THE ABBEY SCHOOL
A BUSINESS & ENTERPRISE ACADEMY

# Knowledge Organiser

## Year 11

## Term 2

# CONTENTS

# Maths Year 11 Term 2
## Foundation – Quadratics, revision of percentages/multiplicative reasoning
## Higher – Equations and Graphs, Circle Theorems.

**Term Focus – Foundation**

What existing knowledge do I need to revisit to extend my algebra skills?]
How do I 'expand' in algebra (and use this to form quadratic expressions)?
What does it mean to 'solve a quadratic'? What is the best way?
How are multipliers used in real life?

**Term Focus – Higher**

What methods do we have for graphing any equations, and how can they help find solutions?
How can we graph an inequality?
What are the circle theorems and how are they applied?


### Prior Learning Links – Foundation

**Year 9 - Algebra**

Understanding of how to substitute values into a formulae, as well as what a quadratic equation is.

**Year 10 – Linear Graphs**

Knowledge gained through linear graphs will provide foundation for plotting coordinates, understanding x and y axis and how to represent equations graphically.

**Year 10 - Multiplicative Reasoning**

Using multipliers to find an increase or decrease in percentages, knowing how to calculate percentage change, understanding the difference between simple and compound interest, profit and loss, as well as the difference between direct and indirect proportion are all covered in Year 10.

### Prior Learning Links – Higher

**Year 9 Term 5**

**5H. Graphs**

Linear Graphs
Graphs of Real Life & Rates of Change
Line Segments
Quadratic Graphs
Cubic, Reciprocal and Other Graphs

**Year 10 Term 2**

**9H – Equations and Inequalities**

Solving quadratics
Completing the square
Simultaneous equations
Linear and quadratic simultaneous equations.
Solving inequalities

### Future Learning Links – Foundation

Quadratic Equations is some of the most challenging content within the foundation curriculum, and thus by covering it in Year 11, students have already gained the skills required such as using substitution, understanding of negatives rules, and indices.

Multiplicative reasoning can again provide challenge for our students and reinforcing skills learnt in Year 10 is vital. This topic is predominantly calculator-based and so this is really important to practise due to 2/3 of the GCSE being calculator papers.

### Future Learning Links – Foundation

Leads into Term 4 Year 11 work on non-linear graphs and proportion. Also provides a basis for the Year 12 Pure Maths curriculum, which develops into transforming functions and more complex graphs.

## Foundation Tier Formulae Sheet

### Perimeter, area and volume

Where $a$ and $b$ are the lengths of the parallel sides and $h$ is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a + b)h$

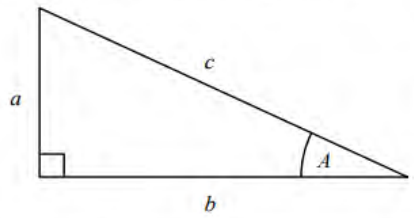
Volume of a prism = area of cross section × length

Where $r$ is the radius and $d$ is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

### Pythagoras' Theorem and Trigonometry




In any right-angled triangle where $a$, $b$ and $c$ are the length of the sides and $c$ is the hypotenuse:

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

In any right-angled triangle $ABC$ where $a$, $b$ and $c$ are the length of the sides and $c$ is the hypotenuse:

$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$

### Compound Interest

Where $P$ is the principal amount, $r$ is the interest rate over a given period and $n$ is number of times that the interest is compounded:

Total accrued $= P\left(1 + \frac{r}{100}\right)^n$

### Probability

Where P ($A$) is the probability of outcome $A$ and P ($B$) is the probability of outcome $B$:

P ($A$ or $B$) = P ($A$) + P ($B$) – P ($A$ and $B$)

## Higher Tier Formulae Sheet

### Perimeter, area and volume

Where $a$ and $b$ are the lengths of the parallel sides and $h$ is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a + b)h$

Volume of a prism = area of cross section × length

Where $r$ is the radius and $d$ is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

