WOOTTON PARK

'Ipsum quod faciendum est diutius'

Knowledge Maps
Year 10: Term 4

GCSE Target Grades 4-9

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Subject: English	Term: 4	Topic: English Language Paper 1

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'Ipsum quod faciendum est diutius durant'

Week 1 – Language P1 Reading overview

Start of exam—5 Minutes.

⇒ Read the glossary.

⇒ Read the information box . Underline key details.

⇒ Read the passage without looking at the questions. Do you understand what is going on?

Q1—5 Minutes.

⇒ Read the question.
⇒ Mark in the margin which lines you need to focus on.
⇒ Use full sentences.
⇒ One point per line.
⇒ Don't repeat yourself, you need four different points!

Q2—10 Minutes.

⇒ Underline key words in question. Who / what are you focusing on?
⇒ Identify the mood / tone.
⇒ Label language devices and interesting words and phrases.
⇒ Write three BIG paragraphs including quotations to back up ideas. Answer each bullet point.

Q3—10 Minutes.

⇒ This question focuses on the WHOLE extract.
⇒ Focus on the following:
- Opening.
- Focus (character / place)
- Foreshadowing.
- Contrasts.
- Ending.
- Time shifts Past / present/ future.
- Thought / Action,

⇒ Aim to write about 4 paragraphs. If in doubt, focus on the beginning, middle and end and how they are structured to maintain interest in the reader.

Sentence Stems.

⇒ **The writer focuses on… in the opening.**
⇒ **The writer builds/ changes / shift… by… making the reader feel….**
⇒ **The writer leaves us feeling…**
⇒ **A structural technique used by the reader is….**

Q4—30 Minutes.

⇒ Underline key words in the question and the statement.
⇒ If the statement is positive—AGREE WITH IT.
⇒ Look again at the part of the extract that is referred to. Underline any evidence you will use to support the statement.
⇒ Underline language techniques that effect the reader. (3 at LEAST.)
⇒ Write at least 5 paragraphs in your answer, using as many quotations to back up your ideas as possible.

Sentence Stems.

⇒ To some extent I agree with… because…
⇒ I certainly agree that…
⇒ However it could also be argued that…
⇒ Overall I agree with the statement that ….

Paper One

Week 2 – Key language techniques

Language Techniques	
Diction	The writer's choice of words.
Hyperbole	The use of extreme exaggeration.
Imagery	When the writer provides mental "pictures".
Irony	Like sarcasm, where the opposite is implied.
Juxtaposition	Two ideas together which contrast each other.
List (of three)	A number of connected items (three= effect).
Metaphor	Something is presented as something else.
Oxymoron	Contradictory terms together "bittersweet".
Pathos	Language used to appeal to the emotions.
Personification	Giving human traits to something non-human.
Repetition	When a word, phrase or idea is repeated.
Semantic Field	A set of words from a text related in meaning.
Simile	Something is presented as like something else.
Symbolism	An idea is reflected by an object/character etc.
Syntax	The way words and phrases are arranged.

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Week 3 – Structural Techniques

Structural Techniques	
Atmosphere	The mode or tone set by the writer.
Climax	The most intense or decisive point.
Dialogue	The lines spoken by characters.
Exposition	The start where ideas are initiated.
Flashback	(Analepsis) Presents past events.
Flash-forward	(Prolepsis) Presents future events.
Foreshadowing	Hints what is to come(can mislead).
Motif	A recurring element in a story.
Resolution	The answer or solution to conflict.
Setting	A geographical/historical moment.
Spotlight	Emphasis is placed on something.
Shift	A switch or change of focus.
Tension	The feeling of emotional strain.

Week 4 – Word classes and sentences

Word Classes	
Noun	Identifies a person (girl), thing (wall), idea (luckiness) or state (anger).
Verb	Describes an action (jump), event (happen), situation (be) or change (evolve).
Adjective	Describes a noun (happy girl, grey wall).
Adverb	Gives information about a verb (jump quickly), adjective (very pretty) or adverb (very quickly).
Sentence Structures	
Fragment	An incomplete sentence (no subject verb agreement). “Nothing.” “Silence everywhere.”
Simple	A sentence with one independent clause. “She went to the shop.”
Compound	A sentence with multiple independent clauses. “She went to the shop and bought a banana”
Complex	A sentence with one independent clause and at least one dependent clause. “Sometimes, when she goes to the shop, she likes to buy a banana.”

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Week 5 – Narrative devices

Types of Narrator	
Limited 3rd person	External narrator with knowledge of one character's feelings (he).
Omniscient 3rd person	External narrator- knowledge of more than one character's feelings (he).
1st person	Told from a character's perspective (I).
2nd person	Directed to the reader (you).
Unreliable narrator	When the perspective offered makes us question the narrator's credibility.
Narrative Styles	
Linear	Events are told chronologically.
Non-Linear	Events are not told chronologically.
Dual	Told from multiple perspectives.
Cyclical	Ends the same way it begins.
Explaining the Extract.	
Introducing	An idea or character is first shown.
Focusing	Our attention is aimed somewhere.
Building	When an idea/tension is increased.
Developing	An earlier point is extended.
Changing	A shift is created for an event/idea.
Concluding	Ideas/ events are drawn to a close.

Week 6 – Descriptive writing

Purpose: Reason you are writing

-You are writing to describe, entertain and impress.
You want to show how impressively you can describe the picture in front of you and show the examiner you can create imagery in the reader's mind through your use of the English language.

Techniques to use:

Simile- Example: He was as timid as an urban fox.
Metaphor- Example: He was a night owl.
Pathetic Fallacy- Example: The sky became cloudy and darkness fell.
Personification-Example: The thorns gripped my shirt as I ran through.
Impressive Vocabulary-Example: Guile, Radiant, Irksome, Serpentine.
Noun, Adjective, Noun- Example: Blood red shoes
Alliteration- Example: Colin can't catch!
Sensory Language- Example: I could taste blood streaming from my lip.

Helpful Hints:

-**Keep your tone consistent throughout**: Do not use similes which suggest a light and playful atmosphere after you have just spent 15 minutes making the scene sound creepy.
-**Describe the setting and location. Avoid action**: The easiest way to gain marks in this section of the paper is to describe in detail using techniques. Too much action will deviate from this description.
-**Use a variety of structural features**: Flashbacks or deep thoughts of the protagonist work well.
-**Keep to one or two characters**: You should concentrate on saying a lot about very little. Fuller descriptions of one/two character(s) is best.

Subject: Maths Higher	Term: 4	Topic: Circle Theorems

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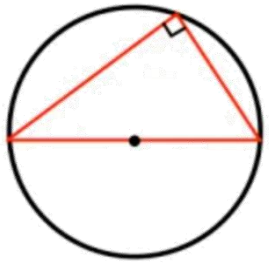
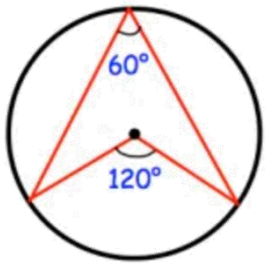
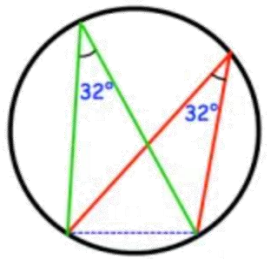
Circle Theorems



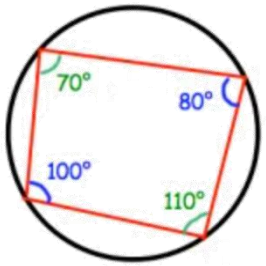
The angle in a semi-circle is 90°



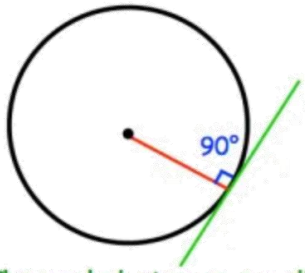
The angle at the circumference is half the angle at the centre



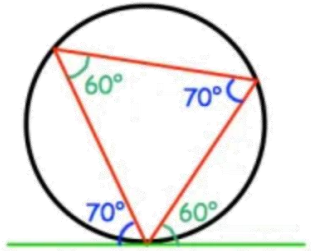
The angles in the same segment from a common chord are equal



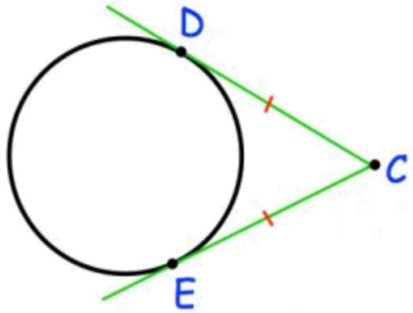
The opposite angles in a cyclic quadrilateral always add to 180°



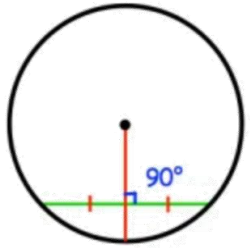
The angle between a radius and a tangent is 90°



Alternate segment theorem
The angle between the chord and the tangent is equal to opposite angle inside the triangle.

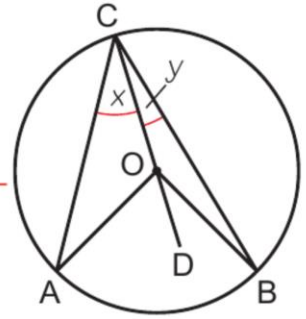


The tangents to a circle from the same point will be equal length



The radius through the midpoint of a chord will bisect the chord at 90°

Prove that the angle at the centre of a circle is twice the angle at the circumference when both are subtended by the same arc.



Draw the line CO and extend it to point D. Let angle ACO = x and angle BCO = y.

AO = OC (radii of same circle)

Angle ACO = angle OAC = x
(base angles of isosceles triangle)

Similarly, angle BCO = angle OBC = y

Angle AOD = $2x$ (exterior angle equals the sum of the two interior opposite angles)

Similarly, angle BOD = $2y$

Angle ACB = $x + y$

Angle AOB = $2x + 2y = 2(x + y) = 2$(angle ACB)

Subject: Maths Higher	Term: 4	Topic: Vectors

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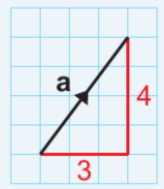
Vector Notation

A **vector** is a quantity that has magnitude and direction
The **magnitude** of a vector is its size.
Displacement, is a vector quantity and is is change in position. A displacement can be written as $\begin{pmatrix}3\\4\end{pmatrix}$ where 3 is the x component and 4 is the y component.
Examples of vectors are force, and velocity.



The displacement vector from A to B is written $\overrightarrow{AB}$

Vectors are written as **bold** lower case letters: **a, b, c**
When handwriting, <u>underline</u> the letter: <u>a</u>, <u>b</u>, <u>c</u>

Equal vectors have the same magnitude and the same direction.

The **magnitude** of the vector $\begin{pmatrix}x\\y\end{pmatrix}$ is it's length, i.e. $\sqrt{x^2 + y^2}$

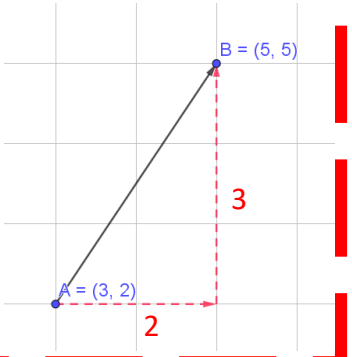
$|a|$ means the magnitude of the vector **a.** $|\overrightarrow{OA}|$ means the magnitude of the vector $\overrightarrow{OA}$

<u>Example</u>
The points A and B have the co-ordinates (3, 2) and (5, 5) respectively. Work out the magnitude of $\overrightarrow{AB}$

$$\overrightarrow{AB} = \begin{pmatrix}2\\3\end{pmatrix}$$

$$|\overrightarrow{AB}| = \sqrt{2^2 + 3^2}$$

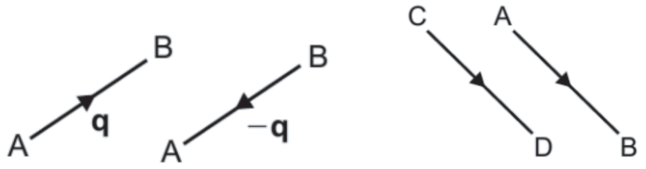
$$|\overrightarrow{AB}| = \sqrt{13}$$



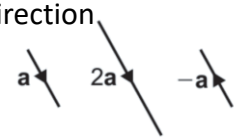
Vector Arithmetic

If $\overrightarrow{AB} = \overrightarrow{CD}$ then the line segments AB and CD are equal in length and are parallel

$\overrightarrow{AB} = -\overrightarrow{BA}$



2**a** is twice as long as **a** and in the same direction
-**a** is the same length as **a** but in the opposite direction



When a vector **a** is multiplied by a scalar k then the vector k**a** is parallel to **a** and is equal to k times **a.**
A **scalar** is a number and only has magnitude. E.g. 3, 2, $\frac{1}{2}$, -1

The two stage journey from A to B and then B to C has the same starting point and same finishing point as the single journey from A to C. So A to B followed by B to C is equivalent to A to C

$$\overrightarrow{AB} + \overrightarrow{BC} = \overrightarrow{AC}$$

Vector addition is **commutative** i.e. **a** + **b** = **b** + **a**

In parallelogram PQRS where $\overrightarrow{PQ}$ = **a** and $\overrightarrow{PS}$ = **b**, the diagonal $\overrightarrow{PR}$ of the parallelogram is **a** + **b**.
This is called the **parallelogram law for vector addition**
When **c** = **a** + **b** the vector **c** is called the **resultant vector** of the two vectors **a** and **b**

Subject: Maths Higher	Term: 4	Topic: Vectors and Proportion

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Solving Geometric Problems

With the origin O, the vector $\overrightarrow{OA}$ and $\overrightarrow{OB}$ are called the **position vectors** of the points A and B.
In general, a point with co-ordinates (p, q) has position vector $\binom{p}{q}$.

When $\overrightarrow{OA}$ = **a** and $\overrightarrow{OB}$ = **b**, $\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB}$ = **b** – **a**

Example

The points A, B, C and D have coordinates (1, 3), (2, 7), (–6, –10) and (–1, 10) respectively. O is the origin.

a Write down the position vectors $\overrightarrow{OA}$ and $\overrightarrow{OB}$.

b Work out as column vectors

i $\overrightarrow{AB}$ ii $\overrightarrow{CD}$

c What do these results show about AB and CD?

a $\overrightarrow{OA} = \binom{1}{3}$ $\overrightarrow{OB} = \binom{2}{7}$

Position vector of (1, 3) is $\binom{1}{3}$

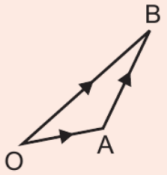
b $\overrightarrow{AB} = \overrightarrow{AO} + \overrightarrow{OB} = -\overrightarrow{OA} + \overrightarrow{OB} = \overrightarrow{OB} - \overrightarrow{OA}$

$= \binom{2}{7} - \binom{1}{3} = \binom{1}{4}$

$\overrightarrow{CD} = \overrightarrow{CO} + \overrightarrow{OD} = -\overrightarrow{OC} + \overrightarrow{OD} = \overrightarrow{OD} - \overrightarrow{OC}$

$= \binom{-1}{10} - \binom{-6}{-10} = \binom{5}{20}$

Use the triangle law:



c $\overrightarrow{AB} = \binom{1}{4}$ $\overrightarrow{CD} = \binom{5}{20} = 5\binom{1}{4}$

$\overrightarrow{CD} = 5\overrightarrow{AB}$

The lines CD and AB are parallel and the length of the line CD is 5 times the length of the line AB.

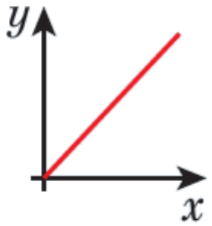
This means CD is a multiple of AB. Explain clearly what $\overrightarrow{CD} = 5\overrightarrow{AB}$ means.

$\overrightarrow{PQ} = k\overrightarrow{QR}$ shows that the lines PQ and QR are parallel. Also they both pass through the point Q so PQ and QR are part of the same straight line. P, Q and R and said to be **collinear** (they all lie on the same straight line)

Direct Proportion

The symbol $\propto$ means 'is directly proportional to'
$y \propto x$ means y is **directly proportional** to x
In general if y is directly proportional to x, $y \propto x$ and $y = kx$ where k is a number, called the **constant of proportionality**

Example



y is directly proportional to x.
When $y = 20$, $x = 8$

a Express y in terms of x.

b Find x when $y = 35$.

a $y \propto x$

Write y is directly proportional to x, using the symbol $\propto$.

So, $y = kx$

Write the equation using k.

$20 = k \times 8$

Substitute $y = 20$ and $x = 8$. Solve to find k.

$k = 2.5$

Substitute the value of k back into the equation.

$y = 2.5x$

b $35 = 2.5 \times x$

Substitute $y = 35$ into $y = 2.5x$.

$x = 14$

A quantity can be directly proportional to the square, the cube, or the square root of another quantity. For example:

- If y is proportional to the square of x then $y \propto x^2$ and $y = kx^2$
- If y is proportional to the cube of x then $y \propto x^3$ and $y = kx^3$
- If y is proportional to the square root of x then $y \propto \sqrt{x}$ and $y = k\sqrt{x}$

Subject: Maths 10(DAB) Higher	Term: 4	Topic: Further Trigonometry

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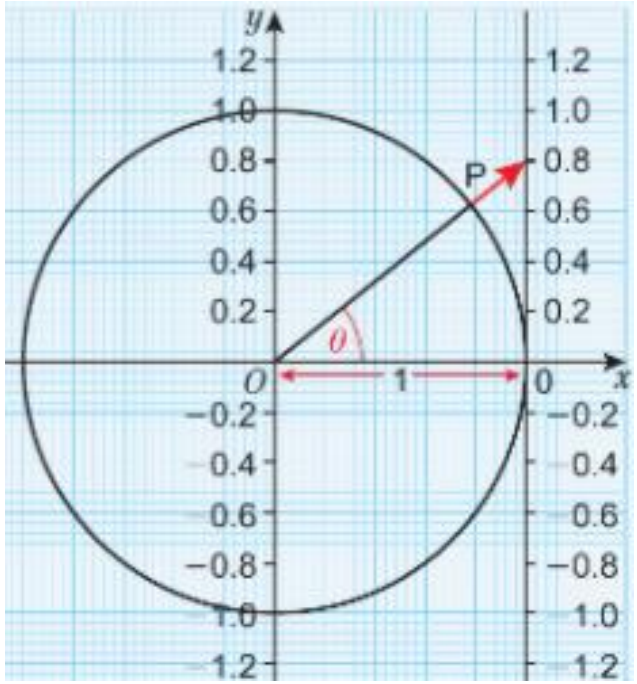
Week 1: The tangent function

Here is the graph of $y = \tan x$ for $0° \leqslant x \leqslant 360°$.



The diagram shows a circle of radius 1 unit with centre at (0, 0).

$\tan\theta = \frac{0.8}{1} = 0.8$

Extending OP to hit the vertical tangent line gives the value of $\tan\theta$.

You can find the **tangent** of any angle using this method except for angles of the form $90° \pm 180n°$

Unlike sine and cosine, the tangent can take *any* value, positive or negative, not just values between −1 and 1.

- The tangent graph repeats every 180° in both directions
- There are asymptotes at 90°, 270° and every 180° onwards. (This is where there are no values for the tangent graphs)

Key word: Asymptote

A straight line that approaches a curve, but does not actually meet the curve.

Subject: Maths 10(DAB) Higher	Term: 4	Topic: Further Trigonometry

WOOTTON PARK

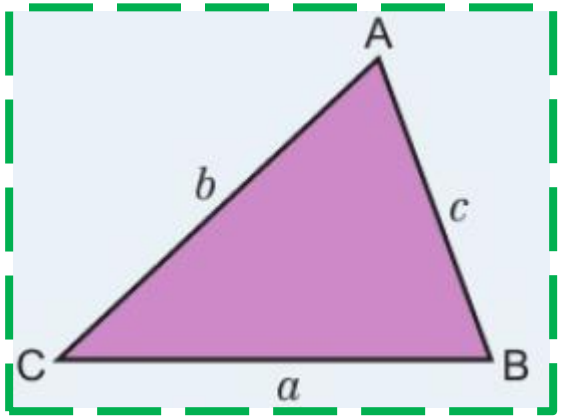
Week 2: Area of a non-right angles triangle and the Sine rule

The **sine rule** can be used in any triangle.

- $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ Use this to calculate an unknown *side*.
- $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ Use this to calculate an unknown *angle*.

To use the sine rule you need to know one angle and the opposite side. Then:

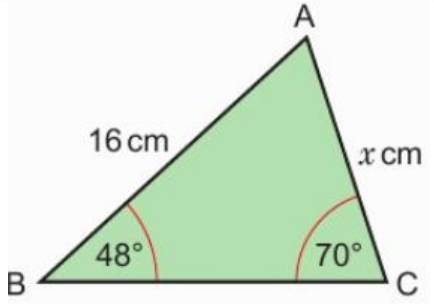
- If you know another **angle** you can work out the length of the opposite side
- If you know another **side**, you can work out the size of the opposite angle



The **area** of this triangle $= \frac{1}{2}ab\sin C$.
a is the side opposite angle A.
b is the side opposite angle B.

Worked example 1

Find the value of x.
Give your answer to 3 significant figures.



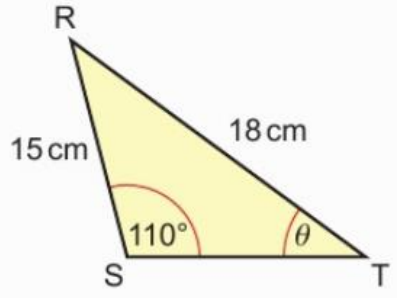
$$\frac{x}{\sin 48°} = \frac{16}{\sin 70°}$$

$$x = \frac{16\sin 48°}{\sin 70°} = 12.653\ldots$$

$$= 12.7\text{ cm (3 s.f.)}$$

Worked example 2

Find the value of θ.
Give your answer to 1 decimal place.



$$\frac{\sin\theta}{15} = \frac{\sin 110°}{18}$$

$$\sin\theta = \frac{15\sin 110°}{18}$$

$$\theta = \sin^{-1}\left(\frac{15\sin 110°}{18}\right)$$

$$= 51.5°\text{ (1 d.p.)}$$

Subject: Maths 10(DAB) Higher	Term: 4	Topic: Further trigonometry

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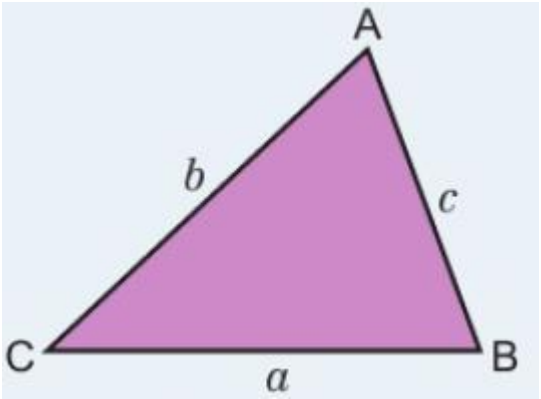
Week 3: Cosine rule

The **cosine rule** can be used in any triangle.

- $a^2 = b^2 + c^2 - 2bc\cos A$ Use this to calculate an unknown *side*.
- $\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$ Use this to calculate an unknown *angle*.

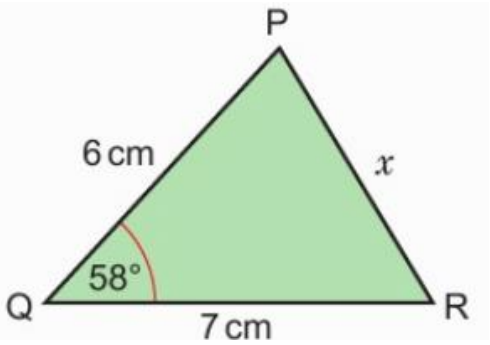


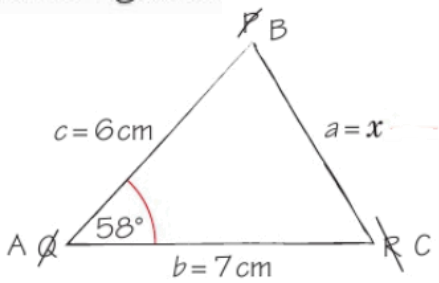
You can use the cosine rule to find:

- the length of a *side* if you know two sides and the included angle
- an unknown *angle* if you know all three sides.

Worked example 1

Work out the length of the side labelled x.
Give your answer correct to 3 significant figures.





$a^2 = b^2 + c^2 - 2bc\cos A$

$x^2 = 7^2 + 6^2 - 2 \times 7 \times 6 \times \cos 58° = 40.486...$

$x = \sqrt{40.486} = 6.3629... = 6.36\text{ cm (3 s.f.)}$

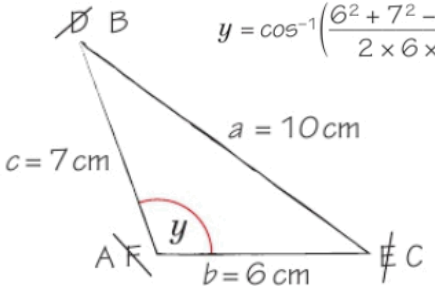
Worked example 2

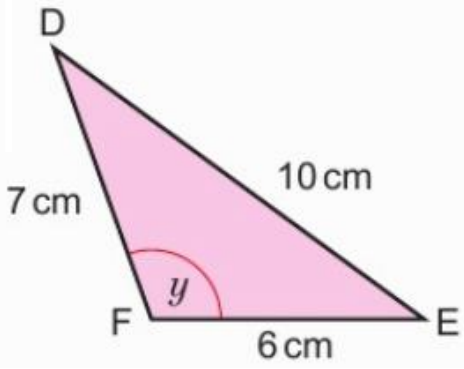
Work out the size of angle y.
Give your answer correct to 1 decimal place.

$\cos A = \dfrac{b^2 + c^2 - a^2}{2bc}$

$\cos y = \dfrac{6^2 + 7^2 - 10^2}{2 \times 6 \times 7}$

$y = \cos^{-1}\left(\dfrac{6^2 + 7^2 - 10^2}{2 \times 6 \times 7}\right) = 100.3°\text{ (1 d.p.)}$





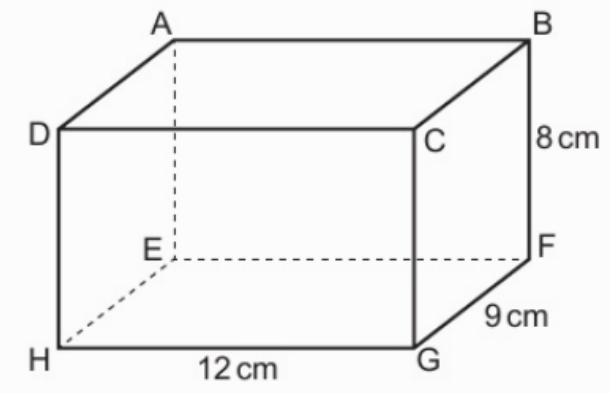
Subject: Maths 10(DAB) Higher	Term: 4	Topic: Further trigonometry

WOOTTON PARK

Week 4: Problems in 3-D

A **plane** is a flat surface. For example, the surface of your desk lies in a **horizontal** plane. The wall in a classroom lies in a **vertical** plane. A diagonal is a line joining one **vertex** to another.

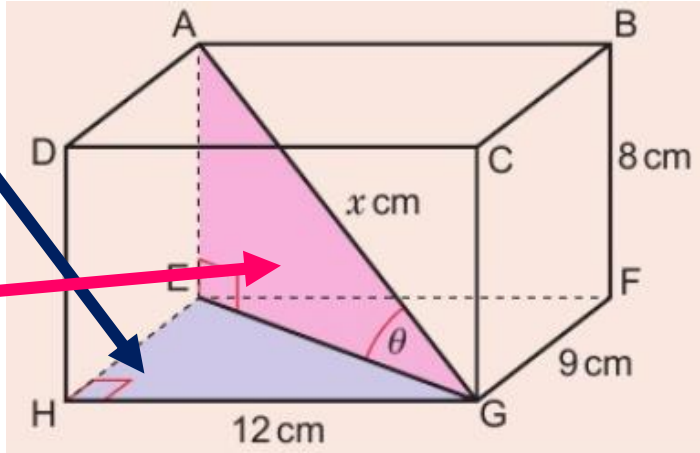
Work out the length of the diagonal, AG, of this cuboid.



The base EFGH is in a horizontal plane and triangle AEG is in a vertical plane. The length of the diagonal AG is x. The angle that AG makes with EFGH is θ.

$EG^2 = 9^2 + 12^2 = 225$

$EG = \sqrt{225} = 15\,cm$



$x^2 = 8^2 + 15^2 = 289$

$x = \sqrt{289} = 17$

The diagonal AG is 17 cm long.

Find the angle that AG makes with the plane EFGH.

Use the lengths given in the question when you can.

