PNF)** - advanced form of flexibility training, involving both the stretching and contracting of the muscles being targeted.
- ✓ **Delayed onset muscle soreness** – muscle pain that starts a day or two after an exercise workout.

## Topic Area 3: Different types and causes of sports injuries

### Key Terms:

- ✓ **Acute injuries** – injuries caused by impacts or collisions.
- ✓ **Chronic injuries** - injuries caused by continuous stress.
- ✓ **Soft tissue injuries** - injuries to muscles, tendons or ligaments.
- ✓ **Hard tissue injuries** – injuries to part of the skeletal system, such as fractures or dislocations.
- ✓ **Strains** - injuries to muscles.
- ✓ **Sprains** - injuries to ligaments.
- ✓ **Ligaments** - tissue that connects bone to bone and strengthens joints.
- ✓ **Abrasion** - surface damage to the skin; grazes.
- ✓ **Cut** - skin wound where the tissues of the skin become separated.
- ✓ **Laceration** - a torn or jagged wound caused by a sharp object.
- ✓ **Contusion** - bruise caused by blood leaking into the surrounding area.
- ✓ **Blister** - bubble on the skin caused by friction.
- ✓ **Fracture** - partial or complete break in a bone.
- ✓ **Dislocation** - when a bone is dislodged from its position in a joint.
- ✓ **Concussion** - head injury in which the brain is shaken inside the skull.
- ✓ **Tendonitis** - inflammation of the tendons.
- ✓ **Epicondylitis** - inflammation of an epicondyle of a bone.
- ✓ **Stress fracture** – tiny cracks in a bone caused by repetitive force, often from overuse.

### Big Questions

- 1) How do different extrinsic factors influence the risk and severity of injury?
- 2) How do different intrinsic factors influence the risk and severity of injury?
- 3) What are the key components of a warm up?
- 4) What are the physiological and psychological benefits of a warm up?
- 5) What are the key components and physiological benefits of a cool down?
- 6) What are the types and causes of acute injuries?
- 7) What are the types and causes of chronic injuries?
- 8) How can you reduce the risk and severity of an injury or medical condition?
- 9) What are common responses and treatments to medical conditions?
- 10) What are the common causes, symptoms and treatments of medical conditions?

### Topic Area 4: Reducing risk, treatment and rehabilitation of sports injuries and medical conditions

#### Key Terms:

- ✓ **Hazard** - something that can cause harm.
- ✓ **Risk** - the likelihood of danger.
- ✓ **Risk assessment** – careful examination of what, in relation to a sports activity, could cause harm to people.
- ✓ **Electrocardiogram (ECG)** - technology used to detect the rhythm and electrical activity within the heart.
- ✓ **Emergency action plan (EAP)** - written document identifying what action to take in the event of an emergency at a sporting event.
- ✓ **SALTAPS** - acronym for see, ask, look, touch, active, passive, strength.
- ✓ **DRABC** - acronym for danger, response, airway, breathing and circulation.
- ✓ **Recovery position** – position for an unconscious person that keeps their airway clear and open.
- ✓ **PRICE** - acronym for protection, rest, ice, compression, elevation.
- ✓ **Ultrasound** - use of high frequency sound waves to diagnose and treat injuries.
- ✓ **Electrotherapy** - use of electrical energy to treat injuries.
- ✓ **Hydrotherapy** - use of water to improve blood circulation, relieve pain and relax muscles.
- ✓ **Cryotherapy** - use of cold temperatures to treat injuries.
- ✓ **Contrast therapy** – use of quickly changing temperatures from hot to cold and back again to treat injuries.
- ✓ **Analgesics** – medication used to relieve pain.
- ✓ **Cast** - hard fibreglass or plaster casing designed to prevent broken bones from moving.
- ✓ **Splint** - plastic or fibreglass support for a limb injury.
- ✓ **Sling** - support, usually of folded cloth, designed to immobilise and rest the arm.

### Topic Area 5: Causes, symptoms and treatment of medical conditions

#### Key Terms:

- ✓ **Asthma** - a condition in which the airways narrow and swell, which can make breathing difficult.
- ✓ **Inhaler** - device that allows medicine to be breathed in.
- ✓ **Nebuliser** - machine that allows medicine to be breathed in.
- ✓ **Glucose** - simple sugar found in blood used as an energy source.
- ✓ **Insulin** - a hormone that lowers blood glucose levels.
- ✓ **Diabetes** - condition in which blood sugar levels are not regulated by the body effectively.
- ✓ **Ketones** – chemicals produced by the liver during fat breakdown.
- ✓ **Diabetic ketoacidosis (DKA)** - a condition caused by excess ketones in the blood.
- ✓ **Insulin-dependent** - another name for Type 1 diabetes.
- ✓ **Insulin-resistant** – another name for Type 2 diabetes.
- ✓ **Hypoglycaemia** - low blood sugar level.
- ✓ **Hyperglycaemia** – high blood sugar level.
- ✓ **Epilepsy** – abnormal brain activity that causes recurring seizures.
- ✓ **Seizures** - bursts of electrical activity that temporarily affect how the brain works.
- ✓ **Triggers** - things that make epileptic seizures more likely.
- ✓ **Fatigue** - a feeling of overwhelming tiredness.
- ✓ **Anti-epileptic drugs (AEDs)** - medicine taken to help control seizures.
- ✓ **Ketogenic diet** - a diet high in fats and low in carbohydrates and proteins.
- ✓ **Sudden cardiac arrest (SCA)** - a condition in which the heart suddenly and unexpectedly stops beating.
- ✓ **Commotio cordis** – a sudden trauma, such as a blow to the chest directly over the heart at certain points in the heartbeat cycle, that can cause sudden cardiac arrest.
- ✓ **Electrolytes** – minerals found in blood, urine and sweat that carry an electric charge when dissolved in water.



## Big Questions

- 1) How are components of fitness relevant to different sports?
- 2) Can you justify why different components of fitness are relevant for different sports?
- 3) What fitness tests are used for each component of fitness?
- 4) Can you apply the components of fitness to a skilled performance?
- 5) What are the principles of training?
- 6) What are SMART goals?
- 7) What are methods of training and their advantages/disadvantages?
- 8) What factors should you consider when designing a fitness training programme?
- 9) How do you apply the principles of training to a fitness training programme?
- 10) How do you plan a fitness training programme?
- 11) How do you record your results from a fitness training programme?
- 12) What are the strengths and areas for improvement for your fitness training programme?

## Topic Area 1: Components of fitness applied in sport

### Key Terms:

- ✓ **Cardiovascular endurance** - the ability of the heart and lungs to get oxygen to the working muscles for use by the body.
- ✓ **Muscular endurance** - the ability of a muscle to sustain repeated contractions.
- ✓ **Aerobic** - with oxygen; oxygen is used to produce energy during low intensity, long-duration aerobic exercise.
- ✓ **Speed** - the maximum rate at which an individual is able to perform a movement.
- ✓ **Strength** - the extent to which a muscle or muscle group can contract against resistance.
- ✓ **Power** - the exertion of rapid muscular strength; it can be remembered as strength  $\times$  speed.
- ✓ **Agility** - the ability to move and change direction quickly while maintaining control.
- ✓ **Balance** - the ability to maintain a position; this involves maintaining the centre of mass over the base of support.
- ✓ **Flexibility** - the range of movement possible at a joint.
- ✓ **Co-ordination** - the ability to use two or more body parts together (simultaneously) smoothly and efficiently.
- ✓ **Reaction time** - the time taken from the onset of a stimulus to the start of the reactive movement.
- ✓ **Maximum oxygen uptake (VO<sub>2</sub> Max)** – maximum volume of oxygen that can be consumed per minute / unit of time.
- ✓ **Protocol** - the accepted or established procedure for conducting a test.
- ✓ **Validity** - refers to how well a fitness test measures the component of fitness that it aims to test.
- ✓ **Reliability** - a fitness test is reliable if it can be repeated and gives similar results each time.
- ✓ **Maximal tests** – fitness tests that require maximal effort in order to produce a valid, comparable result.
- ✓ **Sub-maximal tests** - fitness tests that do not require maximal exertion.
- ✓ **PAR-Q** - physical activity readiness questionnaire.