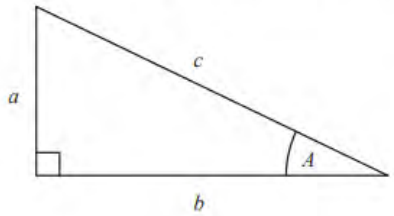
### Quadratic formula

The solution of $ax^2 + bx + c = 0$

where $a \neq 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

### Pythagoras' Theorem and Trigonometry




In any right-angled triangle where $a$, $b$ and $c$ are the length of the sides and $c$ is the hypotenuse:

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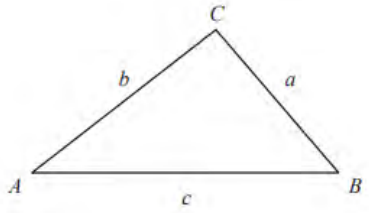


In any triangle $ABC$ where $a$, $b$ and $c$ are the length of the sides:

sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

Area of triangle $= \frac{1}{2}ab\sin C$

### Compound Interest

Where $P$ is the principal amount, $r$ is the interest rate over a given period and $n$ is number of times that the interest is compounded:

Total accrued $= P\left(1 + \frac{r}{100}\right)^n$

### Probability

Where P ($A$) is the probability of outcome $A$ and P ($B$) is the probability of outcome $B$:

P ($A$ or $B$) = P ($A$) + P ($B$) – P ($A$ and $B$)

P ($A$ and $B$) = P ($A$ given $B$) P($B$)

**Key Terms:**

**Factorise:** Putting an expression back into brackets

**Solve:** Find the values (or values) which can be put into an equation to make it true

**Quadratic Equations:** Equations which involve the second power of a variable e.g. $x^2$ or $y^2$

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

**1. Can I remember basic algebraic skills from previous years:** **Red** **Amber** **Green**

**Collecting like-terms**

Simplify: $3x + 5x - 2 + 4$

**Answer:** $8x + 2$

1. Combine like terms (terms with $x$).
2. Add the constants.

**Solving linear equations**

**Without fractions:**

Solve: $3x - 5 = 16$

**Answer:** $x = 7$

**With fractions:**

Solve: $\frac{3x}{4} - 2 = 5$

**Answer:** $x = 12$

Solve: $\frac{x}{2} + 3 = \frac{7}{2}$

**Answer:** $x = 2$

**Without fractions:**

1. Add 5 to both sides: $3x = 21$.
2. Divide by 3: $x = 7$.

**With fractions:**

1. Multiply both sides by 4 to eliminate the denominator: $3x - 8 = 20$.
2. Add 8 to both sides: $3x = 28$.
3. Divide by 3: $x = 12$.

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**Laws of indices**

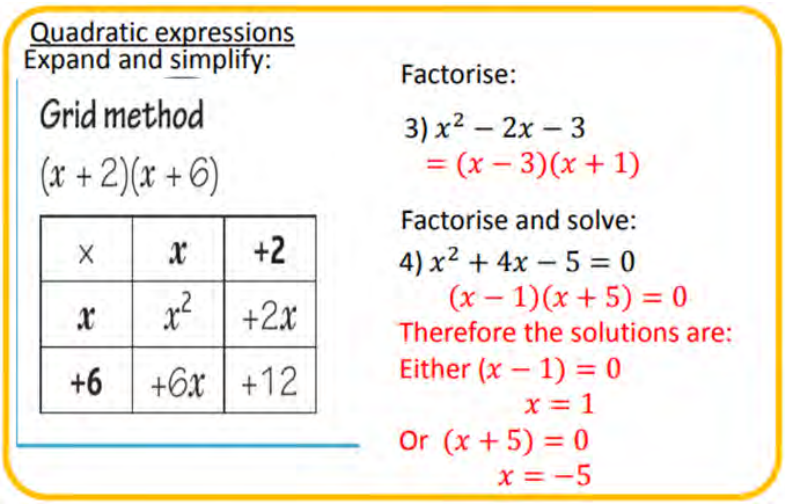
**Multiplication Law:** $x^3 \times x^2 = x^5$