$\tan\theta = \frac{8}{15}$

$\theta = \tan^{-1}\left(\frac{8}{15}\right)$

$= 28.1°$ (1 d.p.)

Subject: Maths 10(DAB) Higher	Term: 4	Topic: Further Trigonometry

WOOTTON PARK

Week 5: Transforming Trigonometric graphs

The graph of $\boldsymbol{y = f(x) + a}$ is the translation of the graph of $y = f(x)$ by $\begin{pmatrix} 0 \\ a \end{pmatrix}$.

The graph of $\boldsymbol{y = f(x + a)}$ is the translation of the graph of $y = f(x)$ by $\begin{pmatrix} -a \\ 0 \end{pmatrix}$.

The graph of $\boldsymbol{y = a\,f(x)}$ is a vertical stretch of the graph of $y = f(x)$, with scale factor a, parallel to the y-axis.

The graph of $\boldsymbol{y = f(ax)}$ is a horizontal stretch of the graph of $y = f(x)$, with scale factor $\frac{1}{a}$, parallel to the x-axis.

The graph of $\boldsymbol{y = -f(x)}$ is the reflection of the graph of $y = f(x)$ in the x-axis.

The graph of $\boldsymbol{y = f(-x)}$ is the reflection of the graph of $y = f(x)$ in the y-axis.

The graph of $\boldsymbol{y = -f(-x)}$ is a reflection of the graph of $y = f(x)$ in the x-axis and then the y-axis, or vice versa. These two reflections are equivalent to a rotation of 180° about the origin.

Subject: Maths Foundation 10CE	Term: 4	Topic: Quadratics

WOOTTON PARK

Factorising quadratics

Factorise- To put back into brackets

Quadratics- Are written in the form of $ax^2 + bx + c$

Perfect square- $(x + a)^2 = (x + a)(x + a) = x^2 + 2ax + a^2$

Factorise $x^2 + 7x + 10$.

$2 + 5 \qquad 2 \times 5$

$x^2 + 7x + 10 = (x + 5)(x + 2)$

$x^2 + 7x + 10 = (x + 5)(x + 2)$

The **factor pairs** of 10 are 1×10 and 2×5. Only the 2 and 5 add together to make 7 so these are the numbers that go in the brackets.

Check: $(x + 2)(x + 5) = x^2 + 5x + 2x + 5 \times 2$

$= x^2 + 7x + 10$

Check your answer by expanding.

Factorise $x^2 + 5x + 6$

$x^2 + 5x + 6$

$(x \quad)(x \quad)$ — Write a pair of brackets with x in each one. This gives the x^2 term when multiplied.

$1 \times 6 \qquad 2 \times 3$ — Work out all the factor pairs of 6, the number term.

$1 + 6 = 7 \qquad 2 + 3 = 5$ — Work out which factor pair will **add** to give 5, the number in the x term.

$(x + 2)(x + 3)$ — Then write each number in each of the brackets with x.

Check: $(x + 2)(x + 3) = x^2 + 5x + 6$ — The expression is now factorised. Expand the brackets to check it is correct.

$x^2 - 9$

± Square Root

$(x-3)(x+3)$

Check

$(x-3)(x+3)$

$= x^2 - 3x + 3x - 9$ ($=0$)

$= x^2 - 9$ ✓

With two squares

$4x^2 - 25$

$(2x-5)(2x+5)$

General Form

$a^2x^2 - b^2$

$(ax-b)(ax+b)$

Difference of two squares

$$a^2 - b^2$$

$$(a + b)(a - b)$$

Subtraction

$64 - 9$

$8^2 - 3^2$

$(8 + 3)(8 - 3)$

For example 81 is a square number

Expanding quadratics

$(n + 4)(n + 7)$

$= n^2 + 7n + 4n + 28$

$= n^2 + 11n + 28$

When you **expand** double brackets, you multiply each term in one set of brackets by each term in the other set of brackets.

$(a + b)(c + d) = ac + ad + bc + bd$

Expand and simplify $(w + 6)(w + 12)$.

$(w + 6)(w + 12) = w^2 + \underbrace{12w + 6w}_{18w} + 72$

$= w^2 + 18w + 72$

Worked example

Expand and simplify $(x + 2)(x + 4)$.

$(x + 2)(x + 4) = x^2 + 4x + 2x + 8$

$= x^2 + 6x + 8$

$(x + 2)(x + 4) = x^2 + \underbrace{4x + 2x}_{6x} + 8$

$= x^2 + 6x + 8$

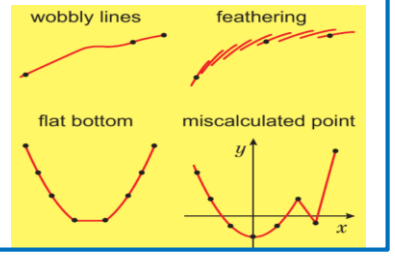
Subject: Maths Foundation 10CE	Term: 4	Topic: Quadratics

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Solving and using quadratic graphs

A **quadratic function** contains a term in x^2 but no higher power of x. $y = x^2$, $y = 5x^2$, $y = x^2 + 5$ and $y = x^2 + 3x + 2$ are all quadratic. The graph of a quadratic function is called a **parabola**.

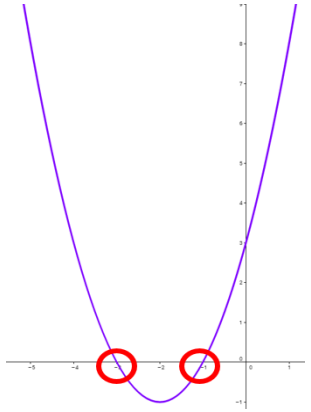
Common mistakes:



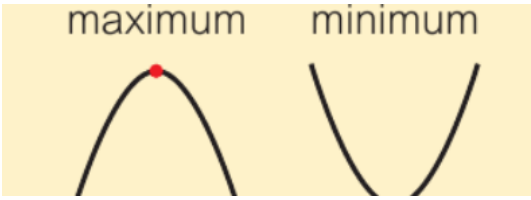
The point where the parabola crosses the x axis is the solution to the equation for x.

We would refer to this as 'the solution' to $x^2 + 4x + 3$

So therefore,
x=-3 or x=-1



Quadratics can be solved by making them equal to zero then factorising



A **turning point** of a graph is where its direction changes. A turning point can be a **maximum** or **minimum** point. A maximum is the point on the graph with the greatest y-coordinate. A minimum is the point on the graph with the lowest y-coordinate.

Here is the graph of $y = x^2 - 3x - 2$.
Use the graph to solve the equation $x^2 - 3x - 8 = 0$.
Give your answers correct to 1 decimal place.

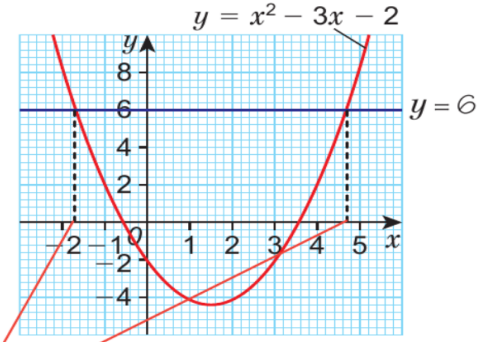
Rearrange the equation so that one side is $x^2 - 3x - 2$.

$x^2 - 3x - 8 = 0$
+6 $x^2 - 3x - 2 = 6$ +6

$-8 + 6 = -2$

Find where $y = x^2 - 3x - 2$ intersects $y = 6$.

$x = -1.7$
$x = 4.7$



Read off the x-values.

Solve $x^2 + 6x = 27$.

$x^2 + 6x = 27$
$x^2 + 6x - 27 = 0$ — Rearrange the equation so it equals 0.
$(x + 9)(x - 3) = 0$ — Factorise the quadratic expression.
$x + 9 = 0$ $\quad x = -9$
$x - 3 = 0$ $\quad x = 3$
$x = -9$ or $x = 3$

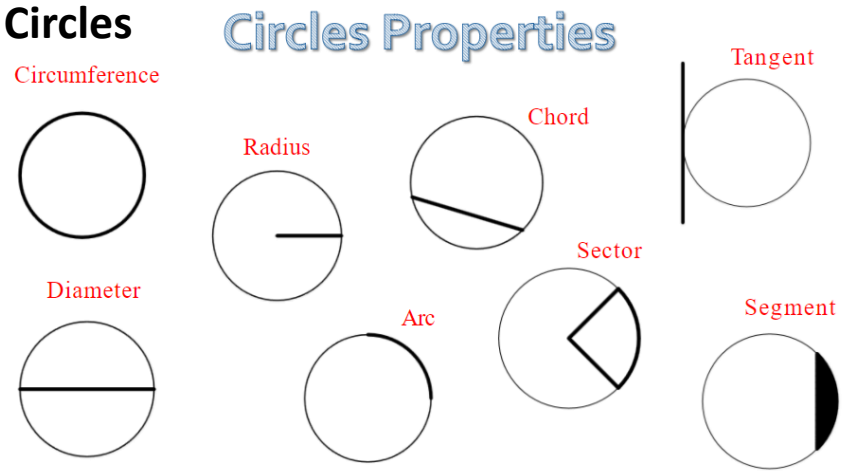
0 multiplied by any number is 0.
So either $x + 9 = 0$
or $x - 3 = 0$.

Check by substitution:
$x = -9$
$(-9)^2 + (6 \times -9) = 27$
$81 - 54 = 27$ ✓
$x = 3$
$3^2 + (6 \times 3) = 27$
$9 + 18 = 27$ ✓

Subject: Maths Foundation 10CE	Term: 4	Topic: Perimeter, area and volume 2

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Circles



Area= πr^2
Circumference= πd

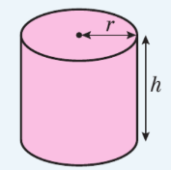
A circle has area 50 m². Find its radius, to the nearest cm.

$50 = \pi r^2$ — Substitute $A = 50$ into the area formula.

$\frac{50}{\pi} = r^2$ — Rearrange to make r^2 the subject.

$\sqrt{\frac{50}{\pi}} = r$ — Square root both sides to find r.

$r = 3.99\,\text{m} = 399\,\text{cm}$



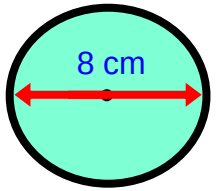
Calculate the circumference correct to 1 decimal place.

Circumference= πd

C=$\pi \times 8$

=25.13274123cm

=25.1cm (1dp)



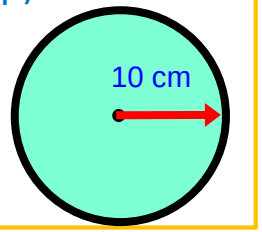
Calculate the area correct to 1 decimal place.

Area= πr^2

C=$\pi \times 10^2$

=314.1592654cm^2

=314.2cm^2 (1dp)



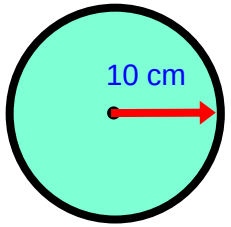
Volume of a cylinder= $\pi r^2 l$
Surface area of a cylinder= $\pi dh + 2\pi r^2$

Calculate the Volume Volume= $\pi r^2 l$

V=$\pi \times 10^2 \times 5$

=1570.796327cm^3

=1570.8cm^3 (1dp)

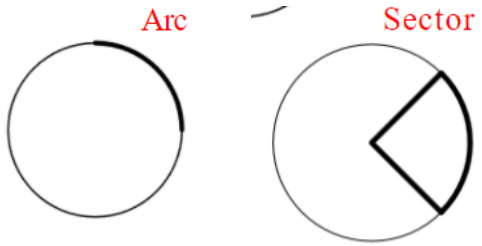


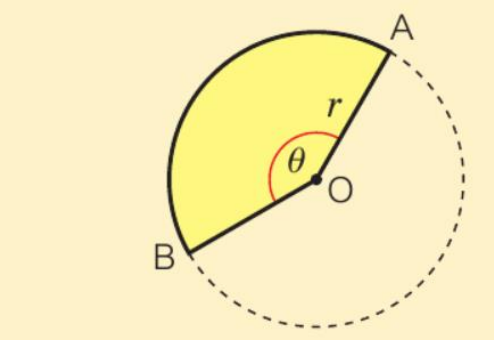
Subject: Maths Foundation 10CE	Term: 4	Topic: Perimeter, area and volume 2

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Arcs and sectors

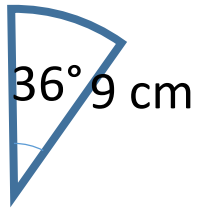




Area of sector $= \frac{\theta}{360} \times \pi r^2$

Length of arc $= \frac{\theta}{360} \times 2\pi r$

Example area of a sector

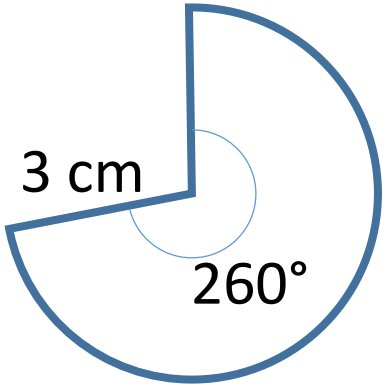


$\frac{36}{360} \times \pi \times 9^2$

$= 8.1\pi$ cm

$= 25.4$ cm^2

Example length of an arc



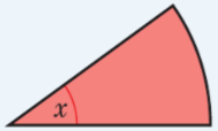
$\frac{13}{6}\pi$ cm

$= 6.81$ cm

For a sector with angle $x°$ of a circle with radius r

Arc length $= \frac{x}{360} \times 2\pi r$

Area of sector $= \frac{x}{360} \times \pi r^2$



Communication hint
An **arc** is part of a circle.

Example 4

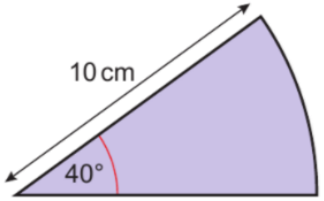
Work out

a the arc length

b the perimeter

c the area of this sector.

Give your answers to 3 s.f.



a Arc length $= \frac{x}{360} \times 2\pi r$

$= \frac{40}{360} \times 2 \times \pi \times 10$ — Write the formula, substitute the angle x and radius.

$= 6.98$ cm (3 s.f.)

b Perimeter $= 6.98 + 10 + 10$ — Perimeter = arc length + 2 radii

$= 27.0$ cm (3 s.f.)

c Area $= \frac{x}{360} \times \pi r^2$

$= \frac{40}{360} \times \pi \times 100$ — Write the formula, substitute the angle x and radius.

$= 34.9$ cm^2 (3 s.f.)

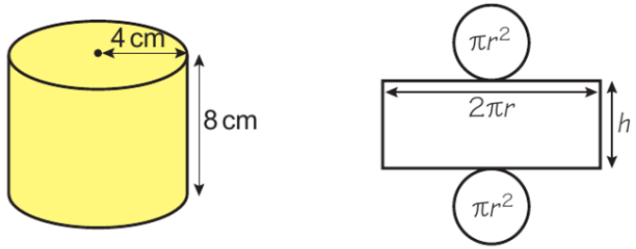
Subject: Maths Foundation 10CE	Term: 4	Topic: Perimeter, area and volume 2

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Spheres, Pyramids and cones

Calculate the total surface area of this cylinder. Give your answer to 1 d.p.



Sketch a net.
Each circle has area πr^2.
The length of the rectangle is the circumference of the circle, $2\pi r$.
The width of the rectangle is the height of the cylinder, h.

Area of each circle $= \pi \times 4^2 = 16\pi$

Area of rectangle $= 2\pi rh = 2 \times \pi \times 4 \times 8 = 64\pi$

Surface area $= 2 \times 16\pi + 64\pi$

$= 32\pi + 64\pi$

$= 96\pi$

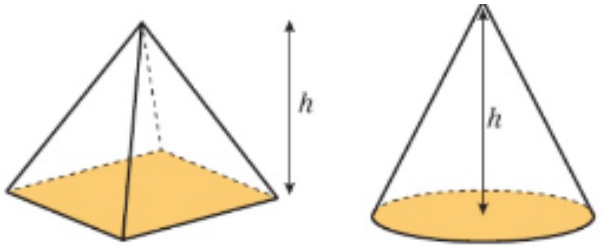
$= 301.6\,\text{cm}^2$

Two circles plus rectangle.

Volume of pyramid $= \frac{1}{3}$ area of base × vertical height

Volume of cone $= \frac{1}{3}$ area of base × vertical height

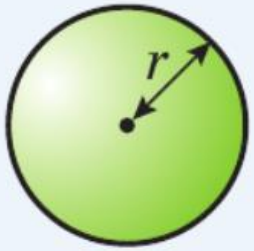
$= \frac{1}{3}\pi r^2 h$



For a sphere of radius r

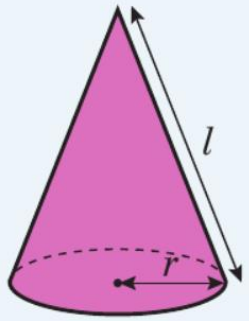
Surface area $= 4\pi r^2$

Volume $= \frac{4}{3}\pi r^3$



Curved surface area of a cone $= \pi rl$, where r is the radius and l is the slant height.

Total surface area of a cone $= \pi rl + \pi r^2$



Subject: Science	Term: 4

Forces in balance

Week 1

WOOTTON PARK

Contact and Non-Contact Forces

Forces either **push** or **pull** on an object. This is as a result of its interaction with another object.

Forces are categorised into two groups:

Contact forces – the objects are touching e.g. friction, air resistance, tension and contact force.

Non-contact forces – the objects are not touching e.g. gravitational, electrostatic and magnetic forces.

Forces are calculated by the equation: **force (N) = mass (kg) × acceleration (m/s²)**

Forces are another example of a **vector quantity** and so they can also be represented by an **arrow**.

Resultant Forces

A **resultant force** is a single force which replaces several other forces. It has the same effect acting on the object as the combination of the other forces it has replaced.

The forces acting on this object are represented in a **free body** diagram.
The arrows are relative to the magnitude and direction of the force.

The car is being pushed to the left by a force of 30N. It is also being pushed to the right by a force of 50N.

The **resultant force is 50N – 30N = 20N**

The 20N resultant force is pushing to the right, **so the car will move right.**

When two objects interact, the forces acting on one another are always equal and opposite.

For example, when a book is laid on the table, it experiences a reaction force from the table. The table pushes up on the book. The book also pushes down on the table. These two forces are equal and opposite.

Scalar and Vector Quantities

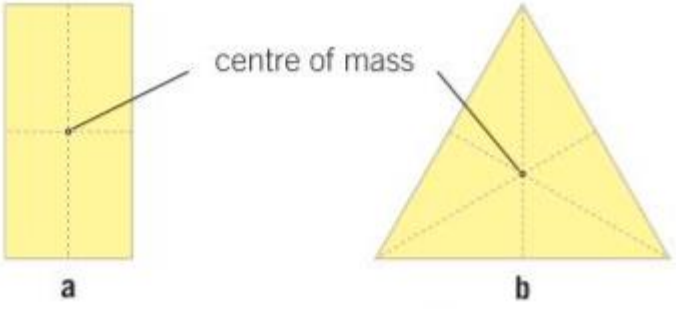
A **scalar** quantity has **magnitude** only. Examples include temperature or mass.

A **vector** quantity has both **magnitude** and **direction**. Examples include velocity.

Speed is the scalar magnitude of **velocity**.

A vector quantity can be shown using an **arrow**. The size of the arrow is relative to the magnitude of the quantity and the direction shows the associated direction.

- The centre of mass of an object is the point where its mass can be thought of as being concentrated.
- The centre of mass of a uniform ruler is at its midpoint.
- When an object is freely suspended, it comes to rest with its centre of mass directly underneath the point of suspension.
- The centre of mass of a symmetrical object is along the axis of symmetry.



Subject: Science	Term: 4

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 2

Motion

Forces and Motion: Distance vs Displacement

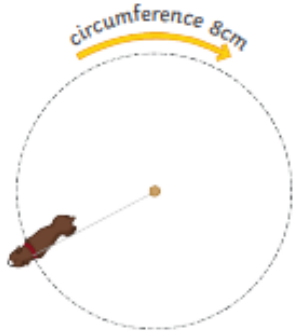
Distance is a **scalar** quantity. It measures how far something has moved and does not have any associated direction.

Displacement is a **vector** quantity. It measures how far something has moved and is measured in relation to the direction of a straight line between the starting and end points.

E.g. A dog is tethered to a post. It runs 360° around the post three times. Each 360° lap is 8m

distance = 8 × 3 = 24m

displacement = 0m (The dog is in the same position as when it started.)



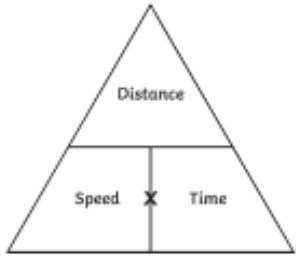
Speed

You should be able to recall the typical speed of different transportation methods.

Activity	Typical Value
walking	1.5m/s
running	3m/s
cycling	6m/s
driving a car	25mph (40km/h)
train travel	60mph (95km/h)
aeroplane travel	550mph (885km/h)
speed of sound	*330m/s*

These values are average only. The speed of a moving object is rarely constant and always fluctuating.

speed = distance ÷ time



You should be able to use this equation and rearrange it to find the distance or time.

Worked example:

John runs 5km. It takes him 25 minutes. Find his average speed in metres per second.

Step 1: convert the units

km → m (×1000) = 5000m

min → s (×60) = 1500s

Step 2: calculate s = d ÷ t

s = 5000 ÷ 1500

s = 3.33m/s

Worked example 2:

Zi Xin has driven along the motorway. Her average speed is 65mph. She has travelled 15 miles. How long has her journey taken? Give your answer in minutes.

Step 1: calculate t = d ÷ s

t = 15 ÷ 65

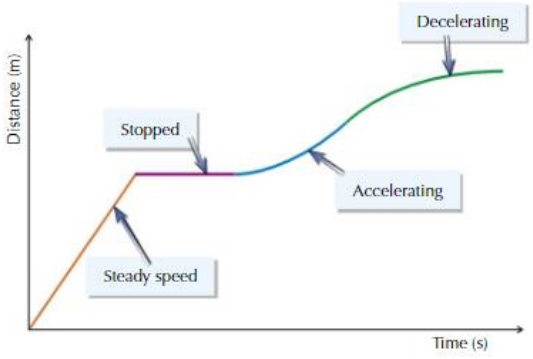
t = 0.23 (hours)

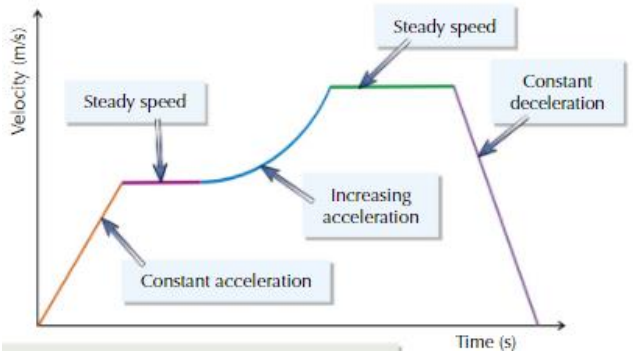
Step 2: convert units

hr → min (×60) = 13.8 minutes

Week 3

Motion





Graph Feature	Distance-Time Graph	Velocity-Time Graph
x-axis	time	time
y-axis	distance	velocity
gradient	speed	acceleration (or deceleration)
plateau	stationary (stopped)	constant speed
uphill straight line	steady speed moving away from start point	acceleration
downhill straight line	steady speed returning to the start point	deceleration
uphill curve	acceleration	increasing acceleration
downhill curve	deceleration	increasing deceleration
area below graph		distance travelled

Velocity is speed in a given direction.

Acceleration is how quickly you're speeding up.

$$a = \frac{\Delta v}{t}$$

$$acceleration = \frac{change\ in\ velocity}{time\ taken}$$

Subject: Science	Term: 4

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 4

Motion

Braking Distance

The **braking distance** is the distance travelled by a vehicle once the **brakes are applied** and until it reaches a full stop.

Braking distance is affected by:

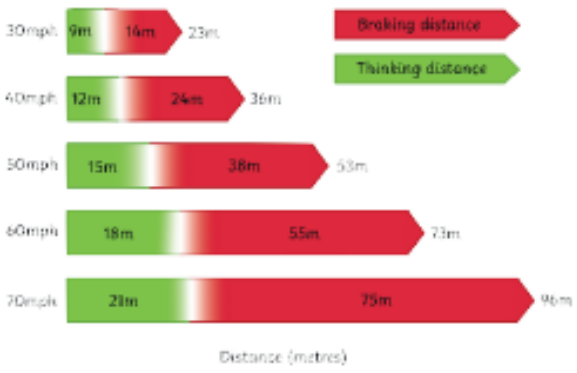
- **adverse weather conditions** (wet or icy)
- **poor vehicle condition** (brakes or tyres)

When **force** is applied to the brakes, **work is done** by the **friction** between the car wheels and the brakes.

The work done reduces the **kinetic energy** and it is transferred as **heat** energy, increasing the **temperature** of the brakes.

increased speed = increased force required to stop the vehicle

increased braking force = increased deceleration



Large decelerations can cause a huge increase in **temperature** and may lead to the **brakes overheating** and the driver **losing control** over the vehicle

Stopping Distance

The **stopping distance** of a vehicle is calculated by:

stopping distance = thinking distance + braking distance

Reaction time is the time taken for the driver to respond to a hazard. It varies from 0.2s to 0.9s between most people.

Reaction time is affected by:

- **tiredness**
- **drugs**
- **alcohol**
- **distractions**

You can measure human reaction time in the lab using simple equipment: a metre ruler and stopwatch can be used to see how quickly a person reacts and catches the metre ruler. The data collected is quantitative and you should collect repeat readings and calculate an average result.

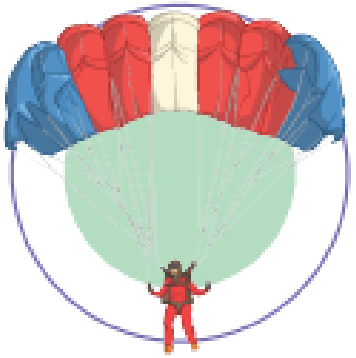
Week 5

Forces in motion

- The greater the resultant force on an object, the greater the object's acceleration.
- The greater the mass of an object, the smaller its acceleration for a given force.
- The resultant force acting on an object is $F = m\,a$

- Friction and air resistance oppose the driving force of a vehicle.
- The stopping distance of a vehicle depends on the thinking distance and the braking distance.
- High speed, poor weather conditions, and poor vehicle maintenance all increase the braking distance. Poor reaction time (due to tiredness, alcohol, drugs, or using a mobile phone) and high speed both increase the thinking distance.
- $F = ma$ gives the braking force of a vehicle.

- The weight of an object is the force acting on the object due to gravity. Its mass is the quantity of matter in the object.
- An object acted on only by gravity accelerates at about $10\,m/s^2$.
- The terminal velocity of an object is the velocity it eventually reaches when it is falling. The weight of the object is then equal to the frictional force on the object.
- When an object is moving at terminal velocity, the resultant force on it is zero.



Subject: Science	Term: 4

Forces in motion

Week 6

WOOTTON PARK

Work Done: Elastic Objects

Work is done on elastic objects to **stretch** or compress them.

To calculate the work done (**elastic potential energy** transferred), use this equation:

E (J) = 0.5 × k × e^2

(elastic potential energy = 0.5 × spring constant × extension^2)

You might need to use this equation also: F = k × e

Worked example:

A bungee jumper jumps from a bridge with a weight of 800N. The elastic cord is stretched by 25m. Calculate the work done.

Step 1: find the spring constant using F = k × e

Rearrange to k = F ÷ e

800 ÷ 25 = 32N/m

Step 2: use the value for k to find the elastic potential energy (work done) using E (J) = 0.5 × k × e^2

0.5 × 32 × 25^2

E = 10 000J

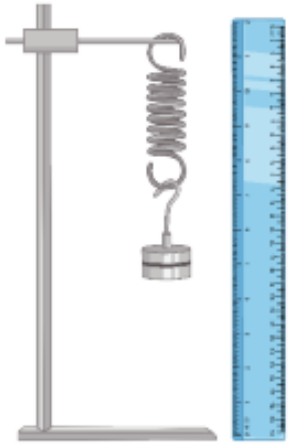
Required Practical Investigation Activity 6: Investigate the Relationship Between Force and Extension for a Spring

F = k × e

force applied (N) = spring constant (N/m) × extension (m)

You should be familiar with the equation above and the required practical shown to the right.

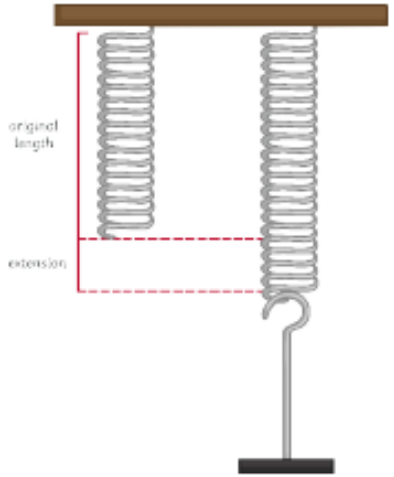
The spring constant is a value which describes the elasticity of a material. It is specific to each material. You can carry out a practical investigation and use your results to find the spring constant of a material.