## Topic Area 2: Principles of training in sport

### Key Terms:

- ✓ **SPOR** - principles of training: specificity, progression, overload and reversibility.
- ✓ **Specificity** - making training specific to the movements, skills and muscles that are used in the activity.
- ✓ **Progression** – gradually making training harder as it becomes too easy.
- ✓ **Overload** - working harder than normal.
- ✓ **Reversibility** – ‘use it or lose it’. If you stop training, you will lose fitness.
- ✓ **FITT** - principles of overload: frequency, intensity, time and type.
- ✓ **SMART** - principles of goal setting: specific, measurable, achievable, realistic and time bound.
- ✓ **Continuous training** - any activity or exercise that can be continuously repeated without suffering undue fatigue.
- ✓ **Aerobic training zone** – the optimal zone of training to make aerobic gains in the body to improve cardiovascular endurance and stamina.
- ✓ **Fartlek training** - ‘speed play’, which generally involves running, combining continuous and interval training with varying speed and intensity.
- ✓ **Interval training** – any training that involves periods of work and rest.
- ✓ **Circuit training** - a series of exercises performed at work stations with periods of work and rest.
- ✓ **Plyometric training** - repeated exercises such as bounding, hopping or jumping over hurdles, which are designed to create fast, powerful movements.
- ✓ **Eccentric contraction** - when a muscle contracts and lengthens.
- ✓ **Concentric contraction** - when a muscle contracts and shortens in length.
- ✓ **Resistance training** - training that involves working against some kind of force that ‘resists’ the movement.
- ✓ **Hypertrophy** - an increase in muscle size as a result of training.
- ✓ **High-intensity interval training (HIIT)** – training that involves periods of very high-intensity work and rest.

## Big Questions

- 1) How are components of fitness relevant to different sports?
- 2) Can you justify why different components of fitness are relevant for different sports?
- 3) What fitness tests are used for each component of fitness?
- 4) Can you apply the components of fitness to a skilled performance?
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- 11) How do you record your results from a fitness training programme?
- 12) What are the strengths and areas for improvement for your fitness training programme?

## Topic Area 3: Organising and planning a fitness training programme

### Key Terms:

- ✓ **One rep max** – the maximum weight that can be lifted once (one repetition).
- ✓ **Adaptability** - flexibility to adapt a programme if, for any reason, the session being performed cannot be followed precisely.
- ✓ **Objective measures** – facts that provide figures/ numbers, which can allow a performer to monitor improvement.



**Figure 2.36** One rep max refers to the maximum weight that can be lifted once

## Topic Area 4: Evaluate own performance in planning and delivery of a fitness training programme



**Figure 2.38** Stretching forms a vital part of warm up and cool down routines

| Target area  | Suitable activity   |
|--|---|
| Cardiovascular endurance/ stamina                    | <b>Specific exercises:</b> any aerobic activity, for example cycling, swimming, jogging, walking, rowing<br><b>Overload intensity:</b> 60–80 per cent of maximum heart rate (220 – age)<br><b>Time:</b> 20 minutes or more of activity, three to four times per week  |
| Muscular strength                                    | <b>Specific exercises:</b> use of high resistance, for example weights, resistance machines, body weight<br><b>Overload intensity:</b> 70 per cent or more of one rep max (maximum lift); three sets of six to eight repetitions<br><b>Time:</b> 30 minutes or more   |
| Muscular endurance                                   | <b>Specific exercises:</b> use of low resistance, for example weights, resistance machines, body weight<br><b>Overload intensity:</b> less than 70 per cent of one rep max (maximum lift); three to four sets of 10–15 repetitions<br><b>Time:</b> 30 minutes or more   |
| Agility  | <b>Specific exercises:</b> shuttles or circuits that involve speed work while changing direction, for example sprinting round cones, ladder running<br><b>Overload intensity:</b> work : rest ratio of 1 : 3 (30 seconds work with 90 seconds rest between different exercises)<br><b>Time:</b> 30 minute sessions, two or three times per week   |
| Speed  | <b>Specific exercises:</b> use speed ladders, sprints, interval sprints<br><b>Overload intensity:</b> work : rest ratio of 1 : 3 (30 seconds work with 90 seconds rest between different exercises)<br><b>Time:</b> 30 minutes or more  |
| Power  | <b>Specific exercises:</b> interval training – high-intensity, short sharp activities; acceleration sprint training; plyometric training, for example box jumping and hurdle jumps<br><b>Overload intensity:</b> for example, box jumps with three to six sets of 8–15 repetitions, depending upon the stress of the exercise being done; sprints with a work : rest ratio of 1 : 3 (30 seconds work with 90 seconds rest between sprints)<br><b>Time:</b> 30 minutes or more |
| Balance, flexibility, co-ordination or reaction time | <b>Specific exercises:</b> use of predesigned circuit to include flexibility stretches, co-ordination drills or balancing exercises<br><b>Overload intensity:</b> two to three sets of 12 reps with 30-second recovery intervals<br><b>Time:</b> 30 minutes or more   |

## Big Questions

- 1) What is the function and role of the cardio-respiratory system?
- 2) How is technology used to inform us about the cardio-respiratory system?
- 3) What are the components and role of the musculo-skeletal system?
- 4) How is technology used to inform us about the musculo-skeletal system?
- 5) What are the short-term effects of exercise on the cardio-respiratory system?
- 6) What are the short-term effects of exercise on the musculo-skeletal system?
- 7) What are the long-term effects of exercise on the cardio-respiratory system?
- 8) What are the long-term effects of exercise on the musculo-skeletal system?

## Topic Area 1: The cardio-respiratory system and how the use of technology supports different types of sports and their intensities

### Key Terms:

- ✓ **Atria** - upper chambers of the heart that collect blood from veins.
- ✓ **Ventricles** – lower chambers of the heart that pump blood out through arteries.
- ✓ **Valves** - prevent the backflow of blood.
- ✓ **Deoxygenated** – venous blood (in veins) that does not carry oxygen.
- ✓ **Oxygenated** - arterial blood (in arteries) that carries oxygen.
- ✓ **Arteries** - blood vessels that mainly carry oxygenated blood away from the heart.
- ✓ **Capillaries** - tiny, thin walled blood vessels that join arteries (which carry blood away from the heart) and veins (which carry blood back to the heart).
- ✓ **Alveoli** - tiny air sacs in the lungs.
- ✓ **Veins** - blood vessels that mainly carry deoxygenated blood back to the heart.
- ✓ **Trachea** - tube connecting the mouth and nose to the lungs.
- ✓ **Lungs** - large spongy organs in chest; used for gas exchange.
- ✓ **Bronchi** - airways that lead from the trachea into the lungs.
- ✓ **Bronchioles** - air passages inside the lungs that connect the bronchi to the alveoli.
- ✓ **Diaphragm** - dome-shaped muscle causing inhalation and exhalation.
- ✓ **Radial pulse** - heart rate that can be felt at the wrist.
- ✓ **Carotid pulse** - heart rate that can be felt at the neck.
- ✓ **Vasoconstriction** – reduction in the diameter of a blood vessel to reduce blood flow through that vessel.
- ✓ **Vasodilation** - widening in the diameter of a blood vessel to increase blood flow through that vessel.
- ✓ **Cardiac output** – the volume of blood that the heart is able to pump out in one minute.
- ✓ **Stroke volume** – the volume of blood that leaves the heart during each contraction.