**Division Law:** $\frac{x^6}{x^2} = x^4$

**Power of a Power Law:** $(x^3)^2 = x^6$

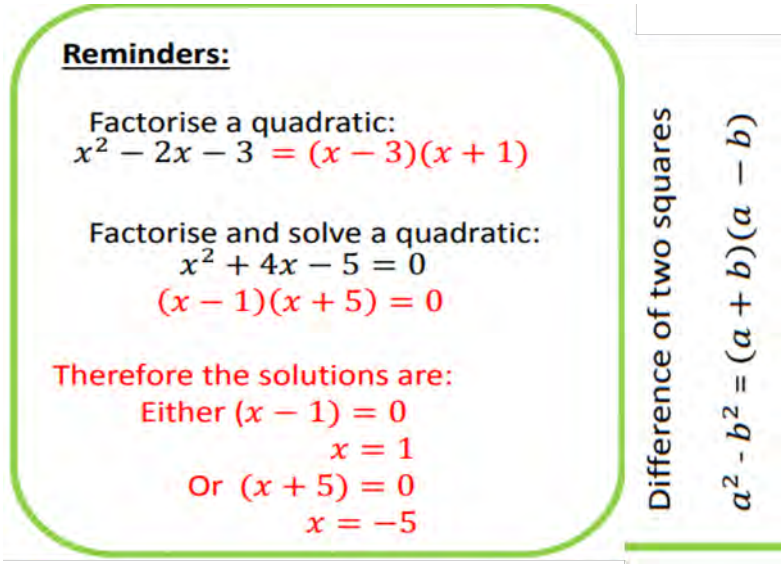
1. **Multiplication**: Add the powers: $x^a \times x^b = x^{a+b}$.
2. **Division**: Subtract the powers: $\frac{x^a}{x^b} = x^{a-b}$.
3. **Power of a Power**: Multiply the powers: $(x^a)^b = x^{a \times b}$.

## 2. How do we expand a double bracket? Red Amber Green




1. **Write out the brackets in a grid**
2. **Multiply each term**
3. **Collect like terms (see skill 1)**

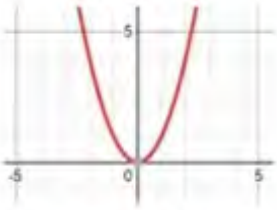
## 3. How do we factorise and solve a quadratic equation? Red Amber Green



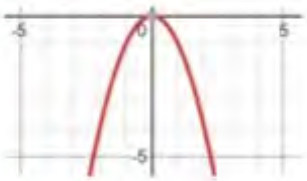
## 4. What does a quadratic graph look like and how can I use it? Red Amber Green

A quadratic graph will always be in the shape of a parabola.

$y = x^2$



$y = -x^2$

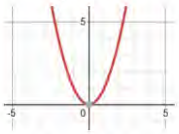


The roots of a quadratic graph are where the graph crosses the $x$ axis. The roots are the solutions to the equation.

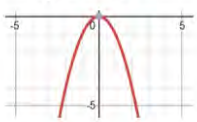
### Key Concepts

A quadratic graph will always be in the shape of a parabola.

$y = x^2$

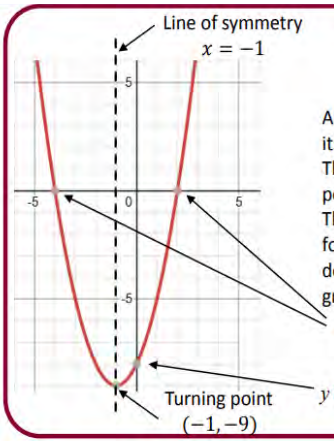


$y = -x^2$



The roots of a quadratic graph are where the graph crosses the $x$ axis. The roots are the solutions to the equation.

### Examples




$y = x^2 + 2x - 8$

A quadratic equation can be solved from its graph.
The roots of the graph tell us the possible solutions for the equation.
There can be 1 root, 2 roots or no roots for a quadratic equation. This is dependant on how many times the graph crosses the $x$ axis.