1. Set up the equipment as shown.
2. Measure the original length of the elastic object, e.g. a spring, and record this.
3. Attach a mass hanger (remember the hanger itself has a weight). Record the new length of the spring.
4. Continue to add masses to the hanger in regular intervals and record the length each time.

Once you have your results, you can find the extension for each mass using this formula: **spring length – original length**

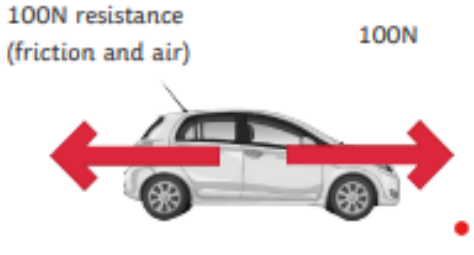
The data collected is continuous so you would plot a **line graph** using the x-axis for extension (m) and the y-axis for force (N). As a result of Hooke's Law, you should have a **linear graph**. The **gradient of the graph is equal to the spring constant**. You can calculate it by rearranging the formula above or by calculating the gradient from your graph.



Newton's Laws of Motion: Newton's First Law

If the resultant force acting on an object is zero...

- a stationary object will remain stationary.
- a moving object will continue at a steady speed and in the same direction.



Newton's Laws of Motion: Newton's Second Law

The acceleration of an object is proportional to the resultant force acting on it and inversely proportional to the mass of the object

resultant force (N) = mass (kg) × acceleration (m/s^2)

Inertial mass – how difficult it is to change an objects velocity. It is defined as the ratio of force over acceleration.

Newton's Laws of Motion: Newton's Third Law

When two objects interact, the forces acting on one another are always equal and opposite.

For example, when a book is laid on the table, it experiences a reaction force from the table. The table pushes up on the book. The book also pushes down on the table. These two forces are equal and opposite.

Subject: Science	Term: 4

Forces in balance

Week 1

WOOTTON PARK

Contact and Non-Contact Forces

Forces either **push** or **pull** on an object. This is as a result of its interaction with another object.

Forces are categorised into two groups:

Contact forces – the objects are touching e.g. friction, air resistance, tension and contact force.

Non-contact forces – the objects are not touching e.g. gravitational, electrostatic and magnetic forces.

Forces are calculated by the equation: **force (N) = mass (kg) × acceleration (m/s²)**

Forces are another example of a **vector quantity** and so they can also be represented by an **arrow**.

Resultant Forces

A **resultant force** is a single force which replaces several other forces. It has the same effect acting on the object as the combination of the other forces it has replaced.

The forces acting on this object are represented in a **free body** diagram.
The arrows are relative to the magnitude and direction of the force.

The car is being pushed to the left by a force of 30N. It is also being pushed to the right by a force of 50N.

The **resultant force is 50N – 30N = 20N**

The 20N resultant force is pushing to the right, **so the car will move right.**

When two objects interact, the forces acting on one another are always equal and opposite.

For example, when a book is laid on the table, it experiences a reaction force from the table. The table pushes up on the book. The book also pushes down on the table. These two forces are equal and opposite.

Scalar and Vector Quantities

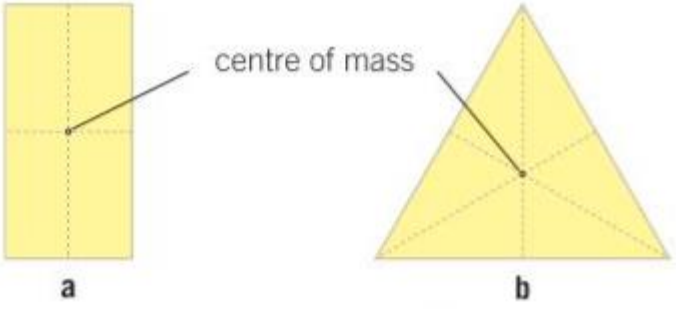
A **scalar** quantity has **magnitude** only. Examples include temperature or mass.

A **vector** quantity has both **magnitude** and **direction**. Examples include velocity.

Speed is the scalar magnitude of **velocity**.

A vector quantity can be shown using an **arrow**. The size of the arrow is relative to the magnitude of the quantity and the direction shows the associated direction.

- The centre of mass of an object is the point where its mass can be thought of as being concentrated.
- The centre of mass of a uniform ruler is at its midpoint.
- When an object is freely suspended, it comes to rest with its centre of mass directly underneath the point of suspension.
- The centre of mass of a symmetrical object is along the axis of symmetry.



Subject: Science	Term: 4

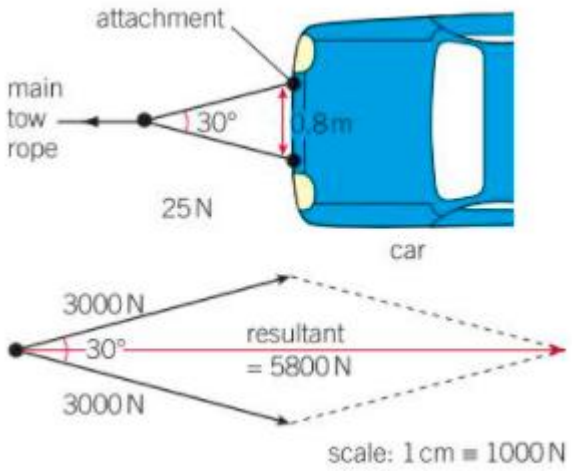
WOOTTON PARK

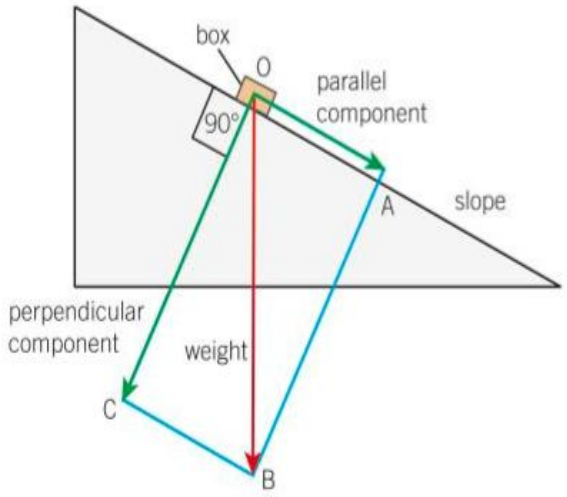
'Ipsum quod faciendum est diutius durant'

Week 2

Forces in balance

- The parallelogram of forces is a scale diagram of two force vectors.
- The parallelogram of forces is used to find the resultant of two forces that do not act along the same line.
- You will need a protractor, a ruler, a sharp pencil, and a blank sheet of paper.
- The resultant is the diagonal of the parallelogram that starts at the origin of the two forces.

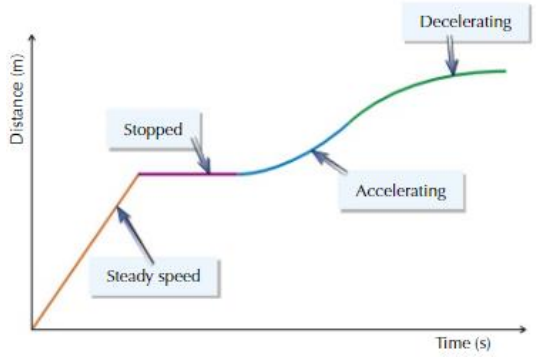


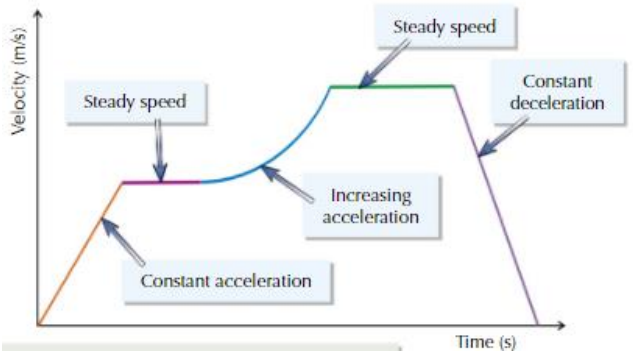


- Resolving a force means finding perpendicular components that have a resultant force that is equal to the force.
- To resolve a force in two perpendicular directions, draw a rectangle with adjacent sides along the two directions so that the diagonal represents the force vector.
- For an object in equilibrium, the resultant force is zero.
- An object at rest is in equilibrium because the resultant force on it is zero.

Week 3

Motion





Graph Feature	Distance-Time Graph	Velocity-Time Graph
x-axis	time	time
y-axis	distance	velocity
gradient	speed	acceleration (or deceleration)
plateau	stationary (stopped)	constant speed
uphill straight line	steady speed moving away from start point	acceleration
downhill straight line	steady speed returning to the start point	deceleration
uphill curve	acceleration	increasing acceleration
downhill curve	deceleration	increasing deceleration
area below graph		distance travelled

Velocity is speed in a given direction.

Acceleration is how quickly you're speeding up.

$$a = \frac{\Delta v}{t}$$

$$acceleration = \frac{change\ in\ velocity}{time\ taken}$$

Subject: Science	Term: 4

WOOTTON PARK

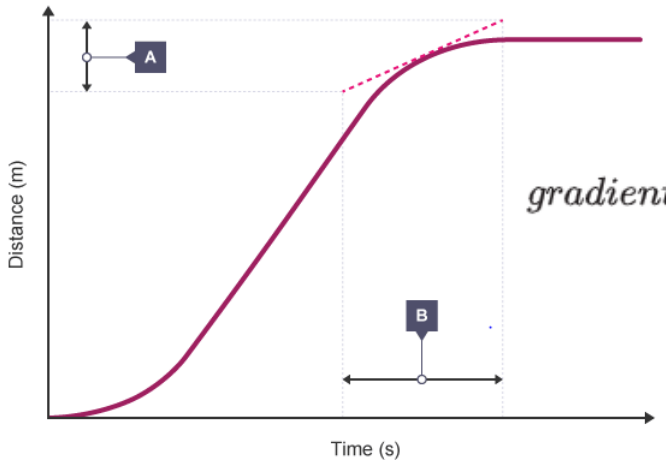
'Ipsum quod faciendum est diutius durant'

Week 4

Motion

If an object is accelerating or decelerating, its speed can be calculated at any particular time by:

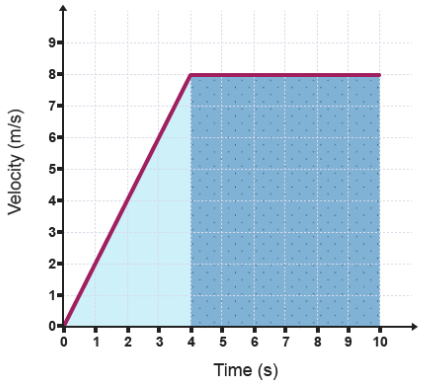
- drawing a **tangent** to the curve at that time
- measuring the gradient of the tangent



$$gradient = \frac{vertical\ change(A)}{horizontal\ change(B)}$$

The displacement of an object can be calculated from the area under a velocity –time graph

Calculate the total displacement of the object, whose motion is represented by the velocity-time graph below.



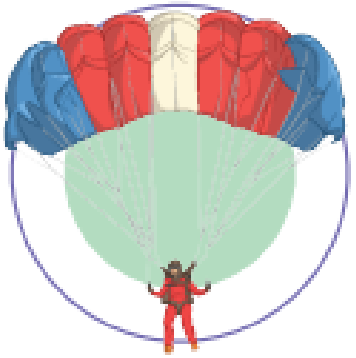
Week 5

Forces in motion

- The greater the resultant force on an object, the greater the object's acceleration.
- The greater the mass of an object, the smaller its acceleration for a given force.
- The resultant force acting on an object is $F = m\,a$
- (H) The inertia of an object is its tendency to stay at rest or in uniform motion.

- The weight of an object is the force acting on the object due to gravity. Its mass is the quantity of matter in the object.
- An object acted on only by gravity accelerates at about 10 m/s^2.
- The terminal velocity of an object is the velocity it eventually reaches when it is falling. The weight of the object is then equal to the frictional force on the object.
- When an object is moving at terminal velocity, the resultant force on it is zero.

- Friction and air resistance oppose the driving force of a vehicle.
- The stopping distance of a vehicle depends on the thinking distance and the braking distance.
- High speed, poor weather conditions, and poor vehicle maintenance all increase the braking distance. Poor reaction time (due to tiredness, alcohol, drugs, or using a mobile phone) and high speed both increase the thinking distance.
- $F = ma$ gives the braking force of a vehicle.



Subject: Science	Term: 4

Forces in motion

Week 6

WOOTTON PARK

Work Done: Elastic Objects

Work is done on elastic objects to **stretch** or compress them.

To calculate the work done (**elastic potential energy** transferred), use this equation:

E (J) = 0.5 × k × e^2

(elastic potential energy = 0.5 × spring constant × extension^2)

You might need to use this equation also: F = k × e

Worked example:

A bungee jumper jumps from a bridge with a weight of 800N. The elastic cord is stretched by 25m. Calculate the work done.

Step 1: find the spring constant using F = k × e

Rearrange to k = F ÷ e

800 ÷ 25 = 32N/m

Step 2: use the value for k to find the elastic potential energy (work done) using E (J) = 0.5 × k × e^2

0.5 × 32 × 25^2

E = 10 000J

Required Practical Investigation Activity 6: Investigate the Relationship Between Force and Extension for a Spring

F = k × e

force applied (N) = spring constant (N/m) × extension (m)

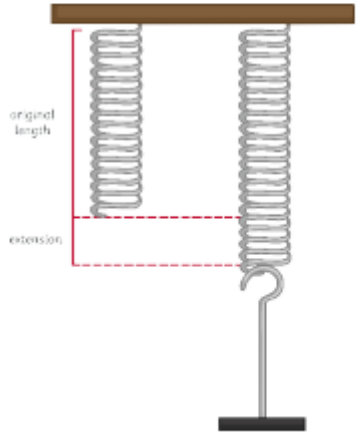
You should be familiar with the equation above and the required practical shown to the right.

The spring constant is a value which describes the elasticity of a material. It is specific to each material. You can carry out a practical investigation and use your results to find the spring constant of a material.

1. Set up the equipment as shown.
2. Measure the original length of the elastic object, e.g. a spring, and record this.
3. Attach a mass hanger (remember the hanger itself has a weight). Record the new length of the spring.
4. Continue to add masses to the hanger in regular intervals and record the length each time.

Once you have your results, you can find the extension for each mass using this formula: **spring length – original length**

The data collected is continuous so you would plot a **line graph** using the x-axis for extension (m) and the y-axis for force (N). As a result of Hooke's Law, you should have a **linear graph**. The **gradient of the graph is equal to the spring constant**. You can calculate it by rearranging the formula above or by calculating the gradient from your graph.



Momentum

momentum (N) = mass (kg) × velocity (m/s)

The law of conservation of mass (in a closed system) states that the total momentum **before** an event is equal to the total momentum **after** an event.

Worked example:

Calculate the momentum of a 85kg cyclist travelling at 7m/s.

p = m × v

p = 85kg × 7m/s

p = 595kg m/s

Subject: Physics	Term: 4	Topic: Force and motion

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 1

Force and acceleration

Force (N) = mass (kg) x acceleration (m/s^2)

Newton's second law of motion states that the acceleration of an object is;

- Proportional to the resultant force on the object
- Inversely proportional to the mass of the object

A resultant force is needed to change the velocity of an object. The tendency of an object to stay at rest or to continue in uniform motion (i.e. moving at a constant velocity) is called its **inertia**. The inertial mass of an object is a measure of the difficulty of changing the object's velocity.

Inertial mass can be defined as $\frac{force}{acceleration^2}$

Weight and terminal velocity

The **weight** of an object is the force acting on it due to gravity, measured in Newton's (N)

The **mass** of an object depends on the quantity f matter in it. Mass is measured in kilograms, kg.

The gravitational force on a 1 kg object is the **gravitational field strength**, on Earth this is 9.8 N/kg.

Weight, N = mass, kg x gravitational field strength, N/kg

Terminal velocity is when a falling object reaches a constant velocity when the frictional velocity is equal and opposite to its weight. The resultant force is zero and so its acceleration is zero.

Week 2

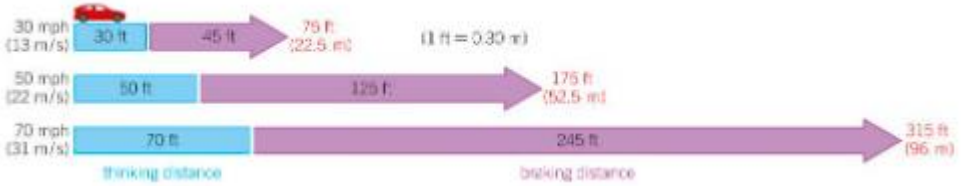
Forces and braking

A **stopping distance** is the shortest distance a vehicle can safely stop in, and is in two parts, the **thinking distance** and the **braking distance**.

Stopping distance = thinking distance + braking distance

Both of these factors can be affected by things such as;

- Drugs and alcohol
- The speed at which the vehicle travels
- Adverse road conditions
- Poorly maintained vehicles.



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Subject: Physics	Term: 4	Topic: Forces in motion

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 3

Momentum

Momentum has size and direction and is a vector quantity.

Momentum (kg m/s) = mass (kg) x velocity (m/s)

When two objects collide the momentum of both objects changes:

- If the two objects has the same mass the velocity is halved by the impact. The combined mass after the collision is twice the moving mass before the collision. So the momentum after the collision is the same as the momentum before the collision
- If one object has double the mass of a second upon impact, the velocity of the smaller trolley is reduced to one-third. The combined mass after the collision is three times the initial mass. So the momentum after the collision is the same as the momentum before the collision.

This is an example of **conservation of momentum:**

In a closed system, the total momentum before an event is equal to the total momentum after the event.

Using conservation of momentum

(mass of A x velocity of A) = -(mass of B x velocity B)

Worked example

A 0.5 kg trolley **A** is pushed at a velocity of 1.2 m/s into a stationary trolley **B** of mass 1.5 kg as shown in Figure 2. The two trolleys stick to each other after the impact. Calculate:

a the momentum of the 0.5 kg trolley before the collision

b the velocity of the two trolleys straight after the impact.

Solution

a Momentum = mass × velocity = 0.5 kg × 1.2 m/s = **0.6 kg m/s**

b The momentum after the impact = the momentum before the impact = 0.6 kg m/s

(1.5 kg + 0.5 kg) × velocity after the impact = 0.6 kg m/s

the velocity after the impact = $\frac{0.6\text{ kg m/s}}{2\text{ kg}}$ = **0.3 m/s**

Worked example

An artillery gun of mass 2000 kg fires a shell of mass 20 kg at a velocity of 120 m/s. Calculate the recoil velocity of the gun.

Solution

Applying the conservation of momentum gives:

mass of gun × recoil velocity of gun = –(mass of shell × velocity of shell)

If you let V represent the recoil velocity of the gun:

2000 kg × V = –(20 kg × 120 m/s)

$V = -\frac{2400\text{ kg m/s}}{2000\text{ kg}}$ = **–1.2 m/s**

Week 4

Impact forces

The longer the impact time, the more the impact force is reduced.

If we know the impact time, we can calculate the impact force as follows. We know;

$$Accerleration = \frac{(final\ velocity\ - initial\ velocity)}{time\ taken} = \frac{change\ in\ velocity}{time\ taken}$$

We also know;

$$force = mass\ \times accleration$$

Because mass x change of velocity = change in momentum, then;

$$Force = \frac{mass\ \times change\ in\ velocity}{time\ taken}$$

Worked example

A bullet of mass 0.004 kg moving at a velocity of 90 m/s is stopped by a bulletproof vest in 0.0003 s.

Calculate **a** the deceleration of the bullet, **b** the change of momentum, and **c** the impact force.

Solution

a Initial velocity of bullet = 90 m/s Final velocity of bullet = 0

Change of velocity = final velocity – initial velocity = 0 – 90 m/s = –90 m/s

(the minus sign tells you that the change of velocity is a decrease)

Acceleration = $\frac{\text{change of velocity}}{\text{impact time}} = \frac{-90\text{ m/s}}{0.0003\text{ s}}$ = **–300 000 m/s²**

The deceleration is therefore **300 000 m/s²**

b Change of momentum = mass × change of velocity = 0.004 kg × (0 – 90 m/s) = **–0.36 kg m/s**

c Force = $\frac{\text{change of momentum}}{\text{time taken}} = \frac{-0.36\text{ kg m/s}}{0.0003\text{ s}}$ = **–1200 N**

(the minus sign tells you that the force decelerates the bullet)

Subject: Physics	Term: 4	Topic: Forces in motion

WOOTTON PARK

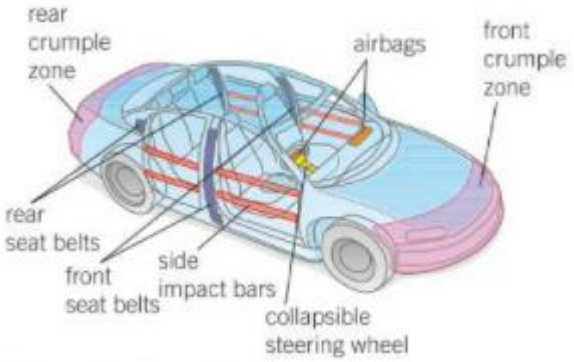
'Ipsum quod faciendum est diutius durant'

Week 5

Safety first

Car safety features include Seat belts, airbags, crumple zones. Increasing the contact time for an impact will reduce the force on the passengers

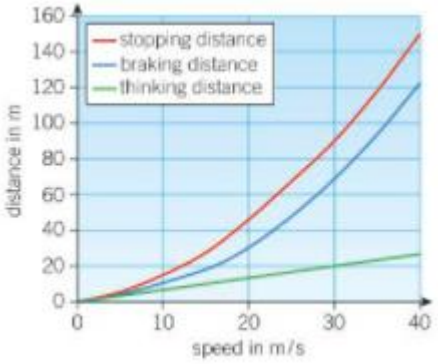
The **time taken to stop someone in a car is longer if they are wearing a seat belt** than if they are not. So the decelerating force is reduced.



Thinking distance is proportional to speed
Braking distance is proportional to the speed squared

Stopping distance – thinking distance + braking distance

Speed (m/s)	10	20	30
Thinking distance (m)	7	14	21
Braking distance (m)	8	32	74
Stopping distance (m)	15	56	96



Week 6

Forces and elasticity

An object is elastic if it returns to its original shape when the forces deforming it are removed.

Extension is the increase in length from its original length.

Extension= length at the stage – original length

Hooke's Law states t**he extension of a spring is directly proportional to the force supplied, as long as its limit of proportionality is not exceeded.**

Hooke's Law can be written as:

Force applied (N) = spring constant (N/m) x extension (m)

The spring constant is equal to the force per unit extension needed to extend the spring, assuming that its limit of proportionality is not reached. The stiffer the spring, the greater the constant.

Stretch tests

You can investigate how easily a material or a spring stretches by hanging weights from it (Figure 1).

- The spring to be tested is clamped at its upper end. An empty weight hanger is attached to the spring to keep it straight.
- The length of the spring is measured using a metre ruler. This is its original length.
- The weight hung from the spring is increased by adding weights one at a time. The spring stretches each time more weight is hung from it.
- The length of the spring is measured each time a weight is added. The spring should be measured from the same points each time to ensure accurate results. The total weight added and the total length of the spring are recorded in a table.

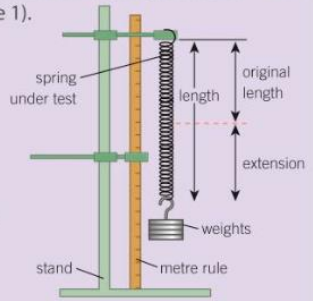


Figure 1 *Investigating stretching*

Safety: Clamp the stand to the bench and take care with falling weights. Wear eye protection.

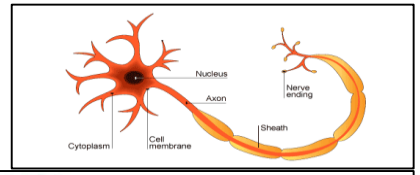
Subject: Biology	Term: 4	Topic: Homeostasis

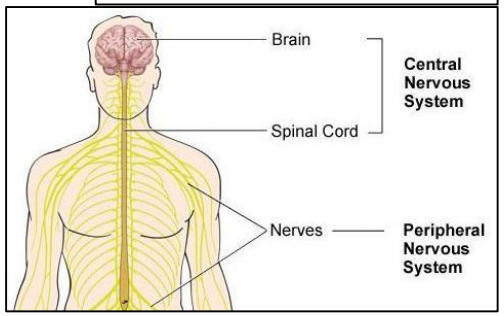
WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 1

Structure and function of the nervous system

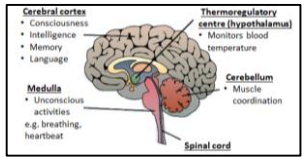
The nervous system uses electrical impulses to enable you to react quickly to your surroundings and coordinate behaviour.
Stimuli (changes in the environment) are detected by cells called receptors.
Impulses from the receptors pass along sensory neurones to the central nervous system.
The central nervous system (CNS) is made up of the brain and spinal cord.
The brain coordinates the response and impulses are sent along motor neurones from the brain to effector organs.





The brain

The brain is made up of billions of interconnected neurones that control complex behaviour.
It has different regions which each have different functions.
Scientists map regions of the brain to their functions by studying patients with brain damage by electrically stimulating different areas of the brain and using MRI scanning techniques.



The eye

The eye is a sense organ containing **photoreceptors** in the **retina** that are sensitive to light intensity and colour.
The tough outer **sclera** has a transparent region at the front called the **cornea** that lets light in and refracts light towards the retina.
The muscular **iris** controls the size of the pupil and the amount of light entering the eye.
The **ciliary muscles** and **suspensory ligaments** change the shape of the **lens** to fine focus light on the retina.
The **optic nerve** carries impulses to the brain.

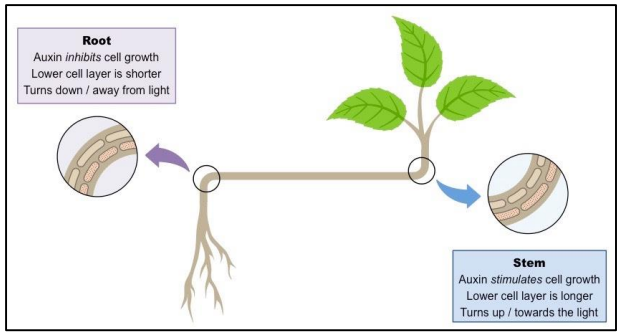
Week 2

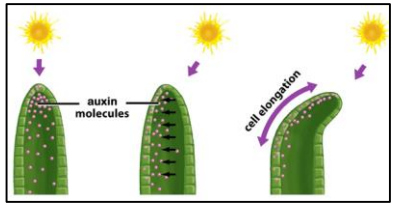
Plant hormones

Plants are sensitive to light (phototropism) and gravity (gravitropism).
Plant responses to light and gravity are brought about by the plant hormone auxin.

The responses of roots and shoots to stimuli of light and gravity are the result of the unequal distribution of auxin.

Shoots grow towards the light against the force of gravity.
Roots grow in the direction of the force of gravity





Using plant hormones

Auxins are used as weed killers (it sends the weeds into uncontrolled growth eventually killing them), rooting powders (as the hormone stimulates the root growth) and in tissue culture (stimulates growth and cell division).

Ethene is used to control fruit ripening. Growers harvest fruit when it is not ripe so it can be transported without getting damaged. By adding ethene and increasing the temperature the fruit will ripen to the perfect stage for sale.

Gibberellins can be used to increase fruit size, end seed dormancy in the brewing industry and promote flowering/increase the yield of sugar cane.

Subject: Biology	Term: 4	Topic: Homeostasis

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 3

The eye

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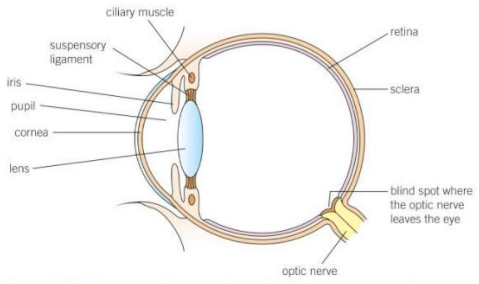


Common eye problems

Hyperopia (long sighted) – Light focuses beyond the retina due to a short eye ball or a flat lens
Myopia (short sighted) – Light focuses in front of the retina due to a curved lens or a long eyeball.
Laser eye surgery can be used to thin the cornea or correct the curve of the lens.
Replacement lenses can also be used.
Contact lenses can be used to correct the lens.