## Topic Area 2: The musculo-skeletal system and how the use of technology supports different types of sports and their movements

### Key Terms:

- ✓ **Clavicle** - the collarbone.
- ✓ **Scapula** - the shoulder blade.
- ✓ **Humerus** - bone in the upper arm.
- ✓ **Radius** - bone of the forearm; attaches to the thumb side of the wrist.
- ✓ **Ulna** - bone of the forearm; forms the point of the elbow.
- ✓ **Cranium** - skull bone, which surrounds the brain.
- ✓ **Ribs** - bones surrounding the heart and lungs, forming the chest cavity.
- ✓ **Sternum** - flat bone at the front of the chest, sometimes called the breastbone.
- ✓ **Vertebrae** - many single bones joined together to form the backbone.
- ✓ **Femur** - long bone of the thigh or upper leg, which extends from the hip to the knee.
- ✓ **Tibia** - the shin bone; forms knee joint with the femur.
- ✓ **Fibula** - bone in the lower leg that forms the ankle.
- ✓ **Patella** - the kneecap; covers the knee joint.
- ✓ **Deltoids** - muscles on shoulder joint that move the upper arm.
- ✓ **Trapezius** - muscle at the top of the back that moves the scapula and head.
- ✓ **Latissimus dorsi** – muscle at the side of back that moves the upper arm.
- ✓ **Pectorals** - muscles in the chest that move the upper arm.
- ✓ **Biceps** - muscles at the front of the upper arm.
- ✓ **Triceps** - muscles at the back of the upper arm.
- ✓ **Abdominals** – stomach muscles that protect internal organs.
- ✓ **Gluteals** - buttock muscles, which are used when running.
- ✓ **Hamstrings** - muscles at the back of the upper leg.
- ✓ **Quadriceps** - muscles at the front of the upper leg.
- ✓ **Gastrocnemius** - one of the calf muscles; used in walking.
- ✓ **Soleus** - one of the calf muscles; used in walking.



## Big Questions

- 1) What is the function and role of the cardio-respiratory system?
- 2) How is technology used to inform us about the cardio-respiratory system?
- 3) What are the components and role of the musculo-skeletal system?
- 4) How is technology used to inform us about the musculo-skeletal system?
- 5) What are the short-term effects of exercise on the cardio-respiratory system?
- 6) What are the short-term effects of exercise on the musculo-skeletal system?
- 7) What are the long-term effects of exercise on the cardio-respiratory system?
- 8) What are the long-term effects of exercise on the musculo-skeletal system?

### Key Terms (continued Topic 1):

- ✓ **Systolic blood pressure** - blood pressure when the heart is contracting.
- ✓ **Diastolic blood pressure** - blood pressure when the heart is relaxed.
- ✓ **Inhalation** - breathing in.
- ✓ **Exhalation** - breathing out.
- ✓ **Intercostal muscles** - muscles located between the ribs.
- ✓ **Diffusion** - the movement of a gas from an area of high concentration to an area of low concentration.
- ✓ **Wearable technology** - technology worn on the body during exercise to provide data.
- ✓ **Laboratory-based technology** - the use of technology inside a laboratory to provide data.
- ✓ **Field-based technology** - technology that can be used to provide data outside of a laboratory in the setting where sports take place, for example a football pitch.
- ✓ **Spirometer** - machine that produces a spirometry trace of breathing volumes.
- ✓ **Vital capacity** - amount of air expelled from your lungs when you take a deep breath and then exhale fully.
- ✓ **Pulse oximeter** - device used to measure how efficiently oxygen is being carried to the extremities by the heart (blood oxygen level).



Figure 3.18 Smartwatch

## Topic Area 3: Short-term effects of exercise on the cardio-respiratory and musculo-skeletal systems

### Key Terms:

- ✓ **Anticipatory rise** - slight increase in heart rate before exercise.
- ✓ **ROM** - range of movement.

### Key Terms (continued Topic 2):

- ✓ **Synovial joint** - a freely moveable joint.
- ✓ **Ball and socket joint** - ball shaped end of bone fits into the socket of another, for example the hip.
- ✓ **Hinge joint** - end of bone fits against another bone allowing movement in only one direction, for example the knee.
- ✓ **Gliding joint** - one bone can slide over another, for example the carpals in the wrist.
- ✓ **Pivot joint** - rounded end of one bone fits into a ring formed by the other bone, for example the vertebrae of the neck, which allow head rotation.

## Topic Area 4: Long-term effects of exercise on the cardio-respiratory and musculo-skeletal systems

### Key Terms:

- ✓ **Fast twitch fibres** - muscle fibres that contract quickly and/or with high force; used during high-intensity work.
- ✓ **Slow twitch fibres** - muscle fibres that contract with a low force but do not fatigue quickly.
- ✓ **Bradycardia** - decrease in the resting heart rate because of training.
- ✓ **Goniometer** - device used to measure flexibility (range of movement at a joint).
- ✓ **Lung capacity** - the amount of air the lungs can hold.
- ✓ **Tidal volume** - the amount of air breathed in and out at rest.
- ✓ **Bone density** - the amount of bone mineral in bone tissue.
- ✓ **Capillarisation** - an increase in the number of capillaries as a result of endurance training.
- ✓ **Heart disease** - when the heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries that supply the heart with blood.
- ✓ **Heart attack** - medical emergency in which the supply of blood to the heart is suddenly blocked.

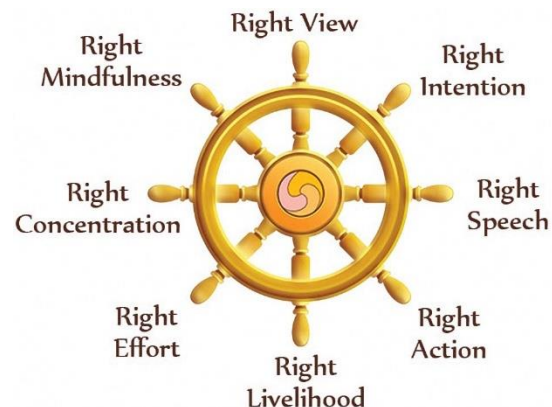
|                      |                     |
|----------------------|---------------------|
| Religion<br>Buddhism | Year: 11<br>Term: 5 |
|----------------------|---------------------|

### Big Questions

1. What guides Buddhists?
2. What are the different traditions within Buddhism and how does that influence actions?

### What is the 8 fold path?

The 8 fold path is a set of rule that Buddhists follow to ensure that they are being good. It helps them generate good karma avoid negative karma and guides them to enlightenment.



### What is a Bodhisattva?

Within **Mahayana** Buddhism, a **Bodhisattva** aims to teach others how to be free of suffering (dukkha) and therefore how to reach Buddhahood, the state of **enlightenment**.

Mahayana Buddhism teaches that everyone can achieve enlightenment. Mahayana Buddhists believe that all humans have the nature of the **Buddha** within them already.

To become Bodhisattvas, Buddhists must practise various characteristics, which Mahayana Buddhists call the **Six Perfections**.

The Six Perfections are:

1. Be generous and give to others.
2. Live a life in which you do the right thing.
3. Have patience with all people.
4. Sustain your energy so that you keep going through difficult times.
5. Work on concentration by meditating.
6. Gain wisdom

### Key words:

**Enlightenment** – to be awoken or become aware of reality.

**Sangha** – the Buddhist community

**Dharma** – nature of reality the buddhas teachings.

**Meditation** - Meditation is a practice where an individual uses a technique – such as mindfulness, or focusing the mind on a particular object, thought, or activity – to train attention and awareness, and achieve a mentally clear and emotionally calm and stable state.