Roots $x = -4$
$x = 2$

$y$ intercept $= -8$

## 5. What is a multiplier and how do I use one? Red Amber Green

| | | |
|---|---|---|
| 1. Increase or Decrease by a Percentage | Non-calculator: **Find the percentage** and **add** or **subtract** it from the **original** amount.<br><br>Calculator: Find the **percentage multiplier** and multiply. | <u>Increase 500 by 20% (Non Calc):</u><br>10% of 500 = 50<br>so 20% of 500 = 100<br>500 + 100 = 600<br><br><u>Decrease 800 by 17% (Calc):</u><br>100%-17%=83%<br>83% ÷ 100 = 0.83<br>0.83 x 800 = 664 |

| | | |
|---|---|---|
| 2. Percentage Multiplier | The **number** you **multiply** a quantity by to **increase or decrease** it by a **percentage**. | The multiplier for increasing by 12% is 1.12<br><br>The multiplier for decreasing by 12% is 0.88<br><br>The multiplier for increasing by 100% is 2. |

| | |
|---|---|
| 3. Reverse Percentage | Find the **correct percentage given in the question**, then work backwards to **find 100%**<br><br>Look out for words like '**before**' or '**original**' |

A jumper was priced at £48.60 after a 10% reduction. Find its original price.

100% - 10% = 90%

90% = £48.60
1% = £0.54
100% = £54

| | |
|---|---|
| Find 15% | × 0.15 |
| Find 3% | × 0.03 |
| Find 99% | × 0.99 |

## 6. What is the difference between simple and compound interest? Red Amber Green

**Interest**

- Simple interest is when the amount of interest stays the same for every year.
- Compound interest is when the amount of interest changes every year as you earn interest on your interest.

**Compound Growth & Decay**

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

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

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

**Example**

**Growth and Decay**

Mo invests £300 at a compound interest rate of 3% per annum. How much money is in his account after 4 years?

If the value was decreasing, our multiplier would be <1

Step 1 – Calculate the interest rate as a decimal multiplier = 1.03

Step 2 – Substitute values into the formula for compound interest

= £300 x $1.03^4$
= £337.65

Final Amount = Starting Amount x (Decimal Multiplier)$^n$

## 7. What are the features of a linear graph? Red Amber Green

**Linear Graphs**

**Straight line graphs** always have the equation:

$$y = mx + c$$

$m$ is the **gradient** i.e. the steepness of the graph.
$c$ is the **y intercept** i.e. where the graph cuts the y axis.

**Parallel** lines have the same gradient.
e.g. $y = 2x + 3$ *and* $y = 2x - 1$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

**Perpendicular** line gradients are the negative reciprocal of one another
e.g. $y = 2x$ *and* $y = -\frac{1}{2}x$

## 8. How do I sketch a quadratic graph?

Red | Amber | Green

To sketch a quadratic graph, you need to follow the following steps:

1. Find the roots of the equation ($y = 0$)
2. Complete the square to find the turning point (min or max)
3. Find the $y - intercept$ ($x = 0$)
4. Sketch

Example below:

Sketch $y = x^2 + 6x + 8$

(1) Roots:

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

$0 = (x+4)(x+2)$

So, $x = -4$ or $x = -2$

roots

(2) Find turning point by completing the square

$x^2 + 6x + 8 = (x+3)^2 - 9 + 8$

$= (x+3)^2 - 1$

∴ Minimum point when $x = -3$, $y = -1$

Minimum point is $(-3, -1)$

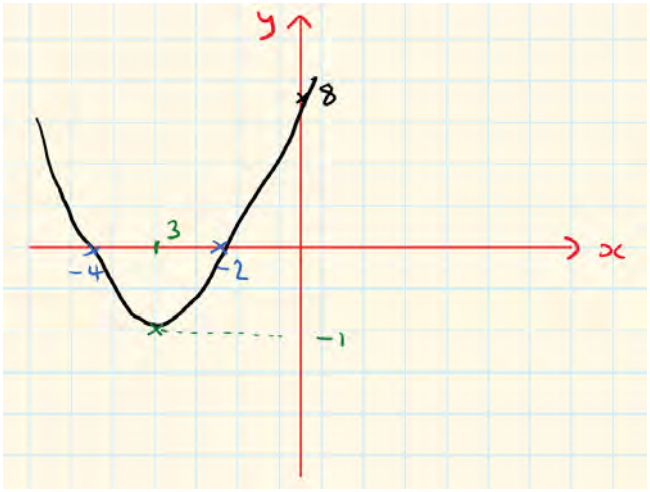
(3) Find y-intercept ($x = 0$)