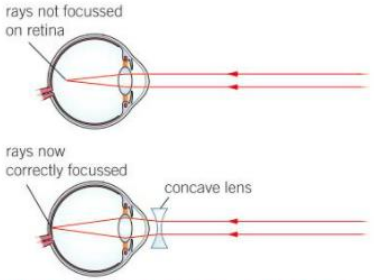
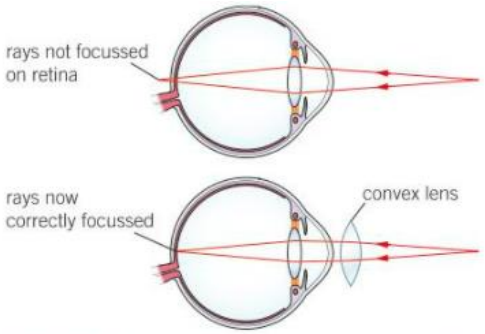


Figure 2 *The eyes of short-sighted people focus light from distant objects in front of the retina, making the objects difficult to see clearly. A simple concave lens can make all the difference*



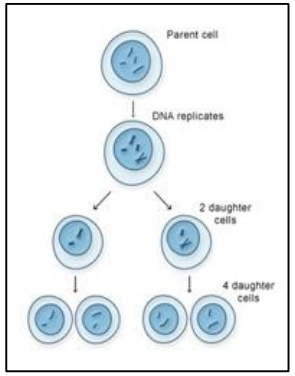
Week 4

Sexual and asexual reproduction

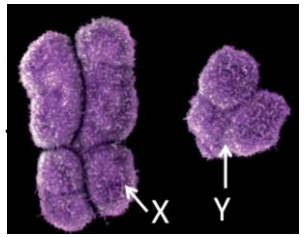
	Sexual	Asexual
Description	Fusion of male and female gametes. Variation in offspring.	Genetically identical clones of one parent.
Advantages	Allows evolution by generating variation.	Much quicker and uses less energy.
Disadvantages	Needs a partner, wastes energy, slower.	No variation, population is vulnerable to change/disease.
Example	Mammals.	Bacteria.

Meiosis

- In meiosis you create sex cells (**gametes**) that only have **HALF** of the number of chromosomes. **HAPLOID gametes** have **23 chromosomes** not 23 pairs.
- They are involved in **sexual reproduction**.
- All gametes are **genetically different** from each other.
- Gametes join at **fertilisation** to restore the normal number of chromosomes. The new cell then divides by **mitosis**.



Sex determination



Human body cells contain **23 pairs** of chromosomes.

22 pairs control characteristics only. The **23rd pair** carries the genes that **determine sex**.

In females the sex chromosomes are the same **(XX)**; in males the chromosomes are different **(XY)**.

Subject: Biology	Term: 4	Topic: Homeostasis

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 4

DNA

DNA is a polymer made up of two strands forming a **double helix**.

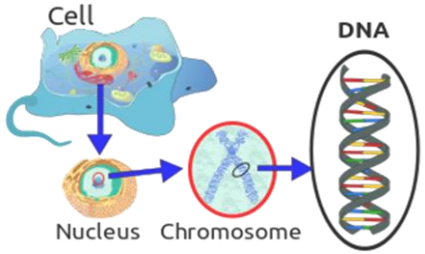
DNA is found in **chromosomes**.

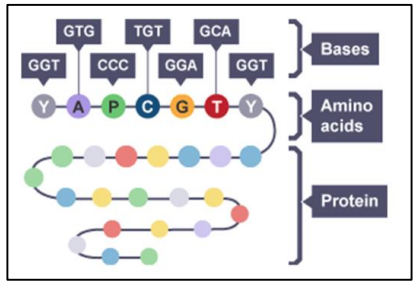
A **gene** is a small section of DNA.

Each gene codes for a sequence of **amino acids** to form a particular **protein**.

The **genome** is all the genetic material of an organism.

The **human genome** has been studied and will be important for medicine in the future.





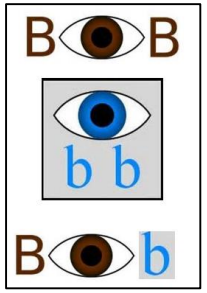
Genetic Inheritance

Some characteristics are controlled by a single gene. Each gene may have different forms called **alleles**.

The genes present, or **genotype**, operate at a molecular level to develop characteristics that are expressed as a **phenotype**.

A **dominant allele** is expressed if only present on one chromosome.
A **recessive allele** is only expressed if present on both chromosomes.

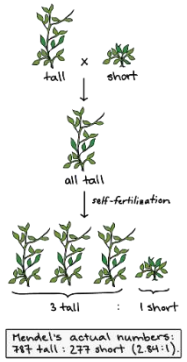
If the two alleles present are the same the person is **homozygous** for that trait, but if the alleles are different they are **heterozygous**.



Week 6

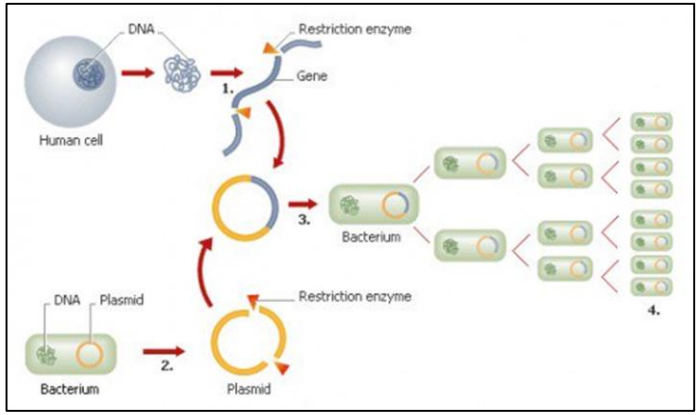
Genetic engineering

In the **mid-19th century** Gregor Mendel carried out breeding experiments using plants. He proposed the idea of separately inherited factors that we now call genes. In the **late 19th century** behaviour of chromosomes during cell division was observed. In the **early 20th century** it was observed that chromosomes and Mendel's factors behaved in similar ways, leading to the idea that the factors (genes) were located on chromosomes. In the **mid-20th century** the structure of DNA was determined and the mechanism of gene function worked out.



Genetic engineering

Genetic engineering involves **modifying the genome** of an organism to introduce a desired characteristic.
Genes can be **cut** from the chromosome of a human or other organism and **transferred** into the cells of other organisms.
Enzymes are used to cut the gene from a chromosome; gene is inserted into a **vector**, e.g. bacterial plasmid or virus; vector is used to insert gene into cell; cell then makes a new protein to produce the desired characteristic.



Concerns about GM crops, e.g. effect on populations of wild flowers and insects, and uncertainty about safety of eating them.

Subject: Chemistry	Term: 4	Topic: The rate and extent of chemical change

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 1&2

Rate of reaction

The rate of a chemical reactions tells you how fast reactants turn into products. Chemical reactions occur in the human body and are also very important in the chemical industry. But, how can we find out the rate of reactions?

There are two ways you can work out the rate of a chemical reaction. You can find out how quickly:

- The reactants are used up as quickly as they make products, or
- The products of the reaction are made

Here are 3 techniques you can use to collect this type of data in experiments:

1) Measuring the decreasing mass of a reaction mixture
2) Measuring the increasing volume of a gas given off
3) Measuring the decreasing light passing through a solution

Collision theory and surface area

Reactions can only take place when the particles (atoms, ions, or molecules) of reactants come together. The reacting particles do not only have to collide with each other, but they need to do so with enough energy for a reaction to take place. This is known as **Collision theory**.

The minimum amount of energy that particles must have before they can react is called the **activation energy**.

Reactions are more likely to happen between reactant particles if you:

- Increase the frequency of reacting particles colliding with each other
- Increase the energy they have when they collide

A larger surface area results in a quicker reaction because there is a larger surface for particles to collide with.

The effect of temperature

Collision theory tells you why raising the temperature increases the rate of reaction.

1. Particles collide more often
2. Particles collide with more energy

Week 3

The effect of concentration and pressure

Higher

Worked example

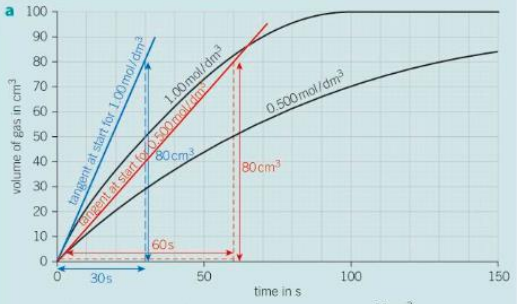
An investigation was carried out to find how the concentration of dilute hydrochloric acid affected the rate of its reaction with calcium metal. The volume of hydrogen gas given off was monitored over 150 seconds using a gas syringe. One test was carried out using 0.167 g of calcium with an excess of 1.00 mol/dm³ dilute hydrochloric acid, and this was repeated using the same volume of 0.500 mol/dm³ acid, also in excess. The results were plotted on a graph – see the two curves in the graph below.

a Use the results on the graph to find the initial rates of reaction, i.e. at the start when time = 0 seconds.

b Draw a conclusion from part **a**.

Solution

a

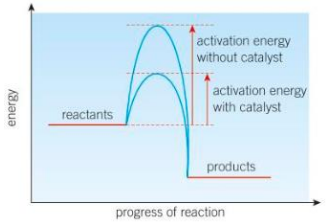


Initial rate for 1.00 mol/dm³ acid (gradient of tangent) at $t = 0$ s is: $\frac{80\,cm^3}{30\,s} = 2.67\,cm^3/s$

Initial rate for 0.500 mol/dm³ acid (gradient of tangent) at $t = 0$ s is: $\frac{80\,cm^3}{60\,s} = 1.33\,cm^3/s$

b The rate for 1.00 mol/dm³ dilute hydrochloric acid is twice the rate for the 0.500 mol/dm³ acid. So doubling the concentration doubles the rate of reaction. The rate is *directly proportional* to the concentration for this reaction. This could be because in any given volume of the acids, in the 1.00 mol/dm³ dilute hydrochloric acid there are twice as many $H^+(aq)$ ions as there are in the 0.500 mol/dm³ acid. This makes it twice as likely that collisions will occur between the acidic $H^+(aq)$ ions and the calcium. So in any given time there will be twice as many collisions, resulting in the reaction rate also doubling.

The effect of catalysts



Reversible reactions

In most chemical reactions, the reactants react completely to form the products. You show this by using an arrow pointing *from* the reactants *to* the products:

$$A + B \rightarrow C + D$$

However, in some reactions the products can react together to make the original reactants again. This is called **reversible reaction**.

A reversible reaction can go in both directions, so two 'half-arrows' are used in the equation. One arrow points in the forwards direction and one in the backwards direction:

$$A + B \rightleftharpoons C + D$$

Subject: Chemistry	Term: 4	Topic: The rate & extent of chemical change / Organic Chemistry

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 4&5

Dynamic equilibrium

Some reactions are reversible. The products formed can react together to make the original reactants again:

$$A + B \rightleftharpoons C + D$$

So what happens when you start with just the reactants in a reversible reaction in a **closed system**, in which no reactants or products can get in or out?

At equilibrium, the rate of the forward reaction equals the rate of the reverse reaction.

Altering conditions

We have seen how changing concentration can affect a reversible reaction at equilibrium . In general, the position of equilibrium shits as if trying to cancel out any change in conditions.
Think about increasing the concentration of a reactant. This will cause the position of equilibrium to shift to the right, in favour of the products, in order to reduce the concentration of that reactant.
By changing the pressure at which the reaction is carried out,
you can change the amount of products that are made:

If the forward reaction produces *more* molecules of gas …	If the forward reaction produces *fewer* molecules of gas …
… an increase in pressure decreases the amount of products formed.	… an increase in pressure increases the amount of products formed.
… a decrease in pressure increases the amount of products formed.	… a decrease in pressure decreases the amount of products formed.

By changing the temperature, you can plan to get more of the products and less of the reactants:

If the forward reaction is exothermic …	If the forward reaction is endothermic …
… an increase in temperature decreases the amount of products formed.	… an increase in temperature increases the amount of products formed.
… a decrease in temperature increases the amount of products formed.	… a decrease in temperature decreases the amount of products formed.

Week 6

Burning hydrocarbon fuels

Complete combustion is when a fuel is burnt in plenty of oxygen, as they burn hydrocarbons release a lot of energy to the surroundings. Complete combustion always leads to the production of carbon dioxide and water, the fuel is fully **oxidised**.

Propane + oxygen → Carbon dioxide + Water

In **incomplete combustion** there is not enough oxygen and so instead all of the carbon in the fuel turns into not only carbon dioxide, but also **carbon monoxide (CO)** is formed which is a very toxic gas.

Cracking hydrocarbons

Some hydrocarbon chains are so long that they are useless to us. So we can break them down into smaller more useful ones in a process called **cracking**.
Cracking takes place over a hot catalyst or mixed with steam and heated to a very high temperatures. The hydrocarbons are cracked as **thermal decomposition** reactions take place.

Alkenes

Alkenes, unlike alkanes, are **unsaturated hydrocarbons** because they contain a C=C group. The C=C grouping is an example of a **functional group**. A functional group gives a 'family' of organic compounds their characteristic reactions. A 'family' of organic compounds is called a **homologous series**. The general formula for the alkene series is:

$$C_nH_{2n}$$

Subject: Geography	Term: 4	Topic: Economic world

Week 1- How are countries classified?

How are countries classified?

A country's level of development is how far it has grown economically, technologically and the quality of life people typically have.

Economic factors include income (how much money people earn), how secure people's jobs are and standard of living (housing, personal mobility). It also includes physical factors such as diet, nutrition, fresh water supply, climate, environmental quality and hazards.

How do we measure a country?

Gross national income (GNI) is a common way of calculating a country's level of development. GNI shows the average wealth of the citizens of a country. GNI allows comparisons to be made between countries. To calculate GNI you add together the total value of all the goods and services produced by the people within the country to the income earned from investments that its businesses and people have made in other countries.

As countries have different population sizes a further calculation needs to be made in order to make comparisons. This involves dividing the GNI by the population of the country to arrive at the GNI per capita. Then the value is converted into US dollars to allow comparisons to be made between countries. Finally, each figure must be adjusted based on its income. In low-income countries (LICs) goods and services often cost less than in high-income countries (HICs).

As of 1 July 2016, low-income economies are defined by the World Bank as those with a GNI per capita of $1,025 or less in 2015. There are 31 countries classified as LICs.

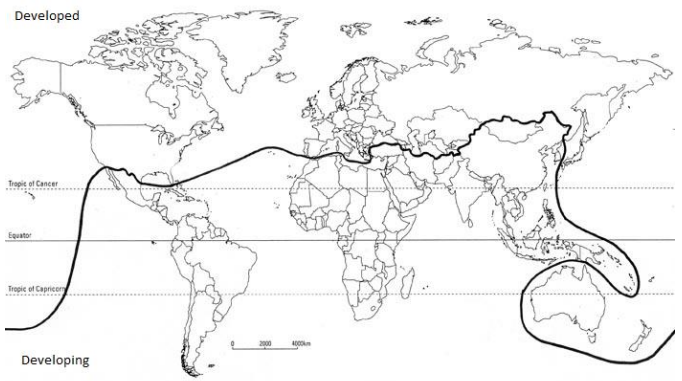
High-income economies are those with a GNI per capita of $12,476 or more. 78 countries are considered as being HICs.

NEE countries are those in-between.

Week- 2 –World development

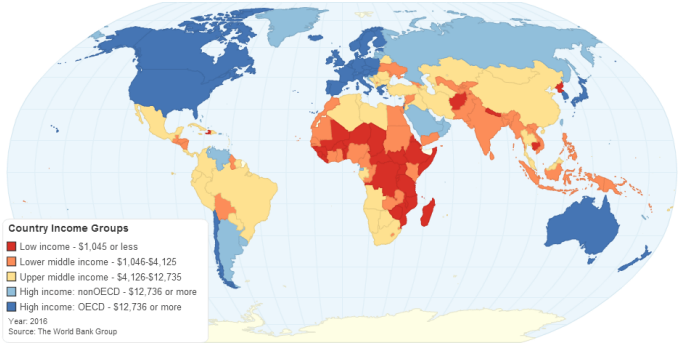
What does world development look like?

The pattern of economic development across the globe has significantly changed over time. There was a clear divide between the rich north and poor south. The Brandt Line (shown below) was used to mark this divide.



Considerable changes have occurred since the 1980s. For example, China is now the world's largest economy. The GNI per capita of some European countries e.g. Bulgaria and Hungary is lower than Brazil. Countries that lie south of the Brandt line, such as Qatar, Singapore and Kuwait have some of the highest incomes.

The map below shows the world in 2015. Most HICs lie in the northern hemisphere, with the exception of Australia and New Zealand. There are clusters of HICs in Western Europe, North America, the Middle East (including Saudi Arabia, Qatar and UAE) and East Asia (including Japan, South Korea and Singapore).



Subject: Geography	Term: 4	Topic: Economic world

Week 2-
How reliable are economic indicators of development?

Measures of economic development

There are a number of different ways economic development can be measured. One of the most common is gross national income data (GNI). However, this data can be very misleading in establishing the level of economic development of a country, particularly if it is an LIC.

Using the mathematical mean is a crude way of establishing a typical figure. If there is a significant divide between the earnings of rich and poor people the income of the more wealthy will skew the GNI. The value of how hard people work, as is common in LICs and NEEs as many people work in subsistence farming or in the informal sector, is not included in the data. Other shortcomings in this data is that is may not be accurate and people may not tell the truth about their earnings, conflict or natural disaster can make it very difficult to collect data. Also, large-scale migration makes it difficult to accurately record population and earnings in any one place.

Also, GNI data is expressed in US dollars, the value of which changes on a daily basis. Finally, some countries have underestimated their GNI because they did not include earnings from certain sectors. For example, Nigeria did not include revenue from the internet or from entertainment in their calculations until recently leading to the value of its economy being under-estimated.

Week 4- How reliable are social indicators of development

How is social development measured?

The concept of development is linked to the idea of progress and civilisation. Obviously, there is more to development than just money! Below are some of the most important social measures and their limitations.

Literacy Rate – % of people who can read and write

Limitations

It is difficult to carry out surveys in war zones or squatter settlements in LICs

People per doctor – the number of people who rely on a single doctor to meet their needs

Limitations

In rural areas in NEEs people are using their mobile phones to get medical advice and this is not included in official data

Infant mortality rate – the number of babies that die within their first year, per 1000 live births

Limitations

Not all births are recorded in poor countries. Also, deaths of children are not always recorded.

Life expectancy – the average age people can expect to live to

Limitations

Where infant mortality is high the life expectancy for those people who survive childhood is much higher than the average.

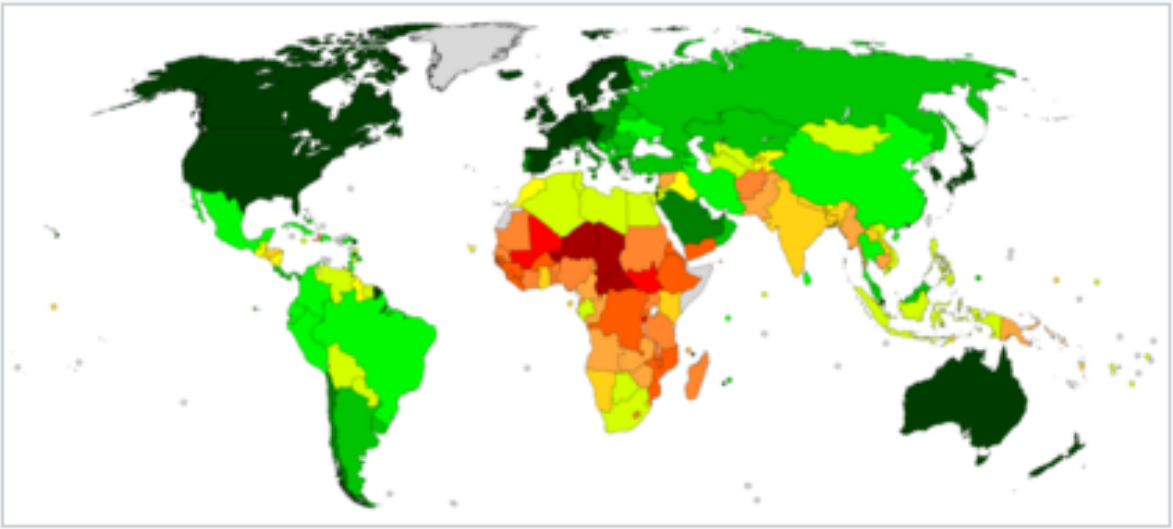
Access to safe water – % of people who have access to water that is safe to drink without the risk of contracting waterborne diseases such as cholera

Limitations

Water quality can change rapidly as the result of flooding. As water becomes more expensive in cities less wealthy people may be forced to use unsafe water.

Subject: Geography	Term: 4	Topic: Economic world

Week 5- Why is the Human Development Index important?



World map of countries by Human Development Index scores in increments of 0.050 (based on 2019 data, published in 2020)

- ≥ 0.900
- 0.850–0.899
- 0.800–0.849
- 0.750–0.799
- 0.700–0.749
- 0.650–0.699
- 0.600–0.649
- 0.550–0.599
- 0.500–0.549
- 0.450–0.499
- 0.400–0.449
- ≤ 0.399
- Data unavailable

Week 5- Why is the Human Development Index important?

Why is the Human Development Index important?

Social measures of development ought to be factored in to calculate a country's overall level of development. Some believe that additional factors such as human rights and happiness are very important. Political corruption and gender inequality are used in some studies. With so much data available to us we use composite measures instead. Composite measures combine several development measures into one formula. The Human Development Index (HDI) consists of three elements. These are:

income
life expectancy
education

HDI per capita is used as an estimated measure of wealth. Life expectancy is the average number of years a person can expect to live. The average number of years of schooling is used in an education index. The three parts are processed to produce a number between 0 and 1.

The world's highest-and lowest-scoring countries in 2015 are shown below:

Norway = 0.944

Australia = 0.933

Switzerland = 0.917

Central African Republic = 0.341

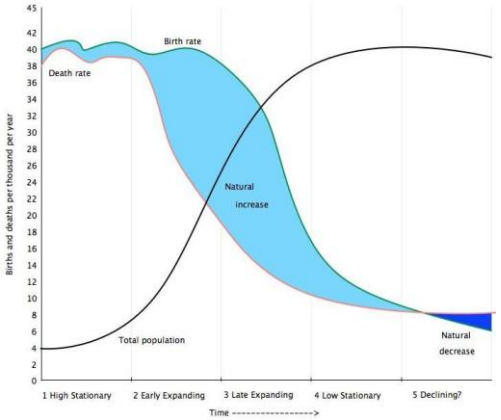
Democratic Republic of Congo = 0.338

Niger = 0.337

Subject: Geography	Term: 4	Topic: Economic world

Week 6 & 7- Development, population change and the demographic transition model

What are the characteristics of countries with different levels of development?
Birth and death rates are also used as social development indicators. As HICs have developed their birth and death rates have decreased over time. This data has been used to develop a model showing how population changes as a country develops. This is known as the demographic transition model (DTM). This model is shown below:



In **stage 1** (high stationary) birth rates and death rates are very high. This is largely due to poor health care provision, a lack of contraception and the need for large families as infant mortality rates are very high.
Low-income countries (LICs) are typically at **stage 2** of the demographic transition model. Death rates are falling due to global approaches to tackling malnutrition and disease. Birth rates remain high due to high infant mortality rates, some children will not survive so families are large, a lack of contraception and children are needed to earn money working.
Newly emerging economies (NEEs) are mostly found in **stage 3** of the demographic transition model. Birth rates are rapidly declining as fewer people live a subsistence lifestyle (growing their own food to survive) so children are not needed to work the land. Contraception is also widely available due to improvements in healthcare.

Week 6 & 7- Development, population change and the demographic transition model

High-income countries are typically found in **stage 4** of the demographic transition model. This is because improvements in healthcare and lifestyle lead to low death rates. The improved status of females means more women have careers and have fewer children. Childcare is also expensive! The most developed countries are in **stage 5** where birth rates fall below death rates. Japan and Germany are examples of where this is the case.
Sometimes there are anomalies in these patterns. This is because birth and/or death rates may suddenly increase as the result of a natural disaster or war. Also, some high-income countries are experiencing an increase in death rates due to an ageing population (a greater proportion of elderly people).
What causes rapid population growth in developing countries?
Rapid population growth occurs in LICs in stage 2 of the demographic transition model due to high natural increase. A population explosion occurs during this stage as shown in the model above. This is because the death rates are falling but birth rates remain high. The UK experienced a population explosion as it entered stage 2 in the 1800s. India, however, experienced it between 1950 and 2000.
As countries across the world develop the rate of global population increase is slowing and is expected to peak at 9 billion people in around 2050.
How does rapid population growth have an impact on development?
Overpopulation, caused by rapid population growth, puts immense pressure on land and resources. It can cause falling incomes, land degradation (e.g. desertification) and reduced health and happiness.
Overpopulation is rarely the sole cause of problems associated with population growth. For example, in Ethiopia during the 1980s the country experienced a major famine. However, this was not just caused by rapid population growth, drought and civil war also contributed to the problems experienced at this time.
Rapid population growth can also bring many positives. As countries develop economically there is a growth in demand for people to work in growing industries.

Subject: History	Term: 3 and 4	Topic: Conflict and Tension: Interwar: The Road to War (KQ3)

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 1-3

Key question 1: What were the Nazi aims on the road to war?

Hitler's aims were largely

- Overturning the **Treaty of Versailles**
- **Rearming** Germany to make it strong again and create jobs
- **Lebensraum**, living space in the east
- Uniting **Volksdeutsche and creating a Greater Germany**
- Uniting Germany and Austria in the **Anschluss**
- Destroying **communism**

These aims created a road to war, which started on the 1st September 1939.

Key question 2: What were Hitler's steps between 1936 and 1939?

The Nazis systematically broke several aspects of the Treaty of Versailles:

1th March 1936: **Reoccupation of the Rhineland** (Hitler sent troops into the Rhineland, which had been demilitarised since the Treaty of Versailles. The was a gamble as the allies might stop him – it paid off as they did not!

March 1938: **Anschluss with Austria**: Hitler always wanted to unite with Austria and made an attempt to do so in 1934, which failed. The Anschluss was successful in 1938, first by staging demonstrations against the government, later by moving troops into the area.

May- September 1938: Hitler wanted to take over the **Sudentenland** of Czechoslovakia, an area with many ethnic Germans. Again, the Nazis got Czech Nazis to stage a protest against the government. In an attempt to avoid war, Hitler was given the area in the **Munich Agreement** if he promised not to invade the rest of the country.

Week 4-6

Key question 3: How did the allies react?

The allies followed the policy of **appeasement,** which meant giving Hitler a little of what he wanted in the hope that this would avoid war. **Neville Chamberlain**, British Prime Minister, flew to Germany three times to find a solution with Hitler to the Czech crisis. He thought he had brought about **'Peace in our time'.** France would have gone to war over Hitler breaking the Treaty of Versailles, but Britain was reluctant. There are many reasons for and against appeasement and whether it was the correct policy.

Key question 4: What finally caused the outbreak of World War 2?

It soon became apparent that Hitler had no intentions of sticking to the Munich Agreement. Several events marked the increase in aggression and ultimately the road to war:

August 1939: **Nazi – Soviet Pact** between Hitler and Stalin
1st September 1939: **The Invasion of Poland and the declaration of war**

Further reading and research:

https://www.bbc.co.uk/bitesize/guides/z9s9q6f/revision/1
https://www.bbc.co.uk/bitesize/topics/zfd82hv
https://www.bbc.co.uk/bitesize/guides/z92hw6f/revision/1
https://www.bbc.co.uk/bitesize/guides/znxdnrd/revision/1

Subject: Spanish	Terms: 3&4	Topic: Viva AQA **GCSE**; Módulo 5: *Ciudades* **Theme 2- Local, National, International and Global Areas of Interest**

Term 3 Week 1 & 2 -

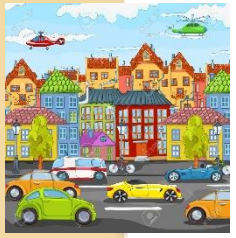
- Talking about places in a town
- Asking for directions
- Explaining different directions

This is CORE vocabulary for this topic.

https://quizlet.com/290993831/aqa-gcse-viva-higher-spanish-module-5-flash-cards/

En mi ciudad	In my town
Hay… / Mi ciudad tiene…	*There is/are… / My town has…*
un ayuntamiento	*a town hall*
un bar / muchos bares	*a bar / lots of bars*
un castillo (en ruinas)	*a (ruined) castle*
un cine	*a cinema*
un mercado	*a market*
un museo / unos museos	*a museum / a few museums*
un parque	*a park*
un polideportivo	*a sports centre*
un puerto	*a port*
muchos restaurantes	*lots of restaurants*
un teatro	*a theatre*
una biblioteca	*a library*
una bolera	*a bowling alley*
una iglesia	*a church*
una piscina	*a swimming pool*

una playa / unas playas	*a beach / a few beaches*
una Plaza Mayor	*a town square*
una pista de hielo	*an ice rink*
una oficina de Correos	*a post office*
una tienda / muchas tiendas	*a shop / lots of shops*
muchos lugares de interés	*lots of sights*
algo / mucho que hacer	*something / a lot to do*
no hay nada que hacer	*there is nothing to do*
Vivo en un pueblo…	*I live in a … village*
histórico / moderno	*historic / modern*
tranquilo / ruidoso	*quiet / noisy*
turístico / industrial	*touristy / industrial*
bonito / feo	*pretty / ugly*
Está situado/a en … del país.	*It is situated in … of the country.*
el norte / el sur / el este / el oeste	*the north / the south / the east / the west*



This is CORE vocabulary for this topic.