**Karma** – word that means action – ever action has a consequence.

**Reincarnation** – the idea you are reborn into a new body when you die.

**Samsara** – the life cycle within dharmic religions.

**Asceticism** – avoiding luxuries or pleasures for spiritual gain.

**Arhat** – a perfected person within Theravada Buddhism.

**Bodhisattva** – a perfected person within Mahayana tradition.

**Pureland** – type of Buddhism that focuses on Amitabha buddha.

### What is an Arhat?

An **arhat** is a 'worthy one' or a 'perfected person'. Theravada Buddhists believe that an Arhat is someone who has reached enlightenment and ended their suffering by following the path taught by the Buddha. Theravada Buddhists believe that an arhat has 'blown out' the **Three Poisons** of **greed**, **hatred** and **ignorance** and so has been able to attain **nibbana**.

### What is the Pure land?

In pure land Buddhism you can go to a place called Sukhavati (heaven). He there is no pain or suffering and you are in the presence of Amitabha Buddha. This means it is easier to become enlightened. To go to Sukhavati you just need to recite **Namo Amitabha Buddha**. Pure Land Buddhism is particularly popular in China and Japan.

### Quick facts!

Holy book – various – Vedas  
Dhammapada.

Age of religion- 2500 years old

Place of worship – Vihara

Name of followers – Buddhist

Number in the UK – 238,626

## BIG QUESTIONS

What is characterisation?

How can physical performance skills and vocal skills be incorporated into a performance?

How can drama techniques be incorporated into a performance?

Why is discipline important in a performance?

What are the differences between the two styles – Naturalism and Abstract Theatre?

What is the difference between devising and a scripted performance?

## Performance Skills

|                           |  |
|---------------------------|--|
| <b>Planned Movement</b>   | Physical actions that are organised prior to the performance and then rehearsed. |
| <b>Positioning</b>        | Arranging an actor in a place/way. Where the actor is facing.                    |
| <b>Posture</b>            | How the body is held.  |
| <b>Body Language</b>      | Movements with the body, that communicate feeling.                               |
| <b>Eye Contact</b>        | Where the actor is looking.  |
| <b>Space</b>              | How the environment is used.   |
| <b>Levels</b>             | How high or low an actor is positioned on stage.                                 |
| <b>Vocal Skills</b>       | How the voice is used to communicate emotion and character.                      |
| <b>Gestures</b>           | Using your hands to further express meaning or emotion.                          |
| <b>Facial Expressions</b> | Showing mood through the movement of your face.                                  |

## 3PBEDSLVGF

Physical performance skills are the ways the use body can be used to communicate character or meaning.

**Always remember to remain disciplined when performing.**

## Vocal Skills

|                   |  |
|-------------------|--|
| <b>Pitch</b>      | How high or low your voice is.   |
| <b>Pace</b>       | How fast or slow you speak.  |
| <b>Pause</b>      | A moment of silence.   |
| <b>Projection</b> | How far and clearly you speak enable your voice to travel across the room.               |
| <b>Tone</b>       | Using your voice to show mood.   |
| <b>Emphasis</b>   | Exaggerating particular words or phrases in a sentence.                                  |
| <b>Accent</b>     | A distinctive pronunciation which shows location. This can be linked to country or area. |
| <b>Volume</b>     | How loud or quiet you are speaking.  |

## 4P'STEAV

The way in which the voice is used to communicate. Vocal skills can be used to communicate character. The more the audience can understand about a character, the greater the understanding of the narrative of the performance. **P.38**



| Drama Techniques   | What would it look like on stage?                              |
|--------------------|--|
| Thought Track      | Character telling their thoughts to the audience               |
| Monologue          | A speech spoken by one character                               |
| Choral Speaking    | A group of actors speaking at the same time                    |
| Slow motion        | Slowing movement down  |
| Flashback          | A scene from the past  |
| Cross Cutting      | Mixing up the order of scenes                                  |
| Narration          | A spoken commentary for the audience about the action on stage |
| Organic Sound      | A sound made by the actors (not recorded)                      |
| Synchronisation    | Actors moving at the same time                                 |
| Canon              | Moving one after the other                                     |
| Multi-role         | One actor playing more than one role                           |
| Hot Seating        | Questioning an actor in role                                   |
| Still Image        | A frozen moment in a scene                                     |
| Physical Theatre   | Using your body to create objects                              |
| Mime               | Performing an action with no props                             |
| Mirroring          | 2 actors facing each other moving at the same time             |
| Split Role         | One role that is played by more than one actor                 |
| Flash forward      | A scene from the future  |
| Tableau            | A still image that captures the whole scene/story              |
| Repetition         | A sound/movement that is repeated                              |
| Marking the Moment | When a moment in a scene is emphasised                         |

### Style: Naturalism

Naturalism uses realistic acting and in-depth characterisation.

- Subtext
- Relationships
- Personality
- Situation
- Motivation

Movement is planned carefully, making sure every action has a meaning behind it.

Set/costume/props/sound are used as part of a Naturalistic performance however drama techniques are NOT used!

### Style: Abstract Theatre

Theatre that is non-naturalistic.

Drama techniques are included in performances to present a narrative or theme in an alternative or unconventional way.

Drama techniques are used to enhance an abstract performance, making it more engaging for the audience.



## BIG QUESTIONS

- How do I answer the 9 mark GCSE question?

## THINK DACE!

**Definition** - Is there a term in the question that can be defined? (if no, do not force a definition, go straight into Application.)

**Example** – Analyse the effectiveness of a partnership as a form of business ownership?  
*‘A partnership is when two or more people come together to start a business.....’*

- Apply your understanding/knowledge  
**Application** - Link the answer to the case study (A02)  
- What are the advantages?  
- Make sure to explain all knowledge applied

**Example** – One advantage of a business taking the form of a partnership would be.....This is an advantage because.....

- Are there disadvantages?  
**Counter-argument (A03a)** - Link answer to counteract the advantages. (A02)  
- No disadvantages? What would happen to the business without it?

**Example** – However, a disadvantage of this business ownership would be.....This is a disadvantage because.....

**Evaluation (A03b)** - Summarise the advantages against the disadvantages! State your opinion, make sure you explain why you have come to this decision? Relate back to the business and the effects it would have.

**Example** – In conclusion, I think a partnership is an effective form of ownership because...

### Big Question – How do I achieve A02 (application) marks?

A number of questions in the exam will ask you a direct question about a particular business from the case study. You need to make sure that you always **APPLY** your knowledge to that particular business in your answer. This will allow you to achieve an additional A02 mark (APP) every time.

Here's an example....

Question - Analyse one way in which Redrow Homes could use Group Activities when selecting new apprentices? (3 marks)

**Answer 1** - Redrow Homes could use group activities as it would allow them to see how well potential apprentices work together on a task. ✓ This will highlight if they have good communication skills. ✓ (Only 2 marks have been awarded here as the answer was not applied specifically to the business).

**Answer 2** - Redrow Homes can assign a task where all the applicants work together to solve a problem relating to a scenario on a building site. This allows the interviewers to observe candidates' interpersonal skills (3 marks have been awarded as the answer is applied to Redrow Homes and a scenario using a building site).

### Don't forget the TESCO TEST!



Remember that the application mark (A02) is more than just writing the name of the business. If you can put TESCO in your answer and it still makes sense, you have not specifically applied it to the business from the case study.



\***Answer 2** would not make sense if you replaced Redrow Homes with Tesco. This is because the answer specifically talks about a building site. Application mark secured! ✓

## BIG QUESTIONS

1. What is the difference between an error and an anomaly?
2. What types of trends can be found in a table, graph or chart?
3. Using data from a spreadsheet, what types of conclusions can be made?
4. Using data from a spreadsheet, recommendations can be made for the future?

## SHOWING DATA SUMMARIES

Used by any business that deals with the sale of goods or services.

Lists totals for sales and/or turnover of individual products/goods, or a salesperson.

Helps identify successful products/salespeople for tracking purposes or making efficiency decisions.

Used by managers to identify how successful different areas of a business are.

Data such as employees, expenditure, target success & more might be included.

This helps identify problems within a business so resources can be targeted to fix them.