$y = x^2 + 6x + 8$

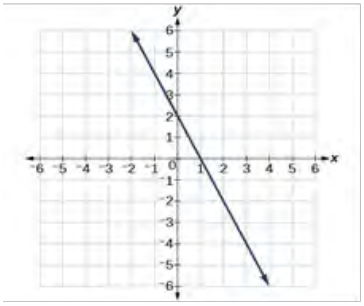
When $x = 0$, $y = 0^2 + 6(0) + 8 = 8$

y-intercept is at $(0, 8)$

**The big reveal!**



**9. What other graphs do I need to know?** Red Amber Green

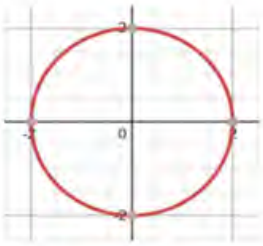


Linear graphs

Y = mx + c

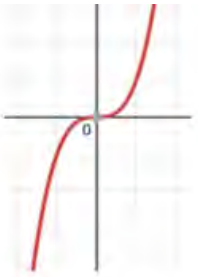
Reciprocal graphs

$y = \frac{1}{x}$



Circle graphs

$x^2 + y^2 = 4$



Cubic graphs

$y = x^3$

**10. How do we expand triple brackets to obtain a cubic equation?** Red Amber Green

Expand $(x-2)(2x+1)(3x-5)$

$x^2 + x - 4x - 2$

$= (x^2 - 3x - 2)(3x - 5)$

| | $x^2$ | $-3x$ | $-2$ |
|---|---|---|---|
| $3x$ | $3x^3$ | $-9x^2$ | $-6x$ |
| $-5$ | $-5x^2$ | $+15x$ | $+10$ |

$= 3x^3 - 9x^2 - 6x - 5x^2 + 15x + 10$

$= 3x^3 - 14x^2 + 9x + 10$

**To expand triple brackets and produce a cubic expression:**

1. **Expand two brackets as normal.**

2. **Multiple the answer by each term in the third bracket. Do this one at a time to avoid errors. Simplify.**

## 11. How do we solve a simultaneous equation graphically? Red Amber Green

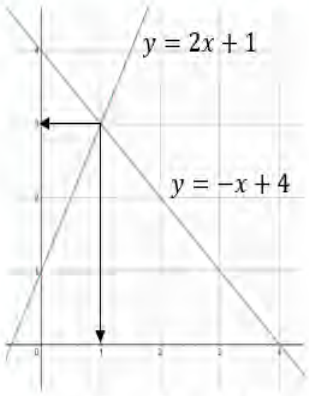
### Key Concepts

Simultaneous equations are when **more than one equation** are given which involve **more than one variable**. The variables have the **same value** in each equation.

Simultaneous equations can be solved **graphically** whereby the **intersection** of the graphs gives the $x$ and $y$ values.

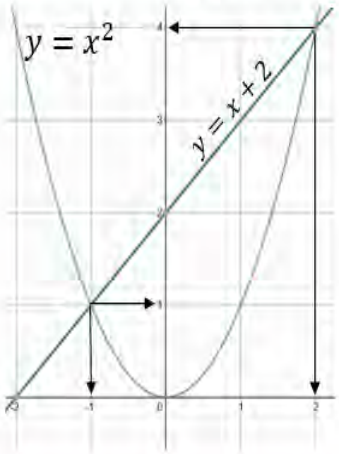
### Examples

Solve graphically: $y = 2x + 1$, $y = -x + 4$




$x = 1$ and $y = 3$

Solve graphically: $y = x^2$, $y = x + 2$

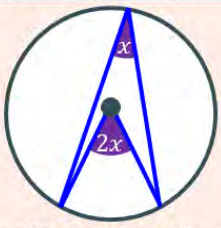



$x = -1$ and $y = 1$

$x = 2$ and $y = 4$

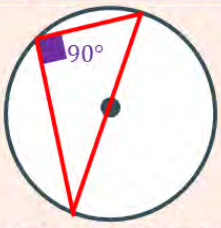
## 12. What circle theorems do I need to remember? Red Amber Green

**Angle at the centre is twice the angle at the circumference**




Look for the 'Arrow' Shape!