REMEMBER LITTLE AND OFTEN IS KEY!

- Using question words
- Developing speaking skills and talking to others
- Giving opinions, using adjectives and using a range of vocab

¿Por dónde se va al / a la…?	How do you get to the…?		
¿Dónde está el / la…?	*Where is the…?*	pasa el puente / los semáforos	*go over the bridge / the traffic lights*
¿El / La …. está cerca / lejos?	*Is the …nearby / far away?*	cruza la plaza / la calle	*cross the square / the street*
sigue todo recto	*go straight on*	coge el autobús número 37	*take the number 37 bus*
gira a la derecha / izquierda	*turn right / left*	está…	*it is…*
toma la primera / segunda / tercera	*take the first / second / third*	en la esquina / al final de la calle	*on the corner / at the end of the street*
calle a la derecha / a la izquierda	*road on the right / left*	al lado del museo / enfrente de…	*next to the museum / opposite…*

Term 3 Week 3 & 4 -

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

- Talking about different shops
- Buying different souvenirs when on holiday

This is CORE vocabulary for this topic.

REMEMBER TO PRACTISE THOSE RANDOM WORDS! THIS VOCABULARY WILL LIKELY POP UP TO 'TRICK' YOU!

Las tiendas	Shops
el banco	*bank*
el estanco	*tobacconist's*
la cafeteria	*café*
la carniceria	*butcher's*
la estación de trenes	*train station*
la farmacia	*pharmacy / chemist*
la fruteria	*greengrocer's*
la joyeria	*jeweller's*
la librería	*book shop*
la panadería	*bakery*
la papelería	*stationery shop*
la pastelería	*cake shop*
la peluquería	*hairdresser's*
la pescadería	*fish shop*
la tienda de ropa	*clothes shop*
la zapatería	*shoe shop*
un regalo	*a present*
sellos	*stamps*
una carta / unas cartas	*a letter / a few letters*
recoger	*to pick up*
mandar	*to send*
horario comercial / horas de apertura	*business hours / opening hours*
de lunes a viernes	*from Monday to Friday*
abre a la(s)… / cierra a la(s)…	*it opens at… / it closes at…*
no cierra a mediodía	*it doesn't close at midday*
cerrado domingo y festivos	*closed on Sundays and public holidays*
abierto todos los días	*open every day*

Recuerdos y regalos	Souvenirs and presents
el abanico	*fan*
el chorizo	*chorizo (sausage)*
el llavero	*key ring*
el oso de peluche	*teddy bear*
los pendientes	*earrings*
la gorra	*cap*
la taza	*mug*
las golosinas	*sweets*

Make sure you practise to be able to use and recognise the vocab. Practise using 'look, cover, write, check'. Add other things you may wish to say to your list.

www.conjuguemos.com

las pegatinas	*stickers*
¿Me puede ayudar?	*Can you help me?*
Quiero comprar…	*I want to buy…*
¿Tiene uno/a/os/as más barato/a/os/as?	*Do you have a cheaper one / cheaper ones?*
un billete de (cincuenta) euros	*a (fifty) euro note*
tengo cambio	*I have change*

Subject: Spanish	Terms: 3&4	Topic: Viva AQA **GCSE**; Módulo 5: *Ciudades* **Theme 2- Local, National, International and Global Areas of Interest**

Term 3 Week 5 & 6 -

- Describing the features of your region
- Using se puede and se pueden structure- 'one can'
- Asking and responding to questions
- Comparing two tenses- past and present.
- Expanding ideas with different opinions and reasons

This is CORE vocabulary for this topic.

REMEMBER LITTLE AND OFTEN IS KEY!

¿Cómo es tu zona?	*What is your area like?*
está situado/a en un valle	*it is situated in a valley*
entre el desierto y la sierra	*between the desert and the mountains*
al lado del río / mar Mediterráneo	*by the river / Mediterranean sea*
Está…	*It is…*
rodeado/a de volcanes / sierra	*surrounded by volcanoes / mountains*
lleno/a de bosques / selvas	*full of woods / forests*
a … metros sobre el nivel del mar	*at … metres above sea level*
Tiene…	*It has…*
unos impresionantes paisajes naturales	*some amazing natural landscapes*
varias influencias culturales	*various cultural influences*
el bullicio de una ciudad	*the hustle and bustle of a city*
El clima es…	*The climate is…*
soleado / caluroso / seco / templado / frío	*sunny / hot / dry / mild / cold*
llueve (muy) poco / a menudo	*it rains (very) little / often*
en primavera / verano / otoño / invierno	*in spring / summer / autumn / winter*
hay mucha marcha	*there is lots going on*
Es…	*It is…*
mi ciudad natal / mi lugar favorito	*My home town / my favourite place*
acogedor/a / atractivo/a	*welcoming / attractive*
famoso/a / conocido/a por	*famous for / well-known for*
una región muy húmeda	*a very humid region*
una zona muy montañosa / pintoresca	*a mountainous / picturesque area*
tan fácil desplazarse	*so easy to get around*
Se puede…	*You / One can…*
estar mucho tiempo al aire libre	*spend lots of time in the open air*
subir a la torre	*go up the tower*
hacer un recorrido en autobús	*do a bus tour*
disfrutar de las vistas / del ambiente	*enjoy the views / the atmosphere*
viajar en el AVE	*travel on the AVE high-speed train*
pasear por los lagos artificiales	*go boating on the artificial lakes*
apreciar la arquitectura variada	*appreciate the variety of architecture*
aprovechar el buen tiempo	*make the most of the good weather*
Se pueden…	*You / One can…*
probar platos típicos	*try local dishes*
practicar deportes acuáticos	*do water sports*
ver edificios de estilos muy diferentes	*see buildings with very different styles*
alquilar bolas de agua	*hire water balls*
practicar senderismo y ciclismo	*go hiking / trekking and cycling*

En mi opinión
<3 Me encanta(n)
☺ Me gusta(n) / Me flipa(n) / Me mola(n) / Me chifla(n)
☹ No me gusta(n) / No me gusta(n) nada
(X) Odio
Pienso que / Creo que

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PRESENT TENSE: It is used to talk about things happening now, in the current. **It translates as 'I do' 'I play' or 'I am playing'**

AR	ER	IR
o		
as	es	
a	e	
amos	emos	imos
áis	éis	ís
an	en	

Practise MAKES perfect! Make flash cards, use online tools, test friends, RECALL these quickly and regularly ☺

PRETERITE

It is used to talk about single completed actions in the past. **It translates as '–ed.'**

AR	IR/ER
é	í
aste	iste
ó	ió
amos	imos
asteis	isteis
aron	ieron

GENERAL REVISION

WOOTTON PARK
'Insum quod faciendum est diutius durant'

KEY GRAMMAR POINTS WE HAVE LEARNT…

- Present Tense Grammar
- Preterite Tense (Past- Completed Actions)
- Imperfect Tense (Past- Used to do/Ongoing)
- Perfect Tense (Past- Have done)
- Present Continuous Tense (I am doing, We are playing)
- Near Future Tense (Future- I am going to go, We are going to visit)

www.conjuguemos.com
www.quizlet.com
www.linguascope.com
www.memrise.com

DON'T FORGET KEY PREVIOUS MODULES TOO…

WE HAVE COVERED 4 MODULES SO FAR- BE SURE TO PRACTISE THEM LITTLE AND OFTEN TOO!
MAKE YOUR LIFE AS EASY AS POSSIBLE NOW RATHER THAN LEAVING IT TOO LATE!

- ✓ Create flash cards
- ✓ Practise module vocabulary using Knowledge Maps and Vocabulary Lists for 10 mins per day
- ✓ Use online resources to practise
- ✓ Create vocabulary revision posters and you can colour code the words you know
- ✓ Test your friends and get your family to test you
- ✓ Little and Often is key
- ✓ Re Write your notes- Look, Cover, Write, Check
- ✓ Read through your book
- ✓ Ask for support if you need it
- ✓ Attend support sessions/Ask for support sessions BE PROACTIVE!
- ✓ Don't give up- even if you find it tough! KEEP GOING! YOU CAN DO IT! ☺

Subject: Spanish	Terms: 3&4	Topic: Viva AQA **GCSE**; Módulo 5: *Ciudades* **Theme 2- Local, National, International and Global Areas of Interest**

Term 4 Week 1 & 2 -

- Talking about PROS and CONS in a town/city
- Talking about different problems
- Using synonyms and antonyms
- Using the Perfect Tense and the Conditional Tense
- Varying different adjectives- so work isn't repetitive!

This is CORE vocabulary for this topic.

Los pros y los contras de la ciudad	The for and against of living in a city
Lo mejor de vivir en la ciudad es que…	The best thing about living in a city is that…
es tan fácil desplazarse	it's so easy to get around
hay una red de transporte público	there is a public transport system
hay tantas diversiones	there are so many things to do
hay muchas posibilidades de trabajo	there are lots of job opportunities
Lo peor es que…	The worst thing is that…
el centro es tan ruidoso	the centre is so noisy
hay tanto tráfico / tantos coches	there is so much traffic / so many cars
se lleva una vida tan frenética	life is so frenetic
la gente no se conoce	people don't know each other
En el campo…	In the countryside…
el transporte público no es fiable	public transport is not reliable
hay bastante desempleo	there is quite a lot of unemployment
no hay tantos atascos como antes	there are not as many traffic jams as before
yo conozco a todos mis vecinos	I know all my neighbours

CONDITIONAL TENSE

It is used to talk about what you would, could and should do. **It translates as 'I would change' 'You should go' 'They could improve'**

AR/IR/ER endings are ALL THE SAME

ía
ías
ía
íamos
íais
ían

¿Qué harías?	What would you do?
Introduciría más zonas peatonales.	I would introduce more pedestrian areas.
Renovaría…	I would renovate…
algunos edificios antiguos	some old buildings
las zonas deterioradas en las afueras	the dilapidated areas on the outskirts
Mejoraría el sistema de transporte.	I would improve the transport system.
Pondría / Crearía más áreas de ocio.	I would put in / create more leisure areas.
Construiría un nuevo centro comercial.	I would build a new shopping centre.
Invertiría en el turismo rural.	I would invest in rural tourism.
Controlaría el ruido.	I would limit the noise.

Term 4 Week 3 & 4 -

WOOTTON PARK
FOUNDATION FOR GROWTH
'Ipsum quod faciendum est diutius durant'

- Shopping for different things- clothes and presents
- Using demonstrative adjectives
- Discussing returns, faults and making complaints
- Explaining preferences
- Using a tourist office to find your way around the city

This is CORE vocabulary for this topic.

REMEMBER TO PRACTISE THOSE RANDOM WORDS! THIS VOCABULARY WILL LIKELY POP UP TO 'TRICK' YOU!

En la oficina de turismo	At the tourist office
¿Me puede dar…?	Can you give me…?
un plano de la ciudad	a map of the town / city
más información sobre…	more information about..
¿Cuánto cuesta una entrada?	How much is a ticket?
para adultos / niños	for adults / children
¿Dónde se pueden sacar las entradas?	Where can you get tickets?
¿A que hora…?	What time…?
sale el autobús?	does the bus leave?
abre…?	does…open?
¿Hay visitas guiadas?	Are there guided tours?
¿Me puede recomendar…?	Can you recommend…?
un restaurante típico	a typical restaurant
un hotel / una excursión	a hotel / a trip

Quejas	Complaints
Quiero devolver…	I want to return…
está roto/a	it is broken
es demasiado estrecho/a / largo/a	it is too tight / long
tiene un agujero / una mancha	it has a hole / a stain
falta un botón	it's missing a button
¿Puede reembolsarme (el dinero)?	Can you reimburse me (the money)?
Podemos hacer un cambio.	We can exchange (it).
¿Qué me recomienda?	What do you recommend?
¿Qué tal…? / ¿Qué te parece(n)…?	What about…? / What do you think of…?
Te queda bien.	It suits you.
Te quedan demasiado grandes.	They are too big on you.
una talla más grande / pequeña	a bigger / smaller size
en rebajas	on sale
Me lo/la/los/las llevo.	I'll take it / them.

De compras	Shopping
Normalmente voy… / Suelo ir…	Usually I go… / I tend to go…
a los centros comerciales	to shopping centres
de tiendas con mis amigos	shopping with my friends
Nunca me ha gustado / Prefiero / Odio…	I've never liked / I prefer / I hate…
comprar en…	shopping in…
cadenas / grandes almacenes	chain stores / department stores
tiendas de diseño / segunda mano	designer shops / second-hand shops
comprar por Internet / en la red	shopping on the internet / online
hacer cola	queueing
porque…	because…
es más económico / práctico / cómodo	it's cheaper / more practical / more convenient
es un buen sitio para pasar la tarde	it's a good place for spending the afternoon
hay más variedad / demasiada gente	there is more variety / there are too many people
los precios son más bajos	the prices are lower
hay más ofertas	there are more offers
ropa alternativa / de moda	alternative clothing / fashionable clothing
gangas	bargains
artículos de marca	branded items

Subject: Spanish	Terms: 3&4	Topic: Viva AQA **GCSE**; Módulo 5: *Ciudades* **Theme 2- Local, National, International and Global Areas of Interest**

Term 4 Week 5

- Planning what you are going to do/will do
- Using the Future Tense
- Understanding Cultural Aspects of Spain/Geography etc.
- Recapping weather

This is CORE vocabulary for this topic.

¿Qué haremos mañana?	*What will we do tomorrow?*
Sacaré muchas fotos.	*I will take lots of photos.*
Subiremos al teleférico.	*We will go up on the cable car.*
Bajaremos a pie.	*We will go down on foot.*
Pasaremos entre las nubes.	*We will go through the clouds.*
Iremos a la playa / a la montaña / de excursión en barco.	*We will go to the beach / to the mountains / on a boat trip.*
Haremos piraguïsmo.	*We will go canoeing.*
Podremos hacer paddlesurf.	*We will be able to go paddlesurfing.*

WEATHER:
Remember it uses **HACE or HAY.**
Hace sol
Hace calor
Hace frío
Hay nubes
Hay niebla
Llueve
Nieva

FUTURE TENSE
It is used to talk about what will happen.
AR/IR/ER endings are ALL THE SAME
é
ás
á
emos
éis
án

Podrás comprar regalos.	*You will be able to buy presents.*
será genial / mejor	*it will be great / better*
nos llevará	*he/she will take us*
Estoy (muy) a gusto.	*I am feeling (very much) at home.*
¡Buena idea!	*Good idea!*
de acuerdo	*OK*
¡Qué pena! / ¡Qué mal (rollo)!	*What a shame! / What a nightmare!*
¡Qué triste!	*How sad!*

FUTURE TENSE

¿Qué tiempo hará?	*What will the weather be like?*		
Hará sol / viento.	*It will be sunny / windy.*	lloverá (bastante)	*it will rain (quite a bit)*
Habrá…	*There will be…*	Las temperaturas subirán / bajarán.	*The temperatures will rise / fall.*
nubes / claros / chubascos	*clouds / clear spells / showers*	El tiempo…	*The weather….*
una ola de calor	*a heat wave*	será variable	*will be variable*
truenos y relámpagos	*thunder and lightning*	se despejará	*will clear up*
temperaturas más altas / bajas	*higher / lower temperatures*	cambiará	*will change*
granizos / brisas fuertes	*hail / strong winds*	no nos importará	*will not matter to us*
periodos soleados	*sunny periods*		

Subject: Business Studies	Term: 4	Topic: Making the business effective

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 1 – Sources of finance

Businesses need finance for a variety of reasons:

- Paying expenses
- Paying wages
- Paying for unforeseen costs
- Investing in products and service
- Investing in new equipment
- Expanding the business

Selling shares
A share is a part ownership of a business. A limited company can sell parts of the company to individuals who become shareholders

Short–term finance options are repaid quickly (in under a year) these might be used to buy stock or pay utility bills.

Source of finance	Description	Benefit
Bank overdraft	Overdraft financing is provided when businesses make payments from their business current account exceeding the available cash balance (going below 0)	Covers short-term expenses that will be repaid quickly Flexible – can choose to use or not
Trade credit	An agreement in which a customer can purchase goods on account without paying cash up front, paying the supplier at a later date	Can pay for materials after you have sold your items Can help build good relationships with trade creditors meaning you can negotiate better rates

Long-term sources of finance – repaid over a period of time longer than a year.

Source of finance	Description	Impact
Personal savings	Savings in the bank	No need to be repaid
Venture capital	Raising capital from investors to fund a new business idea	Can raise finance quickly Can benefit from experienced entrepreneurs depending on how sources
Share capital	Raising large amounts of money by selling a percentage of your business	Raises large sums HOWEVER – shareholder get dividends each year (percentage of the profit) and can influence decisions
Loan	Taking money often from a bank and repaying with added interest	Interest rates can be low No loss of control
Retained profit	Reinvesting finance raised from profits of the business	Nothing to pay back and no interest rate!
Crowd funding	Raising small amounts of money from a large number of people in return for some sort of reward (product involvement or ownership). Often used by start-ups	Can raise large sums May not need to pay back depending on agreement

Week 2 – Business ownership Types and Limited liability

Unlimited liability
The owner is legally responsible for all the business debts – this applies to sole traders and partnerships. This means they can lose their personal assets (house, car etc.) if they are unable to repay!

Limited liability
Debts are linked only to the business and so the owners personal wealth and assets are protected!
This applies to Private limited companies which are incorporated businesses meaning they have a separate legal identity to their owners!

Companies have different legal structures

Ownership	Advantages	Disadvantages
Sole trader 1 owner	+ keep 100% of profits + quick and easy to set up + full control (make all decisions)	-unlimited liability -harder to raise capital (finance) - No one to share responsibility - Business cannot run when owner is ill/away
Partnership 2-20 owners	+more expertise as more owners + owners share risk +more finance can be raised than a ST	- Share profits - No longer exists if a partner leaves - Disagreements may affect company
Private limited company (LTD) Shareholders	+Owners have limited liability + an ltd may be seen as more trustworthy +can raise finance through selling shares +continues to exist if owners change	-complex set-up - Shareholders may disagree - Financial information must be published and can be accessed by others - Lots of information to be reported

Subject: Business Studies	Term: 4	Topic: Making the business effective

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 3 – Franchising

A franchise is the right given by one business to another business to use its name, logo and products or services. The Franchisee will pay a lump sum to purchase the rights and then a yearly fee(usually profit percentage) to the franchisor as well!

Franchisor – the business that gives the franchisee the right to sell their product or services

Franchisee – a business that agrees to sell or produce the branded products under a license agreement from the franchisor

A franchisee does this because the business is already established and they get access to:

- well-known brand
- Training
- Equipment
- Successful products and services
- Advertising and promotion
- products and services completed

Benefits

+ established brand image
+ marketing done for them
+ no research and development costs
+higher chance of survival
+training and support

Drawbacks

- Initial cost is high
- Pay a yearly fee (royalty)
- Less freedom to make decisions
- Restrictions on where you can set up and grow

Week 4 – Location. The marketing mix

Location is a key decision an entrepreneur must make when deciding how to set up! Some factors that might affect location are:

- Proximity to market (where are the customers)
- transport to the location
- Availability of labour
- availability or materials
- are there any competitors

The nature of the business will influence these decisions:
Manufacturing – do they need to be close to the raw materials? Do they need to be away from residential areas?
Exporting – is there good transport links?
Retailing – is there good footfall past the shop? Can customers access the shop easily?

E-commerce has changed some of these factors for example footfall may no longer be necessary but an e-commerce business will need to ensure they have good transport and delivery links as well as secure websites and good internet traffic – lots of people visiting their site

The Marketing Mix (the 4Ps)

The marketing mix is about understanding customer needs and identifying how best to deliver the product or service to them in order to make profit

Product
What is the product?
What is its USP
How do you successfully differentiate from rivals?
What features does it have?
What is the level of quality?

Price
What are customers willing to pay?
Does the price reflect the quality?
IS it enough to cover expenses?

Place
This is the way the product is distributed (how does it get from the producer to the consumer?)
Is it online or in store?
Direct to consumer or through a wholesaler?

Promotion
Promotion is how the business communicates messages about its product to a business. It can do this through:
-advertising
- sales promotions (BOGOF)
- sponsorship
- Public relations

Subject: Business Studies	Term: 4	Topic: Making the business effective

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 5 – Influences on the marketing mix

The marketing mix must be balanced! This means that if the product is luxury the price reflects this and is higher, the promotion is aimed at high income earners (no BOGOF), the place is exclusive (boutiques in high end neighbourhoods. The whole brand image must tie together and be cohesive in order to communicate the right message and generate sales. This can be called having an integrated marketing mix!

Changing needs

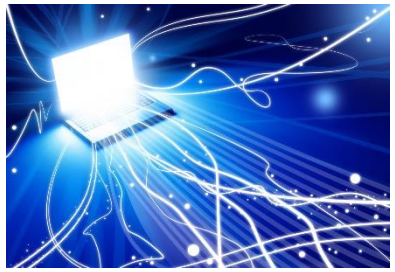
Customers needs change as does the external environment. A business may do the following to adapt their offering to remain competitive:

*Change features
*change where products are sold
*launch a new advertising campaign
*change price

Influence of Technology

Technology has made the business environment even more competitive

Switch from traditional advertising to social media



Products can be customised more easily which consumers enjoy

Consumers can compare prices so businesses need to monitor this and remain price competitive

Companies must have an e-commerce presence as consumers want to order from home

Week 6 – The business plan

A business plan is a document that an entrepreneur puts together in order to forecast sales, cash flow, costs and growth of the business.

A business plan is important to:

- Show to investors
- Show to banks to raise finance
- Undertake market research and plan for potential problems
- Minimise risk due to understanding market and finance
- Identify the needs of the customer

Business plans are used by:

Owners - to stay on track with aims and objectives
Investors – to assess the risk and reward of investing
Lenders – to assess the suitability of loaning finance
Employees – to help with objective setting

A good business plan should include:

- Business ides
- Aims and objectives – these should be SMART
- Market research
- Marketing mix
- Financial forecasts
- Sources of finance
- Location
- Production plans

SMART =
Specific
Measurable
Achievable/Agreed
Realistic
Time-Bound
e.g. To increase sales revenue by 20% within one year

Good Business Planning reduces risk!!!

Subject: GCSE D&T	Term:4	Topic: **Work of others**

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Work of others

Week 1 -

Designer Name	Facts	Logo	Examples
Raymond Templier	**RAYMOND TEMPLIER** (1891 - 1968) like many of his contemporaries in jewelry, was born to a family with a long tradition as jewelers.		
Gerrit Rietveld	**Gerrit Thomas Rietveld**; 24 June 1888 – 25 June 1964) was a Dutch furniture designer and architect. One of the principal members of the Dutch artistic movement called De Stijl, Rietveld is famous for his Red and Blue Chair.		
Charles Rennie Mackintosh	**Charles Rennie Mackintosh** (7 June 1868 – 10 December 1928) was a Scottish architect, designer, water colourist and artist. His artistic approach had much in common with European Symbolism. His work was influential on European design movements such as Art Nouveau and Secessionism.		
Aldo Rossi	**Aldo Rossi** (3 May 1931 – 4 September 1997) was an Italian architect and designer who achieved international recognition in four distinct areas: theory, drawing, architecture and product design. He was the first Italian to receive the Pritzker Prize for architecture.	ALDO ROSSI	
Ettore Sottsass	**Ettore Sottsass** (14 September 1917 – 31 December 2007) was an Italian architect and designer during the 20th century. His work included furniture, jewellery, glass, lighting, home objects and office machine design, as well as many buildings and interiors.		

Company Name	Facts	Logo	Examples
Alessi	**Alessi** is a housewares and kitchen utensil company in Italy, producing everyday items from plastic and metal, created by famous designers.	ALESSI	
Apple	**Apple Inc.** is an American multinational technology company headquartered in Cupertino, California that designs, develops, and sells consumer electronics, computer software, and online services.		
Braun	**Braun GmbH** formerly **Braun AG**, is a German consumer products company based in Kronberg. From 1984 until 2007, Braun was a wholly owned subsidiary of The Gillette Company, which had purchased a controlling interest in the company in 1967.	BRAUN	
Dyson	**Dyson Ltd.** is a British technology company established by James Dyson in 1987. It designs and manufactures household appliances such as vacuum cleaners, hand dryers, bladeless fans, heaters and hair dryers.	dyson	
GAP	**The Gap, Inc.** commonly known as **Gap Inc.** or **Gap**, (stylized as **GAP**) is an American worldwide clothing and accessories retailer.	GAP	
Primark	**Primark** known as **Penneys** in the Republic of Ireland) is an Irish clothing and accessories company which is a subsidiary of AB Foods, and is headquartered in Dublin.	PRIMARK	
Under Armour	**Under Armour, Inc.** is an American company that manufactures footwear, sports and casual apparel.		
Zara	**Zara** is a Spanish clothing and accessories retailer based in Arteixo, Galicia. It is the main brand of the Inditex group,3 the world's largest apparel retailer.	ZARA	

Designer Name	Facts	Logo	Examples
Philippe Starck	**Philippe Starck** (born January 18,. 1949) is a French designer known since the start of his career in the 1980s for his interior, product, industrial and architectural design including furniture	S+ARCK	
Coco Chanel	**Gabrielle Bonheur "Coco" Chanel** (19 August 1883 – 10 January 1971) was a French fashion designer and businesswoman. She was the founder and namesake of the Chanel brand.	CHANEL	
Alexander McQueen	**Lee Alexander McQueen**, CBE (17 March 1969 – 11 February 2010), known professionally as **Alexander McQueen**, was a British fashion designer and couturier. He is known for having worked as chief designer at Givenchy from 1996 to 2001 and for founding his own Alexander McQueen label.		
Vivienne Westwood	**Dame Vivienne Isabel Westwood** DBE RDI (born 8 April 1941) is a British fashion designer and businesswoman, largely responsible for bringing modern punk and new wave fashions into the mainstream.	Vivienne Westwood	
Harry Beck	**Henry Charles Beck** (4 June 1902 – 18 September 1974), known as **Harry Beck**, was an English technical draughtsman best known for creating the present London Underground Tube map in 1931.		
Norman Foster	**Norman Robert Foster, Baron Foster of Thames Bank**, OM, HonFREng (born 1 June 1935) is a British architect whose company, Foster + Partners, maintains an international design practice famous for hightech architecture.	NORMAN FOSTER	

Designer Name	Facts	Logo	Examples
Marcel Breuer	**Marcel Lajos Breuer** (22 May 1902 – 1 July 1981) was a Hungarian-born modernist, architect, and furniture designer. Breuer extended the sculptural vocabulary he had developed in the carpentry shop at the Bauhaus into a personal architecture		
Sir Alec Issigonis	**Sir Alexander Arnold Constantine Issigonis**; 18 November 1906 – 2 October 1988) was a British-Greek designer of cars, widely noted for the ground-breaking and influential development of the Mini, launched by the British Motor Corporation (BMC) in 1959.		
William Morris	**William Morris** (24 March 1834 – 3 October 1896) was an English textile designer, poet, novelist, translator, and socialist activist. Associated with the British Arts and Crafts Movement, he was a major contributor to the revival of traditional British textile arts and methods of production.	MORRIS & Co	
Mary Quant	**Dame Barbara Mary Quant, Mrs Plunket Greene**, (born 11 February 1934) is a Welsh fashion designer and British fashion icon She became an instrumental figure in the 1960s London-based Mod and youth fashion movements.	MARY QUANT	
Louis Comfort Tiffany	**Louis Comfort Tiffany** (February 18, 1848 – January 17, 1933) was an American artist and designer who worked in the decorative arts. He is best known for his work in stained glass.		

Subject: GCSE D&T	Term:4	Topic: **Manufacturing**

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Manufacturing

Week 2

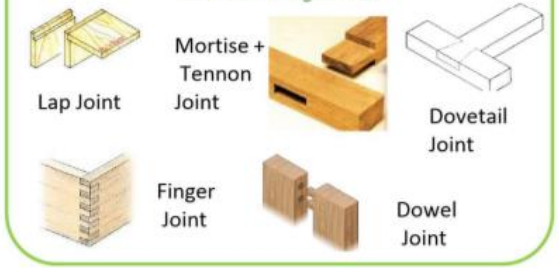
Knowledge Organiser AQA Design & Technology 8552

1: Joining Methods

Wood joints can be either permanent of temporary depending on the type and if glue is used.