Used to manage the money assigned to different departments or projects.

Lists the areas of expenditure, money assigned & actual money spent.

Helps to track expenditure to ensure you are keeping within budget.

## Totals, Counts & Percentages

These three data summary methods allow for easier interpretation than raw data.

### Totals

- Common for financial data such as income, expenditure & profit.
- The SUM function is a useful tool in producing totals.

### Counts

- Useful for summarising data like total number of sales or bookings.
- The COUNT/COUNTA functions are useful in producing counts.

### Percentages

- Useful for comparing numbers such as growth or sales by region.
- A simple part / whole formula & then set the data type to percentage.

## Sales Breakdowns

Summarises sales within a business for analysis.

## Departmental Breakdown

Summarises departmental data for tracking performance of different areas of the business.

## Budget Allocations

Summarises data on budget usage within departments of a business, or for an individual's personal finance.



# MAKING RECOMMENDATIONS

Adapting  
Transport  
Schedules

Deploying  
Staff

Targeted  
Advertising

# THE IMPACT OF PRESENTATION

Inaccurate  
Conclusions  
Made

Information  
Being Biased

Information  
Being  
Misinterpreted

## Trends & Patterns

A trend is where data changes over time in a direction. | Patterns are recurring events in our data.

Spotting trends & patterns is made easier using line graphs.

An example trend might be a consistent growth or reduction in sales or turnover.

An example pattern might be a gym being busier weekday evenings.

Spotting trends & patterns help businesses make better decisions.

You must make sure decisions are based on a large enough data set.

## Anomalies & Possible Errors

Anomalies are where data doesn't fit an overall trend/pattern. | Errors may be the cause of an anomaly.

Anomalies can cause patterns & trends to be missed.

These anomalies may be due to a specific out of the ordinary event.

- A hotel near a major concert may have a sudden unexpected spike in bookings.

They may also be caused by errors in the data.

- E.g. Human errors during data entry, bad sensor readings or malicious damage to data.

We should remove anomalies & errors when analysing data to help spot patterns.

## Homework Links

Links are on Teams

**Homework 1:** Complete the data analyse sheet provided by your teacher.

**Homework 2:** Watch the video below. Make a list of all the techniques used to create the dashboard. You will be using these for your own.

[https://www.youtube.com/watch?v=K74\\_FNnIIF8](https://www.youtube.com/watch?v=K74_FNnIIF8)

**Homework 3:** Develop a plan on paper for your dashboard. How will the main page look? What types of data summaries will you include?

## Key Vocabulary

Errors

Anomalies

Trends

Patterns

Recommendations

Impact

Data summaries

Conclusions

BIG QUESTIONS

To be able to understand -

- ✓ The different stages of play
- ✓ How play can be organised to promote learning
- ✓ The role of the adult in promoting play

Coursework Catch up Learning through play

Learners must understand that children at different ages and stages of development have different play needs.

**A Understand how children play**

For this task you will produce an information booklet, on the different ways in which children play, including an assessment on how play is organised and the role of the adult in supporting play. Within your booklet you must include detailed examples to describe the six stages of play children experience between birth - 5 years, giving examples of play activities suitable for each stage of play.

Continue your booklet to give examples of how play can be organised to promote learning, assessing the advantages or disadvantages of child-initiated, adult-led and adult-initiated play. You must include examples to show the role of the adult in organising play and the most effective way to organise children's play activities to promote learning in all stages of play.

- Unoccupied play, birth-3 months: movements with arms, legs, hands, feet etc., learning how their muscles move.
- Solitary play, birth-2 years: a child plays alone.
- Spectator/onlooker play, 2 years: a child watches other children play but does not play with them.
- Parallel play, 2+ years: a child plays alongside or near others but does not play with them.
- Associative play, 3-4 years: a child starts to interact with others during play but there is not a large amount of interaction.
- Co-operative play, 4+ years: a child interacts fully with others and has interest in both the activity and other children involved.

**Homework**

- 1.1. Research the different types of play and give examples of how this type of play can take place.



## Coursework Catch up Learning through play.

### **B Demonstrate how children's learning can be supported through play**

In the second part of your information booklet, you will be assessing play activities and resources for children, you should include the following information:

For each age group,

- 0-18 months,
- 18months-3 years
- 3-5 years

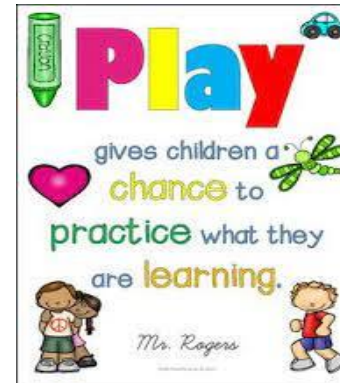
You must provide examples of play activities and resources that could be used to promote each area of development (physical, social, communication and language, cognitive/intellectual and emotional learning).

You must then choose two play activities and resources for two different age ranges and discuss how each activity or resource would promote different areas of development, giving detailed examples to assess the extent to which each activity or resource is likely to promote children's physical, social, communication and language, cognitive/intellectual and emotional learning.

Provide a conclusion in your information booklet about which of your chosen activities and resources are most likely to benefit children's learning.

### **Homework**

**Complete any outstanding coursework**



### Homework Links

Research from the following websites-

- ✓ [www.education.gov.uk](http://www.education.gov.uk)
- ✓ [http://www.nicurriculum.org.uk/docs/foundation\\_stage/learning\\_through\\_play\\_ey.pdf](http://www.nicurriculum.org.uk/docs/foundation_stage/learning_through_play_ey.pdf)
- ✓ <https://www.legofoundation.com/en/learn-how/knowledge-base/what-we-mean-by-learning-through-play/>
- ✓ <https://www.familylives.org.uk/advice/early-years-development/learning-and-play/why-play-matters/>

### Key Terms LA-A

**Social Skills**-used when interacting with each other

**Unoccupied play**- a child does not interact with others and makes movements with their body

**Solitary play**- playing alone

**Spectator/onlooker play**- watching others play but not playing with them

**Parallel play**- playing along side of others but not playing with them

**Associative play**- sharing resources but playing alone

**Cooperative play**- when children are playing together

**Repetition**- repeating something

**Enhance**- increase or improve something

**Independent learning skills**- being able to think, problem solve and act without an adult helping.

**Motivating**- a reason to do something

### Big Questions:

1. Do I know what I need to do to pass the exam?

### Key Terms LA:A

Acute – illness comes on quickly, is short term and can be cured

Chronic – illness comes on gradually, is long term and generally can be treated but not cured

Monitor – is to check on progress over a period of time

Wealth – is having lots of money and goods

Social class – is a broad group in society having the same social or economic status, most commonly, upper, middle and lower class

Material possessions – are things owned by an individual

Self-esteem – is how good or bad an individual feels about themselves and how much they value their abilities

Bereavement – is the process of coming to terms with the death of someone close

### A: Demonstrate knowledge and understanding of factors that affect health and wellbeing

Different factors and how they affect health and wellbeing:

- Physical and lifestyle factors that can have positive or negative effects on health and wellbeing - genetic inheritance, included inherited conditions and a pre-disposition to certain conditions, ill health (acute and chronic) , diet (balance, quality and amount), amount of exercise , substance use, including alcohol, nicotine, illegal drugs and misuse of prescribed drugs, personal hygiene.
- Social, emotional and cultural factors that can have positive or negative effects on health and wellbeing- social interactions, e.g. supportive/unsupportive relationships, social integration/isolation , stress, e.g. work-related , willingness to seek help or access services, e.g. influenced by culture, gender, education
- Economic factors that can have positive or negative effects on health and wellbeing - financial resources.
- Environmental factors that can have positive or negative effects on health and wellbeing- environmental conditions, e.g. levels of pollution, noise , housing, e.g. conditions, location.
- The impact of life events relating to relationship changes and changes in life circumstances

### How you will be assessed

The first part of your externally set assessment consists of two activities connected to a case study you will be provided with. Activity 1 will be about the positive and negative effects of different factors on an individual's health and wellbeing. Activity 2 will be about effects on health and wellbeing of a life event from the case study.