**Angle subtended at circumference by a semicircle is 90°**

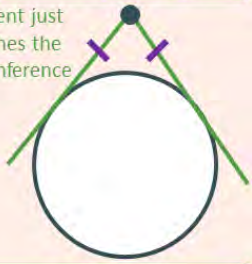



Opposite angle to the diameter!

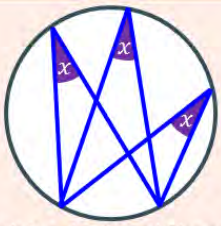
**Tangents and radii meet at 90°**


**Tangents from a point have equal length**

Tangent just touches the circumference

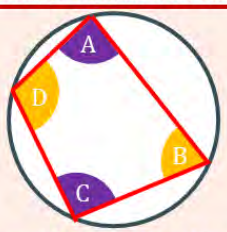


**Angles in the same segment are equal**



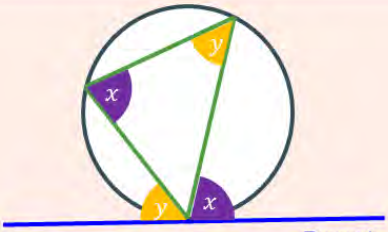

Look for the 'Bow' Shape!

**Opposite angles in a cyclic quadrilateral sum to 180°**




$A + C = 180°$ $B + D = 180°$

**Alternate Segment Theorem**



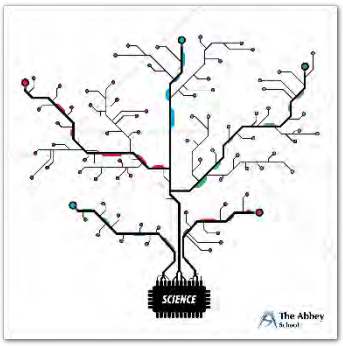

| HOME LEARNING TASKS | |
|---|---|
| **Task Description** | **Done?** |
| U105, U662 Simplifying expressions | |
| U755, U325, U870, U505, U599 Solving equations | |
| U768 Expanding double brackets | |
| U178, U858, U963 Factorising into double brackets | |
| U397 Completing the square (higher only) | |
| U989 Plotting quadratics | |
| U980, U593, U229 Graphs of other functions | |
| U349 Fractions of amounts with a calculator | |
| U533, U332, U988 Simple interest, compound interest and growth and decay | |
| U606 Expanding triple brackets | |
| U459, U251, U489, U130, U808, U807 Circle theorems | |

## Biology Year 11 Term 1 – Inheritance

TERM FOCUS –
Big Ideas – How do our genes determine our characteristics?

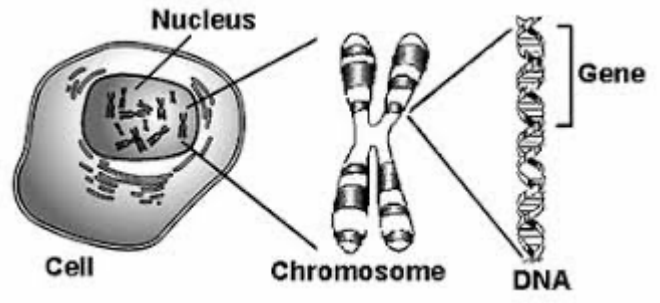
**Prior Learning Links**
1) KS3 – Variation and differences
2) KS3 – Selective breeding
3) KS3 – DNA and Chromosomes
4) KS3 – Disease and Disease

**Future Learning Links**
1) KS5 Meiosis and Mitosis
2) KS5 Biodiversity & Classification
3) KS5 – Biological molecules
4) KS5 – Genetics and Evolution




### 1. How does two metres of DNA fit inside a cell? (Grade 1)

Red Amber Green