Permanent:	Temporary:
When we do not want to take the pieces apart again	When we will, or might need to take pieces apart again
Glues, welding, rivets	Screws, bolts, nails

1.1Wood joints



2. Scales of Production

One off: when you make a unique item
Batch: when you make a few/set amount
Mass: when you make thousands
Continuous: open ended production

3. Adhesives

P.V.A. – Poly Vinyl Acetate – best for joining 2 pieces of wood together
Epoxy – a *thermosetting* resin that can be used to bond most types of material
Contact Adhesive – a glue type that creates a tacky bond on both surfaces to be joined. It can be used with most materials.

4: Materials

4.1 Woods:

Hardwoods:	Softwoods:
Beech Oak Ash	Scots Pine Cedar Spruce

4.2 Engineered Boards

Engineered boards are manmade materials usually made by mixing wood chips and glues to make wooden sheets.

Examples:
Medium Density Fibreboard (MDF)
Chipboard, Plywood and Hardboard

4.3 Plastics

Plastics are made of polymers, and are mostly refined from oil. There are 2 main categories:

Thermoplastics	Thermosetting plastics
Acrylic	Urea Formaldehyde
Polypropylene (PP)	Melamine Formaldehyde
High Impact Polystyrene (HIPS)	Epoxy Resin

4.4 Metals

Metals are hard and usually shiny, containing one or more elements dug and refined from the ground

Ferrous metals are any metal that contains iron and will rust	Non-Ferrous metals do not contain iron and will not rust

Alloys are metals made from a mix of 2 metals – brass is made of copper and zinc.

***Composite** materials* are a mix of 2 different types of material to get the best qualities from each – eg: GRP (Glass Reinforced Plastic)

5: TOOLS

6: Surface Finishes

Finishing is usually one of the last stages of making a project. It will usually involve sanding and applying a surface coating to **protect** your material and **improve its visual appearance.**

Some examples:
Paint, Stain, Varnish, Oil, Danish Oil, Wax, Polish & Dip Coating.

7: KEY WORD FOCUS

You should be able to explain the meaning of each of these words by the end of this rotation.

CAD	Computer Aided Design
CAM	Computer Aided Manufacture
CNC	Computer Numerical Control

Manufacturing

Joining Materials
- Permanent and Temporary
- Wood Joints
- Scale of Production
- Adhesives

Materials
Woods
Engineered Boards
Plastics
Metals
Composite Materials

Tools

Surface Finishing

Subject: GCSE D&T	Term:4	Topic: **Materials & Working Properties**

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Natural & Manufactured Boards

Week 3

Knowledge Organiser – Design Technology
KS4 GCSE

1. Woods

Man-Made Woods

	Description	Uses
Medium density fibreboard (MDF)	•Has a smooth, even surface •Easily machined and painted •Available in water and fire-resistant form •Often veneered or painted to improve its appearance	•Furniture and interior panelling
Chipboard	•Made from chips of wood glued together with urea formaldehyde (glue) •Usually veneered with an attractive hardwood or covered in plastic laminate	•Kitchen and bedroom furniture •Shelving and general DIY Work
Plywood	•A very strong board, constructed of layers of veneer or piles, which are glued together with the grains at 90° to each other •Interior and exterior grades available.	•Furniture making •Boat building and exterior work
Hardboard	•A very cheap particle board •Can have a laminated plastic surface	•Kitchen unit and furniture back panels

Hard Woods

	Description	Uses
Oak	•A very strong, light-brown wood •Open grained •Very hard, but quite easy to work with	•High quality furniture •Beams used in building •Veneers
Mahogany	•Reddish-brown in colour •Easy to work with	•Indoor furniture •Shop fittings •Bars •Veneers
Beech	•A straight- grained hardwood with a fine texture •Light in colour •Very hard but easy to work with •Can be steam bent	•Furniture •Toys •Tool handles
Ash	•Open grained •Easy to work with •Pale cream colour, often stained black •Can be laminated (i.e. sliced into veneers which are glued together)	•Tool handles •Sports equipment •Furniture •Ladders •Veneers

Soft Wood

	Description	Uses
Pine	•Pale-yellow coloured with dark lines and a fine, even texture. •Medium in weight •Stiff and stable •Inexpensive	•Readily available for DIY work •Mainly used for constructional work and simple joinery •Furniture

2. Plastics

	Properties:
Acrylic	•Hard wearing •Will not shatter •Can be coloured •Bathtubs, School Projects, Display signs
Polypropylene	•High Impact strength •Softens at 150°C •Can be Flexed many times without breaking •School chairs, Crates
High Impact Polystyrene (HIPS)	•Light but strong •Widely available in sheets •Used for casings of electronic products
Polythene (LDPE)	•Weaker and softer than HPDE. •Lightweight •Carrier Bags + Squeezy Bottles
Polythene (HDPE)	•Stiff strong plastic •Used for pipes and bowls •Buckets
Urea formaldehyde	•Colourless plastic •Can be coloured •Door and cupboard handles, Electrical fittings

3. Material Properties

Strength
The ability of a material to stand up to forces being applied **without it bending, breaking, shattering or deforming in any way.**

Elasticity
The ability of a material to **absorb force and flex in different directions, returning to its original position.**

Ductility
The ability of a material to **change shape (deform) usually by stretching along its length.**

Malleability
The ability of a material to be **reshaped in all directions without cracking.**

Hardness
The ability of a material to **resist scratching, wear and tear and indentation.**

Toughness
A characteristic of a material that **does not break or shatter when receiving a blow or under a sudden shock.**

3. Metals

	Properties:
Aluminium	•Light Weight •Light grey in colour •Can be polished to a mirror like appearance •Rust resistant
Mild Steel	•Heavy •Dark grey in colour •Rusts very quickly if exposed
Stainless Steel	•Heavy •Shiny appearance •Very resistant to wear / rust.
Cast Iron	•Re melted pig iron with some quantities of other metals •Strong in compression. •Brittle
Copper	•Reddish brown metal. •Soft •Excellent conductor of heat and electricity
Brass	•Yellow metal •Hard •Alloy

4. Composites

Carbon Fibre	GRP Fibreglass
Expensive in comparison to other materials. Very good strength to weight ratio. Used in the manufacture of high end sports cars and sports equipment.	GRP is composed of **strands of glass which are woven to form a flexible fabric. The fabric is normally placed in a mould and polyester resin is added.** **Glass reinforced plastic is lightweight** and has **good thermal insulation properties.** It has a **high strength to weight ratio**

Natural & Manufactured Boards

Woods – Man-made
- MDF
- Chipboard
- Plywood
- Hardwood

Hardwoods
- Oak
- Mahogany
- Beech
- Ash

Softwood
- Pine

Plastics
- Acrylic
- Polypropylene
- HIPs
- LDPE
- HDPE
- Urea Formaldehyde

Material Properties
- Strength
- Elasticity
- Ductility
- Malleability
- Hardness
- Toughness

Metals
- Aluminum
- Mild Steel
- Stainless Steel
- Cast Iron
- Copper
- Brass

Composites
- Carbon Fibre
- GRP Fibreglass

Subject: GCSE D&T	Term:4	Topic: **Materials & Working Properties**

WOOTTON PARK

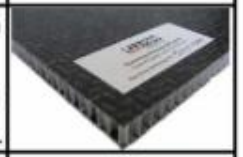
'Ipsum quod faciendum est diutius durant'

Natural & Manufactured Boards

Week 4

Knowledge Organiser – Design Technology KS4 GCSE

1: Forces and Stresses

Force	Description	A fair test for each force/stress.	How a material / object can be adapted to resist	Examples
Tension	Forces pulling in opposite directions.	Apply the same weight to each material and suspended in the same manner.	Concrete can have steel bars inserted to reinforce.	
Compression	Forces that are trying to crush or shorten.	Insert materials into a vice/clamp and apply the same amount of twists to the handle.	Composite panels can have a honeycomb structure sandwiched in the middle to resist.	
Bending	Flexing force	Apply the same weight to the material.	Steel beams have an I profile to resist bending.	
Torsion	Twisting force.	Use clamps & stands to hold the materials and turn in opposite directions at the same angle.	The diagonals on a tower crane help the structure against torsion.	
Shear	A strain produced when an object is subjected to opposing forces.	Place the material between a tool that works in opposite directions. e.g. Shears	Bolts are hardened and have unthreaded shanks to help stop shearing.	

2. Improving functionality of materials

Process	Description	Result	Example	Visual Example
Lamination	Layering of thin materials	Depending on the direction of lamination it can make boards stiffer or actually more flexible	Plywood: Laminations at 90 degrees to each other - Rigid Flexi-ply: laminations all the same direction - Bendy	
Bending / Folding	Folding a 90 degree edge on sheet metal / plastic	Makes the panel more rigid	Body panels on cars	
Webbing	Modern polymer fabrics woven together	Extremely strong and durable fabric	Seat belts	
Fabric interfacing	A strengthening material added to the unseen face of a fabric	Adds strength / shape	Shirt collars	

Subject: GCSE D&T	Term:4	Topic: **Energy, Materials, Systems and Devices**

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

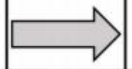
Mechanical Devices

Week 5

Knowledge Organiser – Design Technology
KS4 GCSE

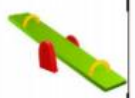
1: Mechanical Devices - Motion

There are four types of motion:

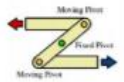
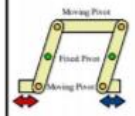
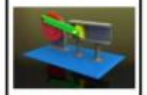
Linear Motion is movement in one direction along a straight line.		
Oscillating Motion This motion is similar to reciprocating motion, but the constant movement is from side to side along a curved path.		
Rotary Motion Examples of circular motion include a ball tied to a rope and being swung round in a circle		
Reciprocating Motion, this is repetitive up-and-down or back-and-forth linear motion		

2: Mechanical Devices – Levers

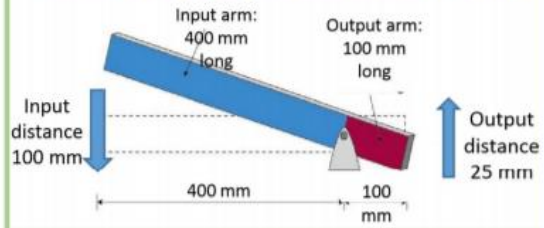
There are three classes of levers.

Class One A class one lever has its input on one side of the fulcrum and its output on the other.		
Class Two A class two lever has its input at one end of the lever, its output in the middle and fulcrum at the other end.		
Class Three A class three lever has its output at one end of the lever, its fulcrum at the other with its input in the middle.		

3: Mechanical Devices – Linkages

Reverse motion linkage	The reverse motion linkage changes the direction of the input motion so that the output travels in the opposite direction. If the input is pulled the output pushes and vice versa. It uses a central bar held in position with a fixed pivot (fulcrum) that forces the change in direction and two moving pivots which are connected to the input and output bars.	
Parallel motion or push/ pull linkage	The push/pull linkage maintains the direction of the input motion so that the output travels in the same direction. If the input is pulled the output is pulled and so on. It uses three linking bars, four moving pivots and two fixed pivots.	
Bell crank linkage	The bell crank linkage changes the direction of the input motion through 90 degrees. It can be used to change horizontal motion into vertical motion or vice versa. It uses a fixed pivot and two moving pivots.	
Crank and slider	The crank and slider linkage changes rotary motion into reciprocating motion or vice versa. It uses a crank which is held with a fixed pivot. A connecting rod uses two moving pivots to push and pull a slider along a set path.	
Treadle linkage	The treadle linkage changes rotary motion into oscillating motion or vice versa. It uses a crank which is held with a fixed pivot. A connecting rod uses two moving pivots and a further fixed pivot to create a windscreen wiper motion.	

4: How to work out a levers distance of travel



Output ÷ Input x Input distance = Output distance

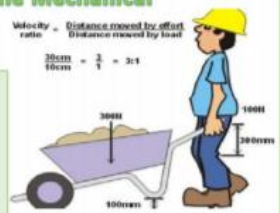
100 ÷ 400 x 100 = 25 mm

5: How to work out the Mechanical Advantage

Or use the following formula:

MA = Load / Effort = 300N / 100N = 3 / 1

This is written as 3:1 or just MA of 3



Mechanical Devices

Types of motion
- Linear
- Oscillating
- Rotary
- Reciprocating

Levers
- Class One
- Class Two
- Class Three

Linkages
- Reverse motion Linkage
- Parallel Motion
- Bell Crank
- Crank and Slider
- Treadle

Working out
- How to work out a levers distance of travel
- How to work out the mechanical advantage

Subject: GCSE D&T	Term:4	Topic: **Energy, Materials, Systems and Devices**

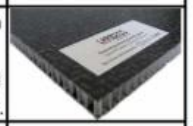
WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Mechanical Devices

Week 6

Knowledge Organiser – Design Technology KS4 GCSE

1: Forces and Stresses

Force	Description	A fair test for each force/stress.	How a material / object can be adapted to resist	Examples
Tension	Forces pulling in opposite directions.	Apply the same weight to each material and suspended in the same manner.	Concrete can have steel bars inserted to reinforce.	
Compression	Forces that are trying to crush or shorten.	Insert materials into a vice/clamp and apply the same amount of twists to the handle.	Composite panels can have a honeycomb structure sandwiched in the middle to resist.	
Bending	Flexing force	Apply the same weight to the material.	Steel beams have an I profile to resist bending.	
Torsion	Twisting force.	Use clamps & stands to hold the materials and turn in opposite directions at the same angle.	The diagonals on a tower crane help the structure against torsion.	
Shear	A strain produced when an object is subjected to opposing forces.	Place the material between a tool that works in opposite directions. e.g. Shears	Bolts are hardened and have unthreaded shanks to help stop shearing.	

2. Improving functionality of materials

Process	Description	Result	Example	Visual Example
Lamination	Layering of thin materials	Depending on the direction of lamination it can make boards stiffer or actually more flexible	Plywood: Laminations at 90 degrees to each other - Rigid Flexi-ply: laminations all the same direction - Bendy	
Bending / Folding	Folding a 90 degree edge on sheet metal / plastic	Makes the panel more rigid	Body panels on cars	
Webbing	Modern polymer fabrics woven together	Extremely strong and durable fabric	Seat belts	
Fabric interfacing	A strengthening material added to the unseen face of a fabric	Adds strength / shape	Shirt collars	

1: The Modification of properties for specific purposes

Process	Material	Purpose
Seasoning	Timber	Removes the moisture content so that the timber will not shrink, warp and twist
Annealing (heating)	Copper	Softens the copper to make it more malleable
Addition of Stabilisers	PVC	Stops plastic become brittle with exposure to the sun


Timber being seasoned in a kiln


Copper bowl being annealed


Metal compounds (stabilisers) are added to PVC for UV protection

Mechanical Devices

Forces and Stresses
- Tension
- Compression
- Bending
- Torsion
- Shear

The modifications of properties
- Seasoning
- Annealing
- Addition of stabilisers

Improving functionality of materials
- Lamination
- Bending / Folding
- Webbing
- Fabric interfacing

Subject: GCSE D&T	Term: 4	Topic: **Energy, Materials, Systems and Devices**

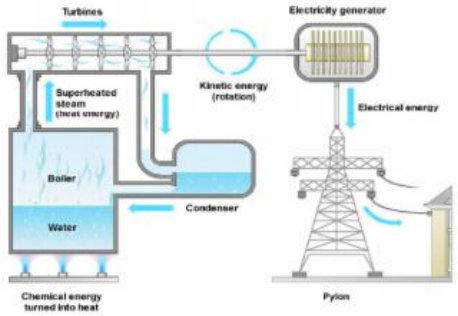
WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Energy Generations and Storage

Week 7

Knowledge Organiser – Design Technology
KS4 GCSE

Energy Types
1. Fossil Fuels – Non-renewable energy

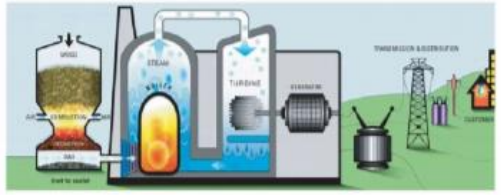


In a thermal power station fuel such as coal, oil or gas is burned in a furnace to produce heat - chemical to heat energy.

- this heat is used to change water into steam in the boiler.
- the steam drives the turbine - heat to kinetic energy
- this drives the generator to produce electricity - kinetic to electrical energy.

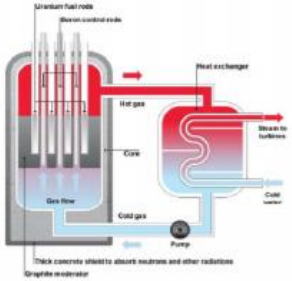
Some experts believe that fossil fuels will run out in our lifetime.

Energy Types 2. Biomass Energy –Renewable Energy



Biomass is an industry term for getting energy by burning wood, and other organic matter. Burning biomass releases carbon emissions, but has been classed as a renewable energy source in the EU and UN legal frameworks, because plant stocks can be replaced with new growth.

Energy Types
3. Nuclear Energy – Renewable energy



The main nuclear fuels are **uranium** and **plutonium**. In a nuclear power station nuclear fuel undergoes a controlled chain reaction in the reactor to produce heat - nuclear to heat energy.

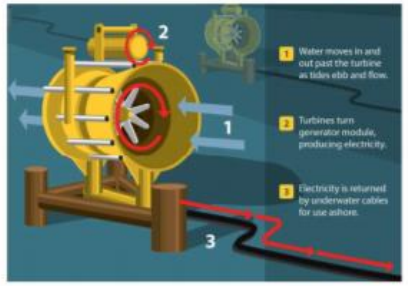
- heat is used to change water into steam in the boiler.
- the steam drives the turbine (heat to kinetic energy)
- this drives the generator to produce electricity - kinetic to electrical energy.

Energy Types
8.Batteries

Alkaline batteries are the most common type of domestic batteries, they are disposable but contain chemicals that are bad for the environment. Fortunately more and more battery recycling banks are appearing now where most of the battery can be reused. **Rechargeable batteries** are better for the environment and more economical in the long run (High initial purchase price). Their lifespan decreases with every charge.

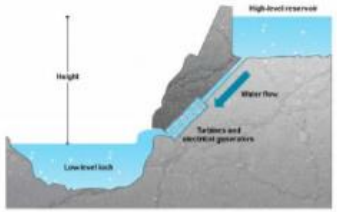
Energy Types
4. Wind Energy – Renewable Energy

6. Tidal Energy – Renewable Energy



5. Solar Energy – Renewable Energy

7. Hydroelectricity – Renewable Energy



- In a hydroelectric power station water is stored behind a dam in a reservoir. This water has gravitational potential energy.
- The water runs down pipes (potential to kinetic energy) to turn the turbine
- The turbine is connected to a generator to produce electricity (kinetic to electrical energy).

Energy Generations & Storage

Energy Types
Non-renewable
- Fossil Fuels

Renewable
- Biomass Energy
- Nuclear Energy
- Wind Energy
- Solar Energy
- Tidal Energy
- Hydroelectricity
- Batteries
  - -Alkaline
  - -Rechargeable

Subject: Drama	Term: 4	Topic: Understanding Drama

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Section A

Theatre Roles and Responsibilities

Performer - A performer might be an actor, singer or dancer, whose job is to perform within a production. They will usually audition in front of the director and a casting director to get their part. They begin their work in the rehearsal room with the director, before performing on stage in front of an audience. They must ensure to maintain a high-quality performance each night, during the run of the show.

Director - A director is responsible for the overall creative vision of the show. They have to bring the different elements of the production together to produce a cohesive final production, having meetings with the design team at various stages during a production. They will also direct the performers and help them develop their characters in rehearsals ahead of the final performance.

Playwright - A playwright is responsible for writing a play. Some are commissioned by theatre companies or producers and others write plays and submit them speculatively. Usually they will have written the play well in advance of rehearsals, but small changes can be made as the show develops. Occasionally, playwrights are present during the entire rehearsal process and they watch the performers work with the director to develop ideas, making notes and writing the script organically.

Understudy - An understudy is a performer who learns the lines and blocking of a regular performer in a production, so that if the regular performer is ever unable to perform, e.g. due to illness or injury, the understudy can cover their part. Sometimes, they may take a smaller role within a production, while covering one of the lead roles. When an understudy goes on to perform a lead role, a performer called a swing will cover the understudy's part.

Set Designer - Responsible for designing the set, working closely with the director and the design team to create the world of the show. They may begin by providing the director with a concept, before moving on to the technical drawing stage. Once the design is complete, the set is constructed and completed by various departments that specialise in materials such as metal, wood and paint.

Section A

Theatre Roles and Responsibilities

Lighting Designer - Responsible for designing the lighting within a production, working closely with the director and the design team to create lighting states for atmosphere and mood on stage. The lighting designer will often have an initial idea about how the lighting will look for a show and will then make adjustments during the rehearsal process. Once their design work is complete, technicians will rig and programme the lights.

Sound Designer - Responsible for designing the use of sound within a production, e.g. sound effects or music, working with the director to create and develop sound that enhances a production. They will also advise the director on whether the production requires microphones and other technical equipment.

Costume Designer - Responsible for designing the costume, hair and make-up for a production, working closely with the design team to ensure that the costumes match the style of the show. They will often create designs ahead of the production being cast and can then make changes once they have met the performers. The costume designer works closely with the costume department, who are responsible for making the outfits and wigs.

Puppet designer- Responsible for designing puppets within a production. They must ensure that puppets match the set and costume design and general aesthetic of the show. They must also ensure that the puppets work efficiently when operated.

Subject: Drama	Term: 4	Topic: Understanding Drama

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Section A

Theatre Roles and Responsibilities

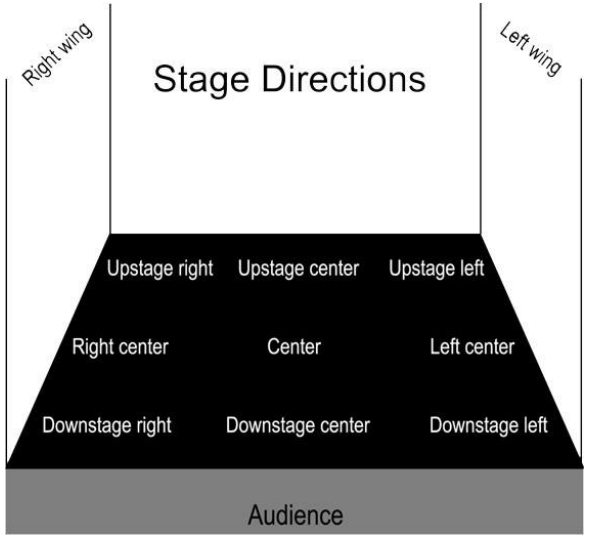
Technician - There are many different types of technicians involved in theatre. They may be involved in rigging the lighting, sound equipment and set. They may also operate technical equipment during a show, controlling lighting, sound or other aspects of the set, e.g. trucks.

Theatre manager - A theatre manager is responsible for the front of house team and is usually a permanent employee of a theatre building. They ensure the smooth running of a performance by looking after the audience.

Stage manager - A stage manager is responsible for backstage during a production. They usually lead a stage management team of a deputy stage manager, assistant stage managers and a company stage manager, and they are involved from before the first rehearsal until after the show has finished. They organise the rehearsal schedule and sit in the rehearsal room making notes that need to be passed onto the design team. During the run of a show, they are responsible for organisational aspects, such as setting props and calling the show.

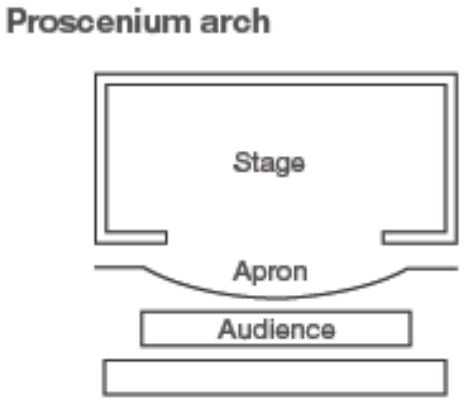
Stage Directions

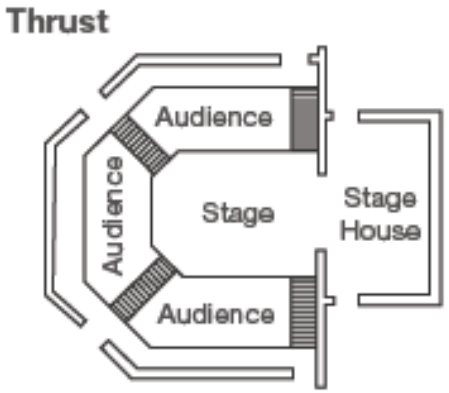
USR – Upstage Right
USL – Upstage Left
DSC – Downstage Centre
CS Centre Stage
CSR Centre Stage Right
CSL Centre Stage Left
DSR Down Stage Right
DSL Down Stage Left
DSC Down Stage Centre

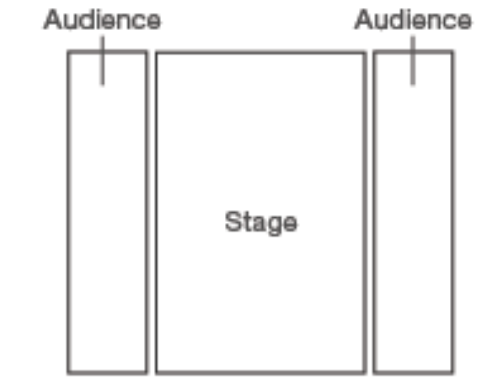


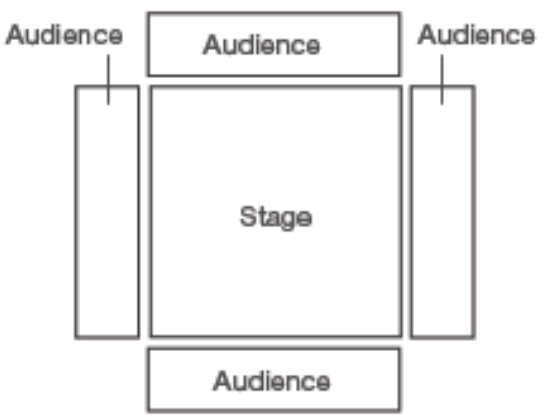
Section A

Types of Staging









Subject: Drama	Term: 4	Topic: Understanding Drama

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Understanding Drama

Section B: Blood Brothers

Historical Context
The city was once a centre of industry with a thriving port which attracted workers from many regions, particularly Ireland and Wales.
The city was bombed during the Second World War.
After the Second World War, particularly in the 1970s and 1980s, Liverpool's economy began to fail.
Housing for poorer communities was built in redeveloped areas of the city
In 1960s and 1970s Liverpool was associated with a thriving music and youth culture.

Political Context: Margaret Thatcher
One of Thatcher's central political beliefs was that success came to those who chose to work hard. In Blood Brothers, Russell contradicts this view. He shows a divided society by having Mickey and Edward attend very different schools and live in different houses. That money and influential connections are necessary to become successful is written into the play. Mickey's failure, despite his good character and hard work, is the basis of the tragedy in the drama.

Social Context

Social class Family and friendship for characters from two different social classes form the heart of the play. Russell shows how wealth brings privilege, even down to the way the Johnstone's and the Lyons are treated differently by the law.
The individual and society: In the play Russell illustrates the influence that society has on individuals, in their education, behaviour and the opportunities they have.
Nature vs. Nurture: The 'nature versus nurture' debate is about how much a persons life is determined by their inherited genetics (their 'nature') and how much is determined by the environment they grow up in ('nurture'). The boys are identical twins and so the difference in the way their lives turn out must be a result of their different upbringings and social positions. Russell uses the twins idea to persuade us that attitudes in society influence peoples lives more than their individual efforts at wanting to do well.

Key Themes in the Play.
Coming of Age – The play follows two baby boys from birth to manhood showing how they change as they grow up.
Nature vs Nurture – An ongoing debate through the play. The play prompts the audience to question whether Edward has been more influenced by external forces or by his biological make-up.
Wealth, Status and Class Division – The Lyons represent success and the Johnstones represent the working class.
Superstition – A recurring theme throughout the play. Mrs Lyons plays on Mrs Johnstones belief in superstitions.

Plot Summary
Blood Brothers, a musical by Liverpudlian playwright Willy Russell, revolves around twin boys (Mickey and Edward) who are separated at birth and brought up in completely different environments in the city. The play, set in the 1960s, is divided into two acts, with songs throughout.

Mickey is brought up with his seven older siblings by his struggling single mother, Mrs Johnstone. His twin brother, Edward, however is brought up as the only child of the wealthy Lyons family, who live nearby, after Mrs Lyons persuaded Mrs Johnstone to hand over one of her twins at birth. Mickey and Edward don't meet each other until they're seven years old, but immediately become best friends and blood brothers. The bond continues when the boys are teenagers and both live in the countryside, despite them both being in love with Mickey's neighbour Linda. However, as they get older, the huge difference in their backgrounds pulls them apart and eventually leads to their tragic deaths.

Written during a period of huge changes in society and politics, Blood Brothers draws the audience's attention to the detrimental effect that social inequality can have on people's lives.