### B: Interpreting health indicators

Health indicators include:

- Resting pulse and recovery after exercise-comparison of resting pulse rate with the rate after exercise and how long it takes to recover, Blood pressure-impact of high and low blood pressure, Peak flow – the measurement of how quickly you can blow air out of your lungs, Body mass index – a measure of the amount of fat on your body in relation to your height to tell you if your weight is healthy.

### **How you will be assessed:**

The second part of your externally set assessment consists of one task, you will be provided with some lifestyle data and physiological data as well as some guidelines to help you interpret the data. You will be asked to explain what the data suggests about the current physical health and risks to the future physical health of the individual featured in the case study.

### **C: Person-centred health and wellbeing improvement plans**

#### Health and wellbeing improvement plans

You will explore the features of health and wellbeing improvement plans and consider the importance of a person-centred approach that takes into account an individual's needs, wishes and circumstances.

Information to be included in plan:

- o recommended actions to improve health and wellbeing
- o short-term (less than six months) and long-term targets
- o appropriate sources of support (formal and/or informal)

#### Obstacles to implementing plans

You will explore the obstacles that individuals can face when implementing these plans and how they may be mitigated.

Potential obstacles include:

- o emotional/psychological – lack of motivation, low self-esteem, acceptance of current state
- o time constraints – work and family commitments
- o availability of resources – financial, physical, e.g. equipment
- o unachievable targets – unachievable for the individual or unrealistic timescale
- o lack of support, e.g. from family and friends
- o other factors specific to individual – ability/disability, addiction
- o barriers to accessing identified services

### **How you will be assessed:**

The final part of your externally set assessment involves designing a health and wellbeing improvement plan, which consists of three activities.

- o Design a health and wellbeing plan for the individual in the case study
- o Give a rationale for your plan
- o Describe the obstacles the person may face and suggest how they could be minimised

### **Key Terms LB-C**

Physiological – relates to how a person and their bodily parts function normally

Cardiovascular system – is the system that moves blood, nutrients and gases around our bodies. It is made up of the heart, blood and blood vessels, also known as the circulatory system

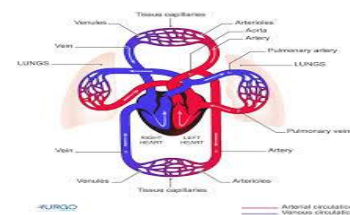
Arteries – are blood vessels that carry blood away from the heart

Potential significance – could develop into something important

Homework links:

<https://www.gov.uk/government/collections/national-child-measurement-programme>

<https://www.scie.org.uk/prevention/choice/person-centred-care>



Subject: 3D Design  
Year / Group: 11  
Topic: Exam Prep  
Term: 3-5

### BIG QUESTIONS

How can the study of other artists help you find your own direction in the development of ideas?

Describe the process of development in artists work.

Compare similarities and differences in artists work.

Explain why primary sources are the richest form of research.

How can Secondary sources enrich the development of ideas?

List different ways of recording your observations of the subject matter.

Why should you plan a wide range of ideas before selecting a final one?

How can the refining process help you to fully realise intentions?

*Controlled Assessment The externally set assignment provides students with the opportunity to demonstrate, through an extended creative response, their ability to draw together different areas of knowledge, skill and/or understanding from initial engagement with their selected starting point through to their realisation of intentions in the 10 hours of supervised time.*



## Key Skills

### RECORD

#### I will independently record...

- images and information appropriate to my chosen exam question
- using wet, dry and digital media
- examples of artists work appropriate to my chosen exam question
- information about artists, showing appreciation of how they use media and techniques to create meaningful work.

### DEVELOP

#### I will independently develop...

- my observation skills using a range of media, techniques and processes.
- artwork and ideas from primary sources
- my knowledge and understanding of artist styles and techniques
- my drawing and planning skills
- ideas in response to a given theme, linking to artists work
- my higher order thinking skills

### REFINE

#### I will independently...

- experiment making the most of media and techniques relevant to my intentions
- select ideas to adapt and improve e.g. adjustments to size, colour and composition.
- develop a piece of work from one media into another

### EVALUATE

#### I will independently...

- analyse and reflect on the development of my own work, through annotation making connections to artists and suggesting ways I could improve.
- evaluate artists using analytical writing skills and forming opinions.

### PRESENT OUTCOMES

#### I will independently...

prepare a plan for a final piece to be completed during the 10-hour exam.



## Homework Links

**Develop preparatory work at home for a minimum of 2 hours per week...**

- Research of artists *including studies, info, evaluation*
- Research of images (*using mind map*)
- Collect primary sources
- Drawings
- Annotation
- Ideas



## Key Vocabulary

*Research/Record/  
Analyse/Experiment/  
Develop/Design/  
Technique/Process/Refine  
Realise/Evaluate*

I will be expected to recall keywords learned in previous projects and use them in the appropriate context.

#### EVALUATING ARTISTS'/DESIGNERS' WORK

1. Describe the piece of art/design you are looking at
2. What is the name of the artist/designer or type of art/design?
3. What part of the world does the art/design come from?
4. Research and list 5 or more things about the artist/designer?
5. Describe the materials used to make the art/design
6. How has the artist/designer made the work?
7. What is being communicated through the art/design?
8. Which of these words best describes the mood of the picture/artefact?  
EMOTIONAL/POWERFUL/HUMEROUS/USEFUL/SERIOUS/BUSY/SLOW/PEACEFUL/WARM/COLD/HAPPY/SAD/CALM/INTENSE/ SCARY can you think of any other words?
9. What do you like or dislike about the picture/artefact? Explain your reasons...

#### ANNOTATING YOUR OWN WORK

- In this piece of work I was trying to...
- The artist/designer that has influenced my work is...
- In my work I used the technique of...
- The source I have used is...
- The media I have used is...
- I like this piece because...
- My idea links to the brief because...
- I can improve this piece by...
- Next, I'm going to.....

**Annotate means to explain your own creations**  
**Artist evaluation is when you write about the artist**  
**Project evaluation is written about the whole project at the end**

#### END OF PROJECT EVALUATION

1. Describe each stage of the project from start to finish
2. What media/materials did you use to produce your work? E.g. Paint/Pencil/Clay etc.
3. Describe how you used different techniques in your project? E.g. painting/drawing/modelling with clay etc.
4. Which artist/designer/culture have you looked at?
5. Write down two or more similarities between your work and the artist/designers' work.
6. Which piece of your work best shows the Artist/Designers' style or the influence of another culture and why?
7. Describe some of your own ideas...
8. Have you used a primary or a secondary source?
9. Have you included the secondary source in your work? Where did you find it?
10. Imagine if your final piece was displayed in a public place.... Describe the effect looking at your work might have on people and society. E.g. relax them, make them feel sad, curious, happy, angry, thoughtful, surprised, confused, nostalgic etc. explain why e.g. because of your use of colour, images, content, arrangement? etc.
11. Explain any other influences on your work e.g. personalities (*including your own*), places, memories, objects, politics, events, activities, religion, fact, fiction etc.
12. Describe how your work links to the project brief?
13. Explain what you have done well...
14. Explain how you could improve...
15. What would you do differently, if you were to repeat any part of this project



## BIG QUESTIONS

*Where can I find appropriate information and data?*

*How do I choose my trial dishes?*

*Can I modify existing recipes to raise the level of difficulty?*

### Overarching BIG QUESTION

Which assessment task will I choose and what do I need to research for the NEA2 task?

#### **Collecting background information.**

Research both primary and secondary sources.

Examples of primary research you may include:

**Surveys**- using the internet. For example, for the food preparation assessment task, you could find out the different types of rice available in supermarket.