Subject: Drama	Term: 4	Topic: Blood Brothers

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Understanding Drama

Section B: Blood Brothers

Who are the key characters?

Mrs Johnstone – The mother of both Mickey and Edward and seven other children. She is a working class woman who does not have a lot of money. She works hard to provide for her family and is employed by Mrs Lyons as a cleaner.

Mickey – Is the son of Mrs Johnstone, he likes to platy with his friends and looks up to his older brother.

Edward – Is the biological son of Mrs Johnstone however he is brought up by Mr and Mrs Lyons as their own son. Edward has a privileged background and is a very well mannered and polite boy.

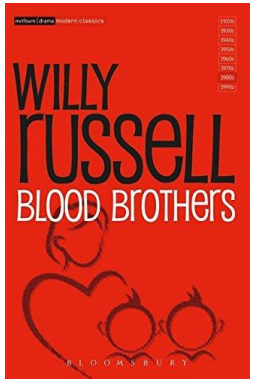
Sammy – Is Mickey's older brother and son of Mrs Johnstone. He is often getting into trouble.

Linda – Is the love interest of the play. She is the same age as Mickey and Edward and begins the play as their friend.

Mrs Lyons - Is a wealthy upper-class woman. She is infertile and when her cleaner, Mrs Johnstone falls pregnant with twins, she asks for one of her babies. She raises Edward as her own.

Mr Lyons – Is the husband to Mrs Lyons and a successful businessman. Mrs Lyons pretends she got pregnant before he went away on a long business trip.

The Narrator – A hugely important figure. He provides crucial information about the narrative and about the characters throughout. The narrator takes different smaller roles as well such as the Milkman and the Bus Conductor.



Can you identify the key moments in these pictures?

Subject: Drama	Term: 4	Topic: Blood Brothers

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Understanding Drama

Tackling Section B

Using your knowledge of the play to answer the written paper: Section B
You will be given an extract from the play and then you will need to answer four questions. (Below is a summary of what the questions will be on.)

Question 1: 4 marks (Always a design question linked to context)

Question 2: 8 marks (How would you perform… using physical and vocal skills)

Question 3: 12 marks (How would you perform… using physical and vocal skills to show an effect… linked to one part of the extract)

Question 4: 20 marks (How would you perform… using physical and vocal skills to show… how does this link to the rest of the play)

KEY PHRASES
"To communicate to the audience……."
"I would show this by using…"
"The actor would…"
"The designer used…"

You must use as much key terminology from the boxes on the next page as possible in all your answers to be able to access all of the grading criteria.

CHARACTER
ROLE
PURPOSE
CASTING
APPEARANCE
AGE
BUILD
COLOURING
SOCIAL CONTEXT
GENDER
RELATIONSHIPS
INTERACTION
STATUS
ATTITUDE
MOTIVATION

PHYSICAL SKILLS/ ACTION
MOVEMENT
GAIT
POSTURE
GESTURE
PACE
TENSION
MANNERISM
RHYTHM
TEMPO
FACIAL EXPRESSION
INTERACTION
MIME
EXAGGERATION
PHYSICALITY
STILLNESS
LEVELS
USE OF SPACE
CHOREOGRAPHY

VOCAL SKILLS
VOLUME
PACE
PITCH
INTONATION
RHYTHM
TONE
DIALECT
ACCENT
MANNERISM
PAUSE
SILENCE
CONTRAST
NARRATION
VERSE
TIMING
SONG
PHRASING
EMOTIONAL RANGE

SETTING
SPACE
STAGING FORM
RELATIONSHIP TO AUDIENCE
ENVIRONMENT
LOCATION
PERIOD
GENRE
TEXTUAL DEMANDS
SET DRESSING
SHAPE
SCALE
MATERIALS
COLOUR & TEXTURE
DURABILITY
SYMBOLISM
ATMOSPHERE
LEVELS
IMAGERY
STAGE MACHINERY

TEXT
MEANING
GENRE
PERIOD & CONTEXT
CONVENTIONS
STRUCTURE
EXPOSITION
PLOT
DENOUMENT
SUB TEXT
THEMES
ISSUES
ATMOSPHERE
CLIMAX
TEXTUAL DEMANDS
MONTAGE
NARRATION

DESIGN ELEMENTS
LIGHTING= SPACE / INTENSITY / COLOUR / TIMING & PACE / ATMOSPHERE / CONVENTIONS / FOCUS / LANTERNS / GELS OR FILTERS / SPECIAL EFFECTS / TEXTURE / SCALE / LINE / SHAPE / BARN DOORS / GOBOS / ANGLE / PROFILE / FRESNEL / PARCAN / FLOOD / LED / INTELLIGENT LIGHTING
COSTUME= COLOUR / TEXTURE / FIT / CUT / SHAPE / PERIOD / SYMBOLISM / ENVIRONMENT / DURABILITY / GENRE / MOVEMENT / ACCESSORIES / CONTEXT / MASK / MAKE-UP / PERSONAL PROPS
SOUND= VOLUME / PITCH / TONE / PACE / MUSIC / SOUND EFFECT / SOUNDSCAPE / PERIOD / ENVIRONMENT / MOOD / ATMOSPHERE / SPECIAL EFFECTS / TIMING / CONTEXT

Subject: GCSE Fine Art	Term: 4	Topic: Patterns in Nature

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 1 Research & Observational Recording

AO3: Mood board – Home Learning

Choose one of the below countries to research the patterns that have developed within that culture and create a mood board of images.

Africa
Islam (Islamic)
New Zealand (Maori)
Australia (Aboriginal)
India (Mandala)
Mexico (Day of the Dead)

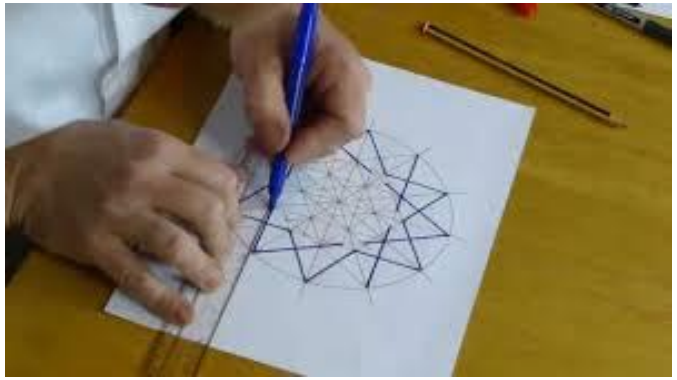
Each nation has different culture, so their art works are modified according to their culture

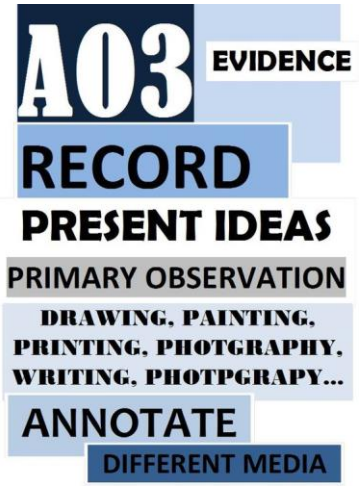
Assessment Objective 3 (AO3)

AO3- Record ideas, observations and insights relevant to intentions as work progresses.

Patterns in Culture

AO3: Drawing from observation: Making a recording of one of your collected pattern images.





Subject: GCSE Fine Art	Term: 4	Topic: Patterns in Nature

Home Learning Week 2 Contextual Studies – Patterns in Culture

AO1: Explore the work of artists, ideas and concepts: **Vocabulary**

Using the correct vocabulary in your annotation will show that you are developing your knowledge, understanding and skills. Think about using key terms, such as:

Subject –
- what is shown in the artwork?
- who is it a portrait of?
- what objects are in a still life?
- what is your natural or built environment?

Composition –
- how are the elements of the work arranged?
- are they close together or far apart?
- what is the overall shape of the composition?
- what viewpoint is it shown from?

Foreground and background –
- which elements appear close up or further away?

Visual elements –
- how are line, shape, colour, tone, form, texture and pattern used?

Assessment Objective 1 (AO1)

Develop ideas through investigations, demonstrating critical understanding of source

Think carefully about how your annotation looks. It should add to your work and not distract from it.
Make sure handwritten annotation is easy to read. If your handwriting is messy you might be better printing your notes.
If you want to print notes you should use a font that complements your images.
Don't feel you have to write in full sentences. Noting key words or phrases can be just as effective.

Write about an artist that creates patterns related to the below cultures.

Africa - Alaoula Senbanjo
Islam (Islamic) – el Seed
New Zealand (Maori)-Aaron Mctaggar
Australia (Aboriginal) - *Tradara Briscoe*
India (Mandala) – Steven Meakin
Mexican (Day of the Dead) - Alfonso Castillo

Short, simple notes using correct vocabulary can give a clear idea of your understanding and knowledge

Subject: GCSE Fine Art	Term: 4	Topic: Patterns in Nature

Week 2 – Artist Transcription

Develop ideas through investigations, demonstrating critical understanding of source

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Assessment Objective 1 (AO1)

AO1: Transcription of artist explored

Make a transcription of explored artists work. A transcription is when you take a piece of art and draw from it to understand how it is made. It isn't copying because you are not replicating it exactly. Instead, you are distilling the image, taking from it what you want, and leaving the rest behind. It is a tool artists have used for centuries.

African Artist; Alaoula Senbanjo

Islamic Artist; eL Seed

Day of the Dead; Alfonso Castillo

Aboriginal Artist; Tradara Briscoe

Mandala Artist – Stephen Meakin

Maori Artist Aaron McTaggart

Subject: GCSE Fine Art	Term: 4	Topic: Patterns in Nature

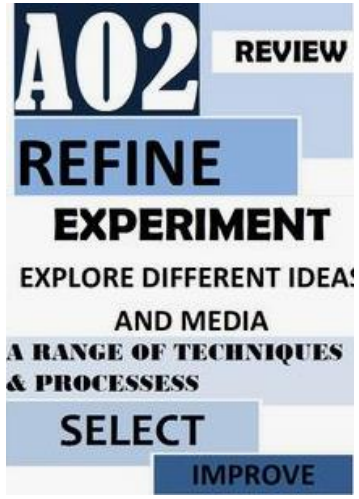
WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 3 – Developing Design Ideas

AO2: Developing Design Ideas

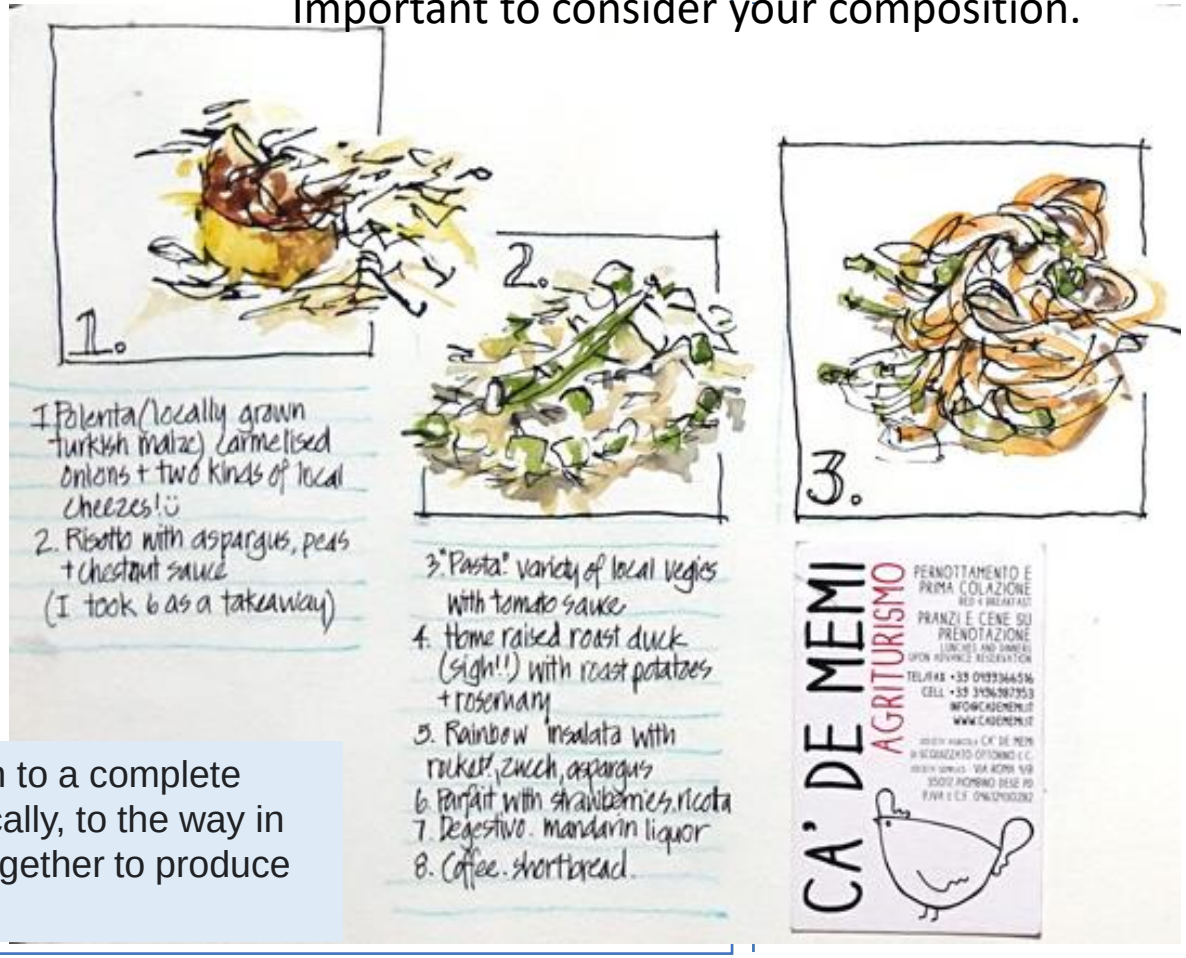
Assessment Objective 2 (AO2)



Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

Create initial sketched design ideas for a final outcome that combines natural forms with your chosen culture.

Important to consider your composition.



Composition is the term given to a complete work of art and, more specifically, to the way in which all its elements work together to produce an overall effect.

Create a refined design ideas for final outcome.

Subject: GCSE Fine Art	Term: 4	Topic: Patterns in Nature

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 4, 5 & 6 Final Outcome – Patterns in Culture

AO4 OUTCOME

PRESENT

FINAL IDEAS

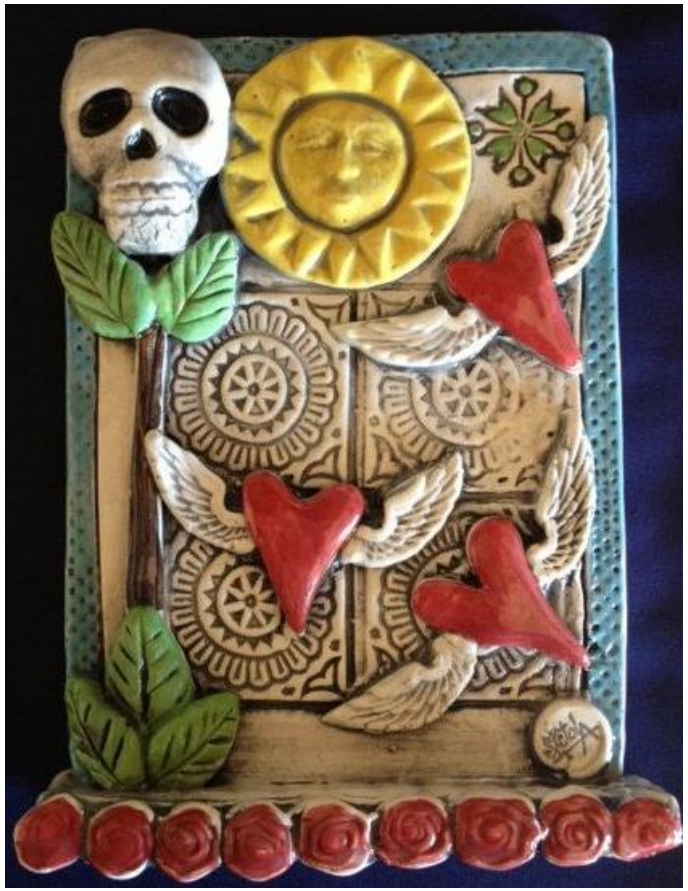
DEVELOPED AS PLANNED

CLEARLY RESPONDS TO ARTISTS EXPLORED

CONNECTION

CONCLUSION

Final Outcome - Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.



Final Outcome created either from; Acrylic Paint, Clay or Lino Print.

Subject: GCSE Fine Art	Term: 4	Topic: Patterns in Nature

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 1-6 Annotation

AO1: Annotating your work, ideas and concepts

Annotations are written explanations or critical comments added to art or design work that record and communicate your thoughts.

- analyse the work of an inspirational artist or designer
- record a technique
- record ideas
- explain the thinking behind an idea
- analyse the success of a technique, idea or composition
- explain how a particular artist or designer's style or technique has influenced your work#

Annotations can be used for your own reference, e.g. to make a note of how you achieved a technique, or to record an idea you might like to try later.
They can also be used to communicate information to the examiner that will help explain your thoughts and decision-making processes.
Using annotations can demonstrate evidence of planning, decision-making and problem-solving ability, which will all contribute towards your assessment.

Assessment Objective 2 (AO2)

Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

To annotate your work successfully, you should explain:

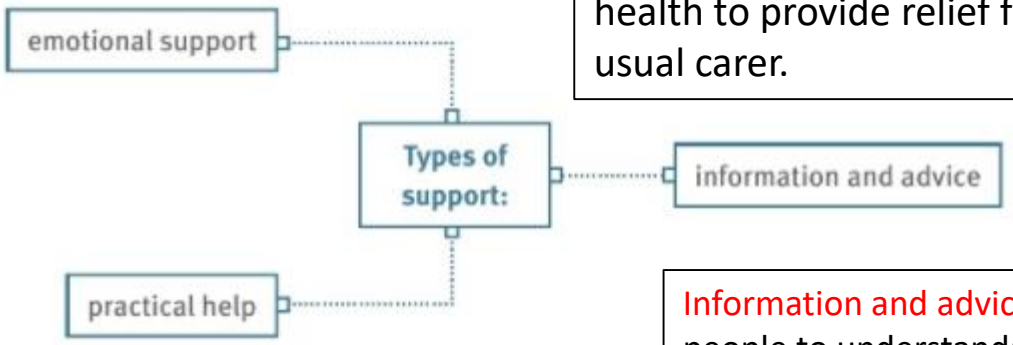
- what you have done and why you did it
- how you did it, such as the media and techniques used
- why you chose a particular medium or technique
- how an artwork or design fits in with your project
- what aspects you like
- how you could improve the work
- what you think you will do next

Carefully placed annotation can complement your visual work as well as explaining it

Subject: Health and Social Care	Term: 4	Topic: Learning Aim B Life events

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 1 – Types of support



Respite care involves temporary care of an individual with ill health to provide relief for their usual carer.

Emotional support is essential to help individuals cope with all life events.

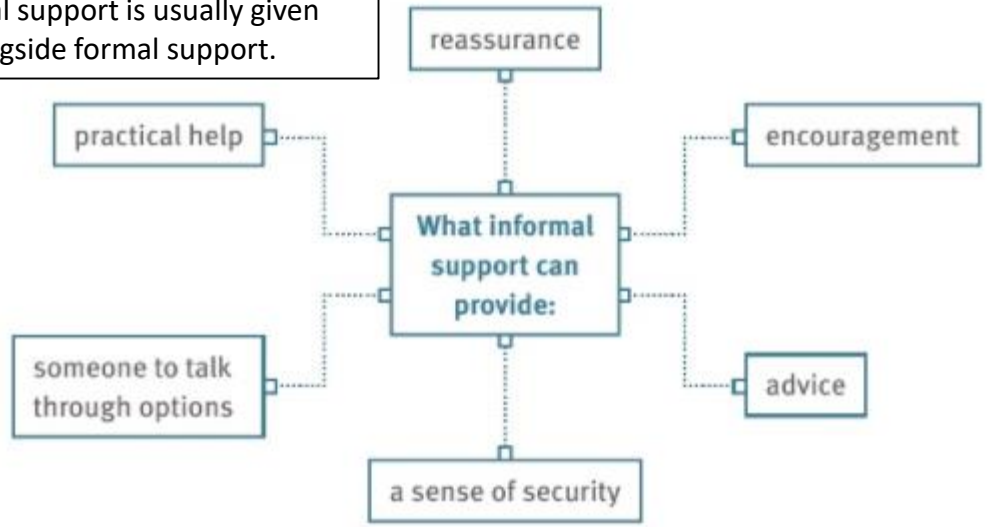
Practical help can include financial help, childcare and transport.

Information and advice helps people to understand;

- Where to go for help
- The choices available to them
- How to make healthy choices

Week 2 – Informal support

Support given by partners, family and friends is often the first level if support that a person receives. Informal support is usually given alongside formal support.



Reassurance: Help give people confidence to deal with the life event.
Encouragement: if people have someone who believes in them, they are more likely to accept and adapt.
Advice: family and friends will generally know the individual best and therefore will be a good source of advice because they will:

- Know the persons background
- Understand the persons needs
- Recognise when the person is not coping
- Suggest ways of overcoming difficulties
- Suggest when the person would benefit from formal help

Security: support from people who are trusted is more likely to give individuals the strength to cope with life changes events.

- Someone to talk to: talking people to;
- Come to terms with events
- Find ways to cope

Practical help: help can be given through;

- Supporting everyday tasks
- Providing childcare
- Providing transport

Subject: Health and Social Care	Term: 4	Topic: Learning Aim B: Life Events

WOOTTON PARK
'Ipsum quod faciendum est diutius durant'

Week 3 – Professional sources of support

Professional describes a member of a profession who is trained and skilled in their area of work.

When a person experiences an accident and injury they may need:

- a trained surgeon and/or medical team to treat the initial injury
- a professional counsellor to talk through what has happened and help them deal with their emotions
- a physiotherapist to support the person to regain or improve mobility
- occupational therapy to help the person to regain independence.

Formal support may be provided by;
Statuary care services – provided by the state
Private care services – privately funded
Charitable organisations – non-profit making

Life circumstance	Professional support
Exclusion from education	• Behaviour support teams – teachers' specialist knowledge of social, emotional and behavioural difficulties. • Educational psychologists – provide support for behavioural problems. • Department for Education – provides guidance on the exclusion processes and support to get back into education.
Imprisonment	• Probation service – supervises offenders when they leave prison and provides support such as directing them to training and a place to live. • Children's social services – provides support to families of prisoners. • Counsellors or cognitive therapists – provide support to people with drug or alcohol problems.
Redundancy	• Careers advice services – provide advice on training or job opportunities. • Counsellors - help people come to terms with life change.

Professional support from carers or services can help people to:

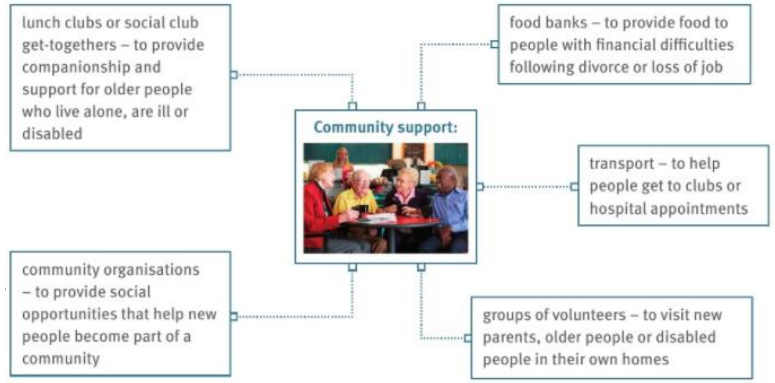
- Maintain or improve a health condition
- Regain mobility and fine motor movements
- Come to terms with life changes
- Understand own emotions
- Get advice and information
- Change their lifestyle

Week 4 –Voluntary sources of support

Voluntary organisations employ qualified people who are paid from donations.

Voluntary sources of support work alongside:

- Informal support given by families
- Formal support given by trained professionals



Community organisations are non-profit making and work at a local level to support the particular needs of people living in the same neighbourhood.

Faith-based organisations are formed by groups of individuals who share religious or spiritual beliefs.
Faith groups:

- Take on wider responsibilities of community groups
- Support peoples emotional, social and physical needs

Organisation	What it does	Life event	Who it supports
Prince's Trust (www.princes-trust.org.uk/)	Provides advice, support and help with education and training to get a job	Imprisonment	Adolescents and young adults who are disadvantaged
Home-Start (www.home-start.org.uk/)	Carries out home visits or organises groups so that new parents can talk and share their worries; refers parents to other services if there are concerns	Parenthood	Parents with young children
Royal National Institute of Blind People (www.rnib.org.uk/)	Gives help and practical advice on sight loss; supports training, education and work; campaigns for better services	Accident/ill health	People with loss of sight
Cruse Bereavement Care (www.cruse.org.uk)	Provides support, information and advice to people when someone close to them dies. This may be face to face or via email or telephone	Bereavement	People of all ages who have been bereaved
Relate (www.relate.org.uk)	Offers face-to-face counselling, workshops and online chat lines	Divorce	People who are experiencing problems and breakdown in relationships/marriage

Subject: Health and Social Care	Term: 4	Topic: Learning Aim B: Coursework

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Week 7 –

Organisation	What it does	Life event	Who it supports
Prince's Trust (www.princes-trust.org.uk/)	Provides advice, support and help with education and training to get a job	Imprisonment	Adolescents and young adults who are disadvantaged
Home-Start (www.home-start.org.uk/)	Carries out home visits or organises groups so that new parents can talk and share their worries; refers parents to other services if there are concerns	Parenthood	Parents with young children
Royal National Institute of Blind People (www.rnib.org.uk/)	Gives help and practical advice on sight loss; supports training, education and work; campaigns for better services	Accident/ill health	People with loss of sight
Cruse Bereavement Care (www.cruse.org.uk)	Provides support, information and advice to people when someone close to them dies. This may be face to face or via email or telephone	Bereavement	People of all ages who have been bereaved
Relate (www.relate.org.uk)	Offers face-to-face counselling, workshops and online chat lines	Divorce	People who are experiencing problems and breakdown in relationships/marriage

Section 1
The first section of your information pack should begin by introducing the individuals and the life event you have selected.
You should then explain the impact of the life event on each individual, giving examples of the different ways in which each person was affected by the same event.

Section 2
The second section of your information pack should explain how your two, chosen individuals adapted to the life event using support from agencies, families other organisations, giving examples of the sources of support used by each individual.

Section 3
The third section of your information pack should assess how well each individual adapted to the selected life event, the role support played in helping each one to adapt and how valuable this was.
You should also compare the ways in which each individual adapted to the changes brought about by the life event.

Look for similarities as well as differences in the reactions of each person. Then, you must justify your reasons on whether and how well, each person adapted. Suggest the importance of different types of support considering the extent to which each type of support helped them adapt.

You will need to focus on;

1. The actual life event and the impact of this on each of the individuals
2. How each individual adapted to the life event
3. The role that support played in helping them to adapt and the value of the support to the individuals

Subject: Creative iMedia	Term: 4	Topic: RO85 Creating a multipage website revision

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'Ipsum quod faciendum est diutius durant'

Week 1

Understanding the properties and features of multipage websites

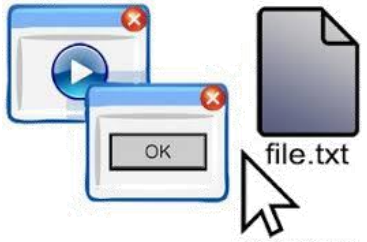
Websites and the internet are part of everyday life; they are used for any number of purposes and are often the first port of call for access to information and services because most websites are public domain.

Multi page websites have several pages that are linked in one or more ways. Websites can have different purposes and features.

Purposes of websites; Education, Online retail, Information and services, Promotion, Entertainment.

Features of websites; House style – Colours, fonts and banners to match the company's 'look'. Consider functional navigation. GUI - graphical user interface.

Extended learning: https://www.bbc.co.uk/bitesize/guides/z3gqhv4/revision/1



Example of a GUI

Week 2

Devices used to access webpages

There are an ever increasing number of devices that can be used to access webpages. They fall into a number of categories;

Laptops and personal computers, Tablets, Mobile devices and smartphones, Games consoles and digital television.

Extended learning: https://www.ictlounge.com/html/accessing_internet.htm

Week 3

Methods of internet connection

Wired broadband: requires a router. The router connects the computer(s) and the phone socket, so you can connect the wired local area network in the building to the wide area network (WWW). An internet service provider manages access.

WIFI: Provides broadband internet access and typically connects via a wired router. WIFI is often used to connect laptops, mobile devices and tablets to the internet.

3G, 4G and 5G wireless broadband: Via the mobile network using radio wave transmission. Speed and availability will vary by location.