**Dietary diary**- this is a record of the foods consumed. It could give information on the type of food and the appropriate quantity. It can be recorded for a day or a few days.

**Interview**- you may find someone who is an expert on the topic in your task who can give you more information.

Examples of secondary research you may also include:

**Trusted Websites**- use and discuss the information you find. Don't copy and paste large amounts of text. Be selective and make a note of the web site you took the information from.

**Books**- be selective and find key points on the topic you are investigating. You can quote some small sections as long as you discuss them.

Newspaper and magazines articles- find up to date articles with relevant information and make sure you discuss the information linked to your title/task.

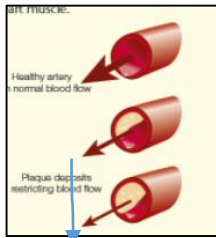
**Leaflets, labels and packaging**. Some of these may be relevant to your title and may give information that will be useful for your task(s).

**Multimedia** – animations, You Tube clips.

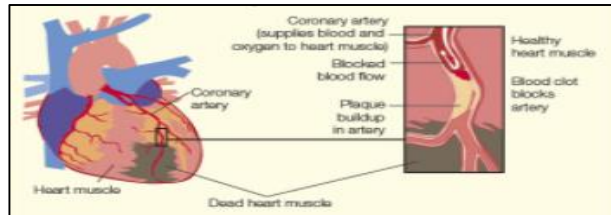
## Coronary Heart Disease is Caused by Clogged Arteries

Your cardiovascular system consists of your heart and blood vessels.

Coronary heart disease (CHD) is when the coronary arteries which supply the heart with blood full of oxygen are narrowed, because they are filled with fatty deposits.



Blood pressure is how much pressure the bloods puts against the walls of your arteries



## Causes

- Eating lots of saturated fats.
- Being physically inactive-as exercise keeps the heart healthy
- Smoking- damaged the lining of the arteries and reduces the oxygen in the blood.
- High blood pressure.

## Health problems

- Blood cannot pass through your blood vessels efficiently, which can cause a squeezing pain in your chest, this is called Angina and other areas of your body.
- Bloods clots can form which suddenly block blood flow to the heart muscle, then the heart doesn't get enough oxygen, which can cause a heart attack.

## How can it be prevented and treated?

### Coronary heart disease (CHD)

- By following the **dietary guidelines** (see pages 38–39).
- By eating foods that contain **antioxidant vitamins A, C and E** (see page 27).



- By **reducing salt intake** (see page 33).



- By **losing weight** if necessary.
- By **taking regular physical exercise**.



- By **trying to reduce stress levels**.
- By **limiting alcohol intake**.
- By **not smoking**.

### High blood pressure (hypertension)

- The advice is the same as for CHD.

## Skeletal Disease

### Osteoporosis

- Osteoporosis is the name given to a **natural ageing process** that usually becomes apparent in old age but can happen earlier in life.
- Osteoporosis means 'porous bones'.



### Tooth decay

- Teeth are an important part of the skeleton as they are involved in the **physical breakdown of food** to enable us to **digest and absorb** the nutrients from it.
- Teeth are vulnerable to becoming **decayed and diseased**, which makes them unable to carry out their job.

### What is it?

- The skeleton includes the bones and the teeth.
- Diet-related diseases can affect the strength of the bones and teeth in children and adults, such as:

#### Rickets

- Rickets is the name given to a **deficiency of Vitamin D** in children (see page 23), which means that not enough calcium is absorbed into the body from food.
- In adults, a lack of vitamin D will lead to the bones becoming weakened (osteomalacia).



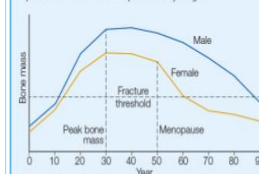
### What causes it (risk factors)?

#### Rickets

- A lack of vitamin D is often caused by not having enough exposure to **sunlight** (see page 23), either through staying indoors too much or completely covering the body with clothing, so that the skin is not exposed to sunlight.

#### Osteoporosis

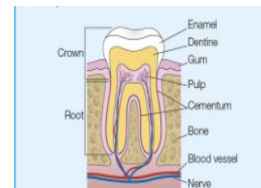
- The effects of osteoporosis are worse if the bones never reached peak bone mass when the person was younger.



- Some people have a **family history of osteoporosis** so are more at risk of developing it.

#### Tooth decay

- Healthy teeth look like this inside:



- In the mouth, there are millions of **microscopic bacteria** (see pages 171–175) that live on and around the teeth and gums.
- Every time we eat and drink, especially foods and drinks that contain **starches and/or free sugars** (see page 19), very quickly a sticky film called '**plaque**' builds up on the enamel of the teeth.
- The bacteria feed on the plaque and turn the sugars and starches it contains into **acids**.
- The acids stay on the teeth for around 45 minutes before the saliva produced in the mouth starts to neutralise them.
- Many children suffer from tooth decay due to poor diets and poor dental care.

### Allergen and food intolerance awareness

There are 14 ingredients (allergens) that are the main reason for adverse reactions to food. Cross-contamination of food containing these allergens must be prevented to reduce the risk of harm. They must also be labelled on pre-packaged food and menus so that consumers can make safe choices. The 14 allergens are:

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

### Food poisoning

Food poisoning can be caused by:

- bacteria, e.g. through cross-contamination from pests, unclean hands and dirty equipment, or bacteria already present in the food, such as salmonella;
- physical contaminants, e.g. hair, plasters, egg shells, packaging;
- chemicals, e.g. cleaning chemicals.

Bacterial contamination is the most common cause.

Micro-organisms occur naturally in the environment, on cereals, vegetables, fruit, animals, people, water, soil and in the air. Most bacteria are harmless but a small number can cause illness. Harmful bacteria are called pathogenic bacteria.

The process of food becoming unfit to eat through oxidation, contamination or growth of micro-organisms is known as food spoilage.

### Key terms

**Allergens:** Substances that can cause an adverse reaction to food. Cross-contamination must be prevented to reduce the risk of harm.

**Bacteria:** Small living organisms that can reproduce to form colonies. Some bacteria can be harmful (pathogenic) and others are necessary for food production, e.g. to make cheese and yogurt.

**Cross-contamination:** The transfer of bacteria from one source to another. Usually raw food to ready to eat food but can also be the transfer of bacteria from unclean hands, equipment, cloths or pests. Can also relate to allergens.

**Food poisoning:** Illness resulting from eating food which contains food poisoning micro-organisms or toxins produced by micro-organisms.

**High risk ingredients:** Food which is ready to eat, e.g. cooked meat and fish, cooked eggs, dairy products, sandwiches and ready meals.

### High risk food

Bacteria easily multiply on foods known as 'high-risk food'. These are often high in protein or fat, such as cooked meat and fish, dairy foods and eggs. Cooked pasta and rice are also regarded as high risk foods if they are not cooled quickly after cooking and stored below 5°C.

**Temperatures to remember.**  
**To reduce the risk of food poisoning, good temperature control is vital:**

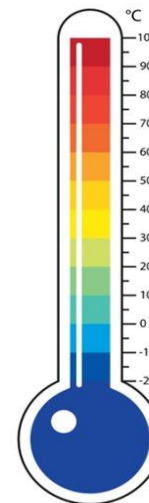
**5-63°C – the danger zone**  
**where bacteria grow most readily.**

37°C – body temperature, best temperature for bacterial growth.

5°C (or below) – the ideal temperature your fridge should be.

75°C – if cooking food, the core temperature, middle or thickest part should reach at least this temperature.

75°C – if reheating food, it should reach at least this temperature. In Scotland food should reach at least 82°C. Remember to reheat food only once!



### Homework Links

Food a Fact of Life

BBC Bitesize

BNF

(British Nutrition Foundation)

### Key Vocabulary

Cross Contamination

Bacteria

Danger zone

Allergens

Food Poisoning



|                                      |  |  |  |   |  |  |   |  |
|--------------------------------------|--|--|--|---|--|--|---|--|
| <b>S1 General Practical skills</b>   | Accurate measurement of liquids and or solids  | Grease/oil, line, flour evenly with attention to finished product  | Select and adjust cooking process and length to suit ingredient                | Tests for readiness: Temp probe; knife; skewer; poke test; bite; visual colour check; sound   | How to taste and season during cooking   | Change the taste and aroma using infusions, herbs, paste, jus, reduction   | Change texture and flavour using browning, glazing, add crust, crisp and crumbs | Presentation and food styling; garnishes; decorative techniques; portioning; presenting and finishing  |
| <b>S2 Knife skills</b>               | <b>Fruit and veg:</b><br>Bridge hold<br>Claw grip  | Peel<br>Slice<br>Dice  | Cut into even sized pieces:<br>Batons, julienne                                | <b>Chicken:</b><br>Fillet a chicken breast<br>Portion whole chicken<br>Slice evenly and accurately  |  | <b>Meat:</b><br>Remove fat<br>Remove rind<br>Slice evenly and accurately   |   | <b>Fish:</b><br>fillet whole fish;<br><br>Raw meat<br>Cooked meat<br>Meat alternative (tofu, halloumi) |
| <b>S3 Fruit and veg</b>              | Mash; shred; scissor snip; scoop; crush; grate; peel; segment; de-skin; blanch; shape; pipe; blend; juice                              |  |  | Prepare garnishes   |  | Demonstrate control of <b>enzymic browning</b> , spoilage and preventing food poisoning (wash and dry where appropriate) |   |  |
| <b>S4 Use of cooker</b>              | <b>Using the grill:</b> Use a range of foods such as vegetables, meat, fish or alternative (halloumi), seeds, nuts; chargrill or toast |  |  |   | <b>Using the oven:</b> baking; roasting; casseroles and/tagines; braising  |  |   |  |
| <b>S5 use of equipment</b>           | Use of blender; food processor; mixer; pasta machine; microwave oven   |  |  |   |  |  |   |  |
| <b>S6 cooking methods</b>            | <b>Water based methods using hob:</b> Steaming; boiling and simmering; blanching; poaching   |  |  |   | <b>Dry heat and fat based methods:</b> Dry frying; shallow frying and stir-frying  |  |   |  |
| <b>S7 prepare, combine and shape</b> |  | Roll; wrap; skewer; mix; coat; layer meat, fish and alternatives.<br>Shape and bind wet mixtures (falafels, burgers, fishcakes, meatballs) |  |   | Demonstrate skill of preventing cross contamination and handling high risk foods safely  |  |   |  |
| <b>S8 Sauce making</b>               | <b>Starch based:</b> Starch gelatinisation (roux, all-in-one, blended, veloute, béchamel). How starch/liquid ratios affect viscosity   |  |  | <b>Reduction:</b> show how evaporation concentrates flavour and changes viscosity: (tomato pasta sauce, curry sauce, gravy, meat and meat alternatives sauces (Bolognese) |  | <b>Emulsion:</b> salad dressing; mayonnaise; hollandaise. Demonstrate understanding of how to stabilise an emulsion      |   |  |
| <b>S9 Tenderise and marinate</b>     |  | How acids denature protein   |  | Marinades add flavour and moisture when preparing vegetables, meat fish and alternatives  |  |  |   |  |
| <b>S10 Dough</b>                     | Making a dough (bread, pastry, pasta): shortening, gluten formation, fermentation (proving)  |  |  |   | Roll out pastry, use a pasta machine, line a flan ring, create layers (puff pastry), proving, resting, glazing, finishing (pipe choux; bread rolls; flatbreads; pasta; pinwheels; pizza; calzone |  |   |  |
| <b>S11 Raising agents</b>            | <b>Eggs:</b> Gas-in-liquid foam – whisking egg whites, whisked sponge  |  | <b>Chemical:</b> Use of self raising flour, baking powder, bicarbonate of soda |   | <b>Steam:</b> Choux pastry, batter   |  | <b>Biological:</b> use of yeast   |  |
| <b>S12 Setting mixtures</b>          |  | <b>Gelation:</b> use of starch to set a mixture on chilling for layered desserts (custard)   |  |   | Set a mixture on heating such as denatured and/or coagulated protein in eggs   |  |   |  |

You must be able to demonstrate knowledge and understanding of the functions, structures and main sources of protein, carbohydrates and fat. Know the biological value of protein, understand an individual's need for carbohydrate, understand the consequences of excess and deficiencies of protein, carbohydrate and fat.

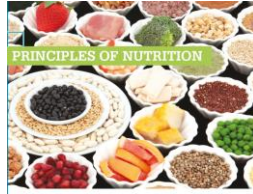
Demonstrate the knowledge and understanding of the sources and functions of vitamins and minerals. Understand the consequences and deficiencies of vitamins and minerals. Understand the retention of water soluble vitamins during cooking.

Demonstrate the knowledge of the Eatwell Guide and health eating guidelines. Understand diet requirements throughout life and diet related

illnesses.

### Key words

1. Amino Acids
2. High Biological Value (HBV)
3. Low Biological Value (LBV)
4. Protein Complementation
5. Kwashiorkor
6. Fatty Acids
7. Glycerol
8. Saturated Fats
9. Unsaturated Fats
10. Fat Soluble vitamins
11. Water Soluble Vitamins
12. Cholesterol
13. Hydrogenation
14. Trans fats
15. Dietary Fibre
16. Photosynthesis
17. Monosaccharides
18. Disaccharides
19. Polysaccharides
20. Non starch Polysaccharide (NSP)
21. Constipation
22. Diverticular Disease



### Keywords

1. Fortified
2. Rickets
3. Osteomalacia
4. Antioxidant
5. Thiamin
6. Riboflavin
7. Spina bifida
8. Ascorbic acid
9. Peak Bone Mass
10. Haemoglobin
11. Anaemia
12. Thyroid
13. Dehydration
14. Lactating

### Keywords

1. Eatwell Guide
2. Reference Intake (RI)
3. Body Mass Index
4. Iron Deficiency anaemia
5. Osteoporosis
6. Foetus
7. Basal Metabolic Rate (BMR)
8. Physical Activity Level (PAL)
9. Estimated Average Requirement (EARs)

### Key Points

1. Protein is required by the body for growth, maintenance and repair.
2. Proteins are built up of units of amino acids.
3. Fats can be classified as either saturated and unsaturated.
4. Saturated fats are considered to be more harmful to health because they raise levels of cholesterol.
5. Carbohydrate provides the body with energy.
6. Most of our energy should come from complex starchy foods.
7. Vitamins are micronutrients, required in small amounts to do essential jobs in the body.
8. Water soluble vitamins are easily destroyed during preparation and cooking.
9. Water makes up two thirds of the body so it is vital to drink regularly to stay hydrated.
10. Nutritional needs change throughout life, but everyone needs to consider the current healthy eating guidelines when planning meals.
11. Energy balance is the balance of energy consumed through eating and drinking compared to energy burned through physical activity.



Consuming more energy than is needed by the body will lead to weight gain and obesity.



Diabetes type 2 (formerly non insulin dependent diabetes mellitus) is often associated with obesity and can cause serious long term health problems.

### Homework Links

Food a Fact of Life

BBC Bitesize

BNF

(British Nutrition Foundation)

### Key Vocabulary

Cross

Contamination

Bacteria

Danger zone

Allergens

Food Poisoning

### Quick Test

1. What are the functions of fat in the diet?
2. Give an example of protein complementation.
3. What does NSP stand for?
4. What are the fat soluble vitamins?
5. What is peak bone mass?
6. Why is a good supply of folic acid needed in early pregnancy?
7. What is Osteoporosis?