Extended learning: https://www.bbc.co.uk/bitesize/guides/zh4whyc/revision/4 Identify three purposes fulfilled by websites

Subject: Creative iMedia	Term: 4	Topic: RO85 Creating a multipage website revision

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

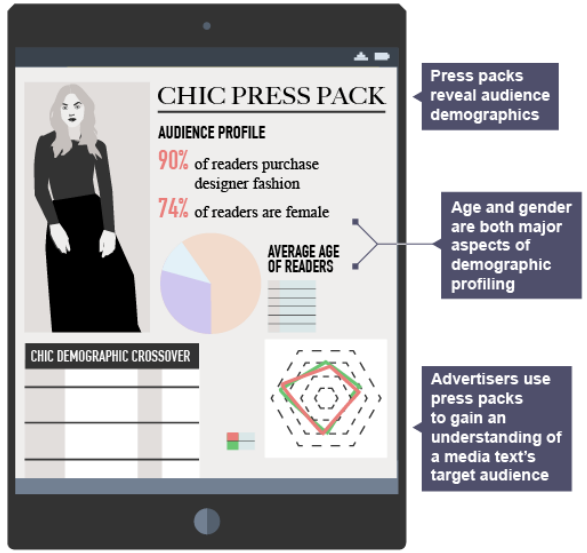
Week 4

Interpreting the client requirements and target audience for a multipage website;

Understanding client requirements is vital when creating a successful product. When reviewing the client brief you need to be able to interpret clearly what the client needs you to make and the elements the website needs to have.

As well as style and design you need to think about the functional elements such as:
Number of pages, Media content, Information on each page, Type of navigation and Additional requirements of your client

Some key elements include understand the requirements of your target audience:
Categorisation of the target audience
Literacy levels
Accessibility needs
Devices and connection method they might use.



Extended learning:

Week 5

Producing a work plan for a multipage website;

When creating a complex project such as a multipage website it is particularly important to plan your time.
There are many different tasks and features that need to be incorporated into a plan to ensure that you create a working website which meets the client brief and is delivered on time.

There are a range of elements to consider when planning your project which you have looked at in RO 81 and RO 82.
Creating a Gantt chart to include; workflow, resource is, milestones, contingencies.

Gantt chart tutorial: https://www.youtube.com/watch?v=un8j6QqpYa0
Extended learning: https://www.bbc.co.uk/bitesize/guides/z2yxtyc/revision/6

Subject: Creative iMedia Supported content	Term: 4	Topic: RO85 Creating a multipage website revision

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Week 1

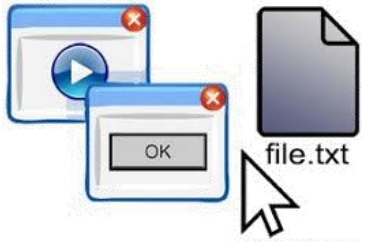
Understanding the contents and features of multipage websites

Websites and the internet are part of everyday life; they are used for any number of purposes and are often the first port of call for access to information and services because most websites are public domain which means they are available for everyone to access.

Multi page websites have several pages that are linked in one or more ways – usually by clicking on hyperlinks. Websites can have different purposes and features. Reasons for websites include; Education, Selling stuff online, Information and services, Promotion, Entertainment.

Features of websites; House style – Colours, fonts and banners to match the company's 'look'. GUI - graphical user interface – using pictures to get around.

Extended learning: https://www.bbc.co.uk/bitesize/guides/z3gqhv4/revision/1



Example of a GUI

Week 2

Devices used to access webpages

There are a growing number of devices that can be used to access webpages. They fall into a number of categories;

Laptops and personal computers, Tablets, Mobile devices and smartphones, Games consoles and digital television.

Extended learning: https://www.ictlounge.com/html/accessing_internet.htm

Week 3

Methods of internet connection

Wired broadband: requires a device called a router. The router connects the computer(s) and the phone socket, so you can connect the wired local area network in the building to the wide area network (WWW). An internet service provider manages access.

WIFI: Provides the internet and usually connects by a wired router. WIFI is often used to connect laptops, mobile devices and tablets to the internet. 3G, 4G and 5G wireless broadband: Via the mobile network which uses radio waves to send data. Speed and availability will change depending on where you are.

Extended learning: https://www.bbc.co.uk/bitesize/guides/zh4whyc/revision/4 Identify three purposes fulfilled by websites

Subject: Creative iMedia Supported content	Term: 4	Topic: RO85 Creating a multipage website revision

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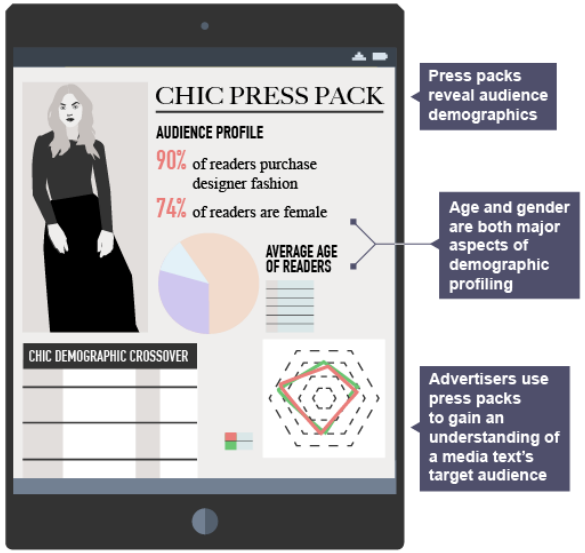
Week 4

Understanding the client requirements and target audience for a multipage website;

Understanding what the client wants is really important when creating a successful product. When reviewing the client brief you need to be able to interpret clearly what the client needs you to make and the things they want you to include.

As well as style and design you need to think about how it will work:
Number of pages, Media content, Information on each page, Type of navigation and Additional requirements of your client

Some key elements include understand the requirements of your target audience:
Talking in detail about your target audience
Literacy levels
Accessibility needs
Devices and connection method they might use.



Extended learning:

Week 5

Producing a work plan for a multipage website;

When creating a complex project such as a multipage website it is particularly important to plan your time.
There are many different tasks and features that need to be incorporated into a plan to ensure that you create a working website which meets the client brief and is delivered on time.

There are a range of elements to consider when planning your project which you have looked at in RO81 and RO82.
Creating a Gantt chart to include; workflow, resource is, milestones, contingencies.

Gantt chart tutorial: https://www.youtube.com/watch?v=un8j6QqpYa0
Extended learning: https://www.bbc.co.uk/bitesize/guides/z2yxtyc/revision/6

Subject: Photography	Term: 4	Topic: Fundamentals of Photography

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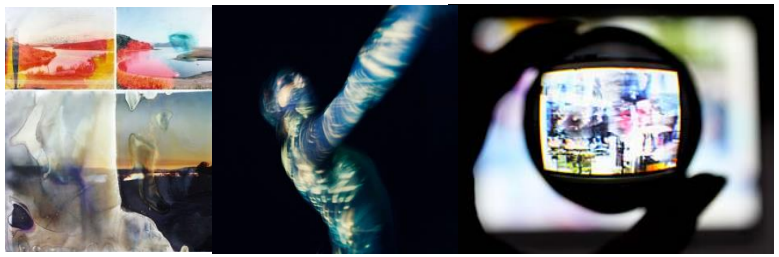
Week 1

GSCE Course Content

AO1- Research images and artists

Begin with a strong starting point. Research this starting point and photographers and techniques linked to your idea. Presentation and narrative is key. Examples: Mind Maps, Artist Research, Photograph Analysis, Analysis of Techniques.



AO2- Experimenting with materials and techniques

Reduce and refine your ideas and explore this in detail, analytically and aesthetically. Explore the visual elements such as colour, shape, texture etc. Start to experiment and develop these ideas further by choosing a photographer/ a photograph, analyse it and recreate it, and then reflect on it and it's influence on your own work! Photograph techniques, digital and manual manipulation.

AO3- Recording ideas

Recording your ideas, observations, analysis and reflection. Should include visual and written work. This is important as it documents your artist influence and experimentation which is essential to your mark. It is a cycle of influence, recreation, experimentation, reflection and refining. Examples – Photoshoot planning, Contact Sheets, Photographs and Annotations, Photograph Analysis

AO4- Final piece and evaluation

Your final piece must reflect everything you have analysed and explored throughout your project, and show a clear journey from starting point to final piece. If its not clear to you, it certainly won't be evident to the examiner, so make sure it is a coherent body of work. It should be influenced by the work of others but must not be a copy of others' work. It has to be unique.

Artist Essay

Write a minimum of 350 words analysing the photographic works of a chosen artist following the guidelines below.
You will describe a range of significant visual features. You will demonstrate a clear and detailed understanding of the artist's intentions.

Emerging: Introduction- 50 words (minimum)
Firstly, when writing about an artist you should always note the following:
- Name of artist / designer
- Title of artwork
- Date of artwork
- Medium used (ie: oil on canvas)
- Why did you select this artist to study?

Sentence Starters
The photographer I have chosen to study is…
The title of the artwork I will be analysing is… which was created on the…
The photographer used (digital photography, dark room photography etc.)
I chose this work because I was interested in the (technique, process, style, concept etc.)

Developing: Description- 100 words (minimum)
What is it?
Describe the artwork in as accurate and detailed a manner as you can. Imagine the reader has never seen this image.
- What does it look like?
- What is the subject?
- What is the focus of the work?

Comment on the way it has been composed. Discuss the way the artist has used the visual elements such as; colour, tone, form, shape, line, space, pattern, texture, etc…
Don't forget to mention your own responses to the artwork; how it makes you feel and anything it reminds you of.

Securing: Analysis- 150 words (minimum)
How was it made?
Try to analyse the processes and techniques the artist or designer has used. What materials have been used? Have you ever tried to create similar effects or used similar materials?
Why was it made in that style?
Think about why it was made in this particular way and not another. What do you think the artist's intentions were? How does this artwork compare to others made around the same time, or in the same area? What was life like at the time this artwork was made? How was it interpreted when it was made? Do we still think of it in the same way today?

Sentence Starters
The photograph achieved this effect using (name process, techniques used).
I have tried/ not tried this technique before.
The materials in the image are… this is important because/ the reason this is used is…
I think the photographer uses this techniques/ materials/ concepts because…
I think the photograph was influenced by…
I think the viewer's interpretation has/may change over time because…

Subject: Photography	Term: 4	Topic: AO3

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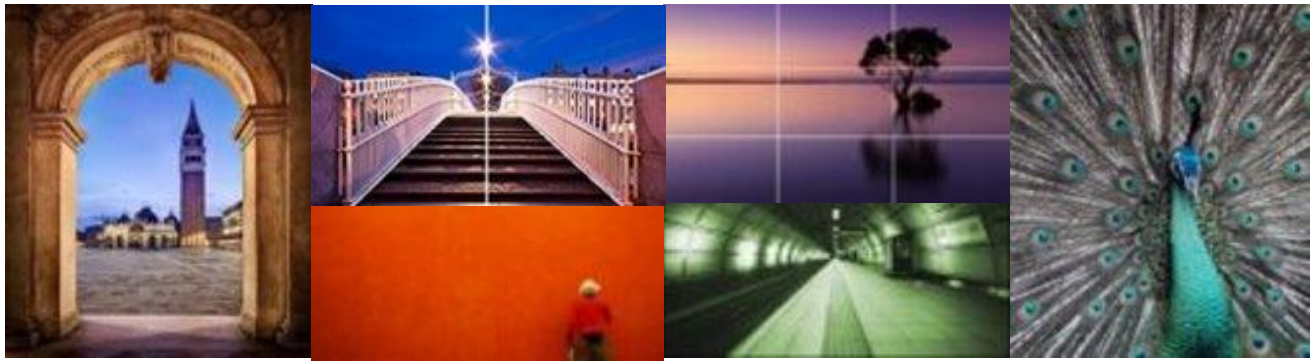
Week 2

Photographic Visual Elements

The **viewpoint** refers to the position a photograph is taken from. There are three common view points, **worm's eye view**, **bird's eye view**, and **eye level**. Angles are the specific location of the camera and the direction a photograph is taken from. Both of these elements have an impact on the composition, interest and overall success of your image.

Lighting is a key factor in creating a successful image. it is necessary to control and manipulate light correctly in order to get the best texture, vibrancy of colour and luminosity on your subjects. Lighting can be **natural** or **artificia**l. It can be **harsh** or **soft**. The direction and intensity of the lighting not only affect the clarity of the image but the position of shadows. This in turn effects the **atmosphere** or **mood** of an image.



Composition is the arrangement or placement of object in an image to maximise **aesthetic value**. It is an extremely important skill in creating success photographs. This skill requires practice in order to "train your eye" to achieve your outcome.

Above are some examples of different styles of composition. **Rule of Thirds, Symmetry, Centred, Negative Space, Leading Lines, Framed** and **Filling the Frame** are some of the most common compositions used. Can you identify the type of composition shown in each example?

Subject: Photography	Term: 4	Topic: Experimentation AO2

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Week 3 - 4

Digital Manipulation

You will learn how to manipulate your photographs in the style of the below artists (left to right Camila Casullo, Nico Goodden, Brandon Kidwell, Barbara Kruger and Julie Cockburn). You will learn how to isolate colour, create a double exposure affect, add text and repeat and rotate to create patterns. You can find YouTube tutorials for all of these skills to practice using Photoshop prior to your lesson.

Subject: Photography	Term: 4	Topic: Experimentation AO2

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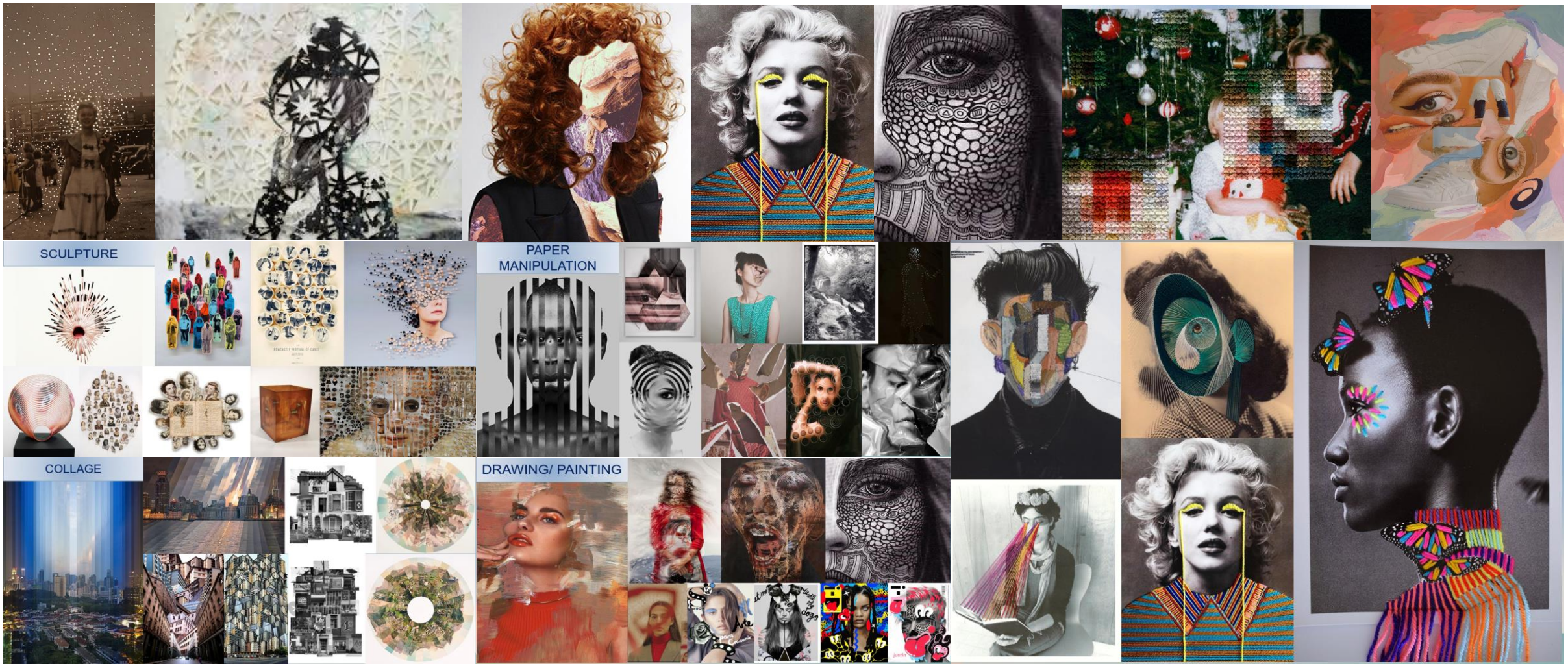
Week 5 - 6

Photographic Visual Elements

You will learn how to manipulate your photographs in the style of the below artists (left to right Amy Friend, Elise Wehle, Erin Case, Victoria Villasana, Alana Dee Haynes). You will learn how to create tessellation patterns, negative space effects, create a double exposure affect, add embroidery and add drawing/ etching to your photographs.



Subject: Photography	Term: 4	Topic: Fundamentals of Photography

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Key Vocabulary and Definitions

Aesthetic Value - The positive attributes of a visual.

Composition - The artistic arrangement of the parts of a picture.
Rule of Thirds - The **rule of thirds** is applied by aligning a subject with the guide lines and their intersection points on a gird split into thirds
Symmetry - Symmetry is when both sides of an image are the same or hold equal weight
Centred - The subject of an image is centred in the photograph.
Negative Space - Is the area surrounding the main subject in a photograph which is left unoccupied.
Leading Lines - Lines that appear in a photograph that have been framed and positioned by the photographer to draw the viewer's eye towards a specific point of interest.
Framed - A frame within a frame occurs when you use a visual element in the image to frame the primary subject.
Filling the Frame - These means the subject(s) takes up a significant part of your image, filling up to the edge or the frame of your photograph.

Viewpoint - Refers to the position a photograph is taken from. There are three common view points, **worm's eye view**, **bird's eye view**, and **eye level**.
Lighting - Refers to the way a photograph is light this can be catagoriesed **natural** i.e. sunlight or **artificia**l i.e. lamp, studio setting. It can also be **harsh** (bright and defined, casts strong contrast/shadows)or **soft** (glowing and evenly dispersed). Different effects are created using different lighting positions i.e. back lighting, side lighting.
Focus - Describes the part of a photograph that is sharpest or clearest. Can also refer to the most important part of a composition.
Depth of Field – Is the distance between the nearest and the furthest objects giving a focused image.

Narrative - The story which the photographer creates using the different visual elements.
Mood - The suggestion of a particular feeling or state of mind a photographer creates using the visual elements. Can also be known as atmosphere.

Subject: Psychology	Term: 4	Topic: Development

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Week 1 – Key Study- Blackwell and Dweck (2007)

A01

Background= students who believe intelligence is flexible (growth) gained better grades than those who believed it was fixed

Study 1

Aim= To see whether theories of intelligence correlate with academic achievement and to test the impact of academic intervention

Hypothesis=There will be a relationship between 7th grade students idea of intelligence (fixed or growth) and their achievements based on a Maths test

Method= Longitudinal over 5 years, correlational field study, 373 students from 4 7th grade classes in NY USA.

Scores on a math's test was taken as well as a motivational questionnaire which assessed their mindset, learning goal, effort beliefs and response to failure

Results= No significant correlation between mindset and other motivational scores or Maths test result in 7th grade HOWEVER when tested at the end of 7th grade and 8th grade there was a correlation

Conclusion= If they believed their intelligence could change then they improved more than those who thought IQ was fixed

Study 2

Hypothesis= Students who are taught to think intelligence changes display more motivation and achieve more highly than those not taught this

Method= correlational field study, independent measures design in a secondary school in NY USA again. They grouped people into intervention group or control group (not given intervention). 99 participants used with consent gained

Procedure= PPs completed the motivation questionnaire, randomly assigned to intervention group or not. Intervention group were taught that **'learning changes the brain by forming new neural connections and that students are in charge of this'**

Maths grades, motivation score and teacher assessment were recorded after 8 sessions

Results= PPs in intervention group had more positive mindsets in the motivation questionnaire, the teacher report showed 27% had more positive motivation, and the intervention group did better on the Maths test

Conclusion= Positive mindset=more motivated and teaching students that intelligence is flexible has a positive impact on motivation and achievement

A03

☹ Culturally biased- NY schools may not represent other countries

☹ Impact measured was small

☹ Reductionist as only focused on students mindset and if parents and teachers also had this belief then this would contribute to findings

Subject: Psychology	Term: 4	Topic: Development

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

Week 2 – Development-Applications

How Piaget's Ideas Have Been Applied to Education

Readiness-Piaget identified stages that children develop. Teachers need to ask learners questions in a way that takes into account their developmental stage. He believed intelligence was innate and all children are ready at the same stages

Sensori-motor- A child in this stage should be given toys like rattles to learn how to grasp it and make sounds

Pre-operational- Children should be encouraged to dress up and play role play games

Concrete operational- Help them to learn to cook so they can develop conservation with ingredients

Formal operational- Engage children in debates to help hypothetical thinking

Active learning- Piaget suggested the classroom should encourage 'discovery learning' and learning through play, solving problems and thinking creatively

How Learning Theories Apply to Education

Growth Mindsets- Teachers should set tasks that allow learners to make progress and achieve, encouraging them to work hard and give them the tools to succeed. Teachers should praise for effort and not for intelligence

Meaning not learning styles- Evidence shows learning styles don't work so lessons should not be differentiated to suit this but instead focus on supporting progress. Students need to be encouraged to think about the meaning of content.

Subject: Psychology	Term: 4	Topic: Psychological Problems

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Week 3 – Defining Mental Health, Prevalence and Incidence

Mental health continuum- a way of defining mental health by looking at it on a scale. Individuals may feel more or less mentally healthy at different times in different situations

Jahoda (1958) suggested good mental health is:

- High self-esteem
- Personal growth and self-actualization
- Autonomy
- Accurate perception of reality
- Mastery of the environment

Prevalence of Mental Health Problems

Prevalence= the number of people with a mental health problem at any one time

¼ British adults report being diagnosed with a mental health disorder

Every year 1/10 children (5-16) are diagnosed

APMS (adult psychiatric morbidity survey)

- 16-24 year olds are more likely to suffer from panic disorders and phobias
- 45-54 are more likely to suffer from anxiety
- Women are more likely to suffer anxiety, depression, phobias and OCD
- LGBTQ are more at risk of experiencing mental health problems

Prevalence Over Time

- This is difficult to track because not all are recorded and diagnosed, symptoms change over time, self-report surveys are not accurate.
- Despite these issues there is clearly a rise in mental health in the UK in particular mood and anxiety disorders.
- There is also a change in attitude and diagnosis over time for example what classes as a symptom and how long someone has to have it
- Changes over time e.g homosexuality which used to be classed as a disorder in the 1990s

How Attitudes Have Changed

- We avoid stigmatized words such as 'insanity' and 'crazy'
- Mental Health Act (1959) used 'mental disorders'
- Mental health treated similarly to physical
- 1970's Mind charity was formed and campaigned
- 1980's rise in community care
- 90's onwards we see more groups such as 'Time To Change'

Week 4 – Changing Attitudes towards mental health

The effects of stigma on individuals before and after diagnosis

- Cognitive factors (stigmas) are hard to measure but self-report methods can try to
- Before diagnosis people can be perceived as 'weird' or 'crazy'
- After diagnosis individual disorders carry their own stereotype such as Schizophrenic= 'violent and dangerous'
- This could lead to a self-fulfilling prophecy

The effects of discrimination on individuals before and after diagnosis

- Friendship rejection
- People are often less likely to help you because the 'issue' isn't physical
- After diagnosis family can exclude you and employers may treat you differently or you may be less likely to get a job

The effects of significant mental health problems on the wider society, including care in the community

- Increase in mental health issues= a strain on the NHS
- Lack of funding=more needed from tax payers
- More people needing help=the quality of care reduces
- Community care is often used instead of psychiatric but some argue this is too much pressure for families and communities without the resources or time
- Society has had to pass laws to protect people with disabilities including mental health
- The rise in prevalence means people have to interact with those who have mental health conditions and this can impact attitudes and reduce discrimination
- Campaigns have raised awareness

Subject: Psychology	Term: 4	Topic: Psychological Problems

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Week 5 – Schizophrenia- Characteristics and Social Drift Theory

Schizophrenia= A psychotic disorder where people lose their sense of self and reality
International Classification of Diseases= A manual that lists hundreds of mental disorders with their associated symptoms used by medical professionals to diagnose disorders
Classification= Thought disturbances, delusions, hallucinations, disorganized speech, catatonic behaviour, negative symptoms (e.g withdrawal from activities)
Key Statistics= 1% of population diagnosed, normally in those under 40, affects men and women equally but men more likely to be diagnosed in 20s women in 30s, 10 years after diagnosis 25% fully recover

Social Drift Theory

- Mental health issue= drift into bottom of society
- Schizophrenia is most often linked to class as working class people are 5 times more likely to be diagnosed
- Theory suggests that people with Schizophrenia lose touch with reality, opt out of society and are no longer interested in 'normal' activities. They lack motivation for day today life
- This causes a downward spiral into poverty and loss of status as they are unlikely to hold down a job or education
- They 'drop out' of society and experience rejection
- This makes it hard for them to 'get better'

☹Cause and effect- lower class may cause Schizophrenia (poverty, deprivation, poor diet)
☹ May be a bias in diagnosis-psychiatrists are maybe more likely to diagnose people from a lower class
☹ Ignores bio factors such as high dopamine levels

Week 6– Schizophrenia- Biological Theory

Idea that there is a genetic link to Schizophrenia and that the gene affects the brains of those diagnosed with it. The biological theory suggests the brain of a Schizophrenic person:

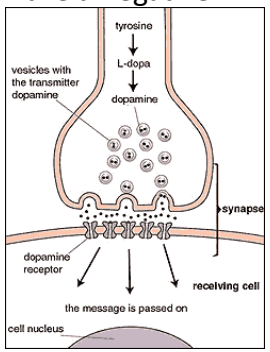
Brain Chemistry

- Has too much dopamine overall which is linked to movement, perception, attention and mood. Too much can cause hallucinations and erratic movement
- Dopaminergic neurons fire too quickly and too often and there are too many dopamine receptors

Brain Structure

- There is less blood flow in the frontal cortex (where tasks are carried out)
- The prefrontal cortex has a different structure (making judgements) and there is **low level activity in this area lacking dopamine**
- There is less grey matter in the temporal lobes
- The hippocampus is smaller in volume (memories and emotions that go with them)

☹ Ignores nurture- brain has to interact with environment to cause Schizophrenia symptoms such as hallucinations
☹ Could be the effect of, not the cause- it may be that the disorder is caused by something else and the brain structure is changed afterwards
☹ Deterministic- pessimistic to suggest they have no control. This can have a negative impact on recovery



Subject: Sports Studies	Term: 4 – Learning Outcome 3	Topic: Unit R051 Contemporary Issues in Sport

WOOTTON PARK

'Ipsum quod faciendum est diutius durant'

• The features of major sporting events, i.e.
o **regularity/scheduling**, i.e.
- 'one-off' (e.g. hosting the Olympic and Paralympic Games will only happen in any given country/ city once in a generation)
- regular (e.g. UEFA Champions League final is an annual event which a city could host more than once in a relatively short period of time but it is shared around as a rule)
o **regular and recurring** (e.g. hosting a Formula 1 Grand Prix would be annual and is normally contracted for a period of years to the host country/city)
o international element, i.e. involves competitors, and therefore supporters/interest, from more than one country (e.g. the Olympic and Paralympic Games; FIFA World Cup; Rugby Union Six Nations)
o **level of investment**, i.e.
- required
- which may be attracted
o **potential 'legacy'**, i.e.
- sporting
- social
- economic

• The links between potential benefits and drawbacks and legacy, i.e.

o many of the benefits and drawbacks are relevant to more than one of the legacy areas (sporting, social, economic) (e.g. sports facilities could have both sporting and social legacy).

• The potential benefits and drawbacks of cities/countries hosting major sporting events, i.e.

o **benefits**, i.e.

- investment in developing/improving transport system

- increased direct and indirect tourism

- commercial benefits (e.g. money from sponsors, external investment which would not otherwise have been attracted)

- participation may increase in some sports

- infrastructure/social facilities built can be used by people who live in the area where the events have been held

- sports facilities will be improved or new facilities built

- raise the status of the country/'shop window effect'

- morale of the country is raised

o **drawbacks**, i.e.

- bidding to host can be expensive and you may not be awarded the event

- event can cost hosts more than it raises in revenue

- facilities can end up not being used after the event if not planned properly

- can have negative impact on the status of the country if event runs poorly/is disorganised

- while hosting the event will help to promote one area of sport, others may suffer as a consequence - can cause divisions in the country if the specific area which hosted (e.g. one city) is perceived to have been the only beneficiary

FIFA WORLD CUP
Qatar2022

Cambridge NATIONALS

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'Ipsum quod faciendum est diutius durant'

Key Words

Regularity – the quality of being stable, predictable and regular.

International – a game or contest between teams representing different countries in a sport

Investment – the action or process of investing money for profit.

Legacy – all planned and unplanned structures created for and by a sporting event that remain longer than the event itself e.g. Olympic legacy.

Drawback – a feature that renders something less acceptable; a disadvantage or problem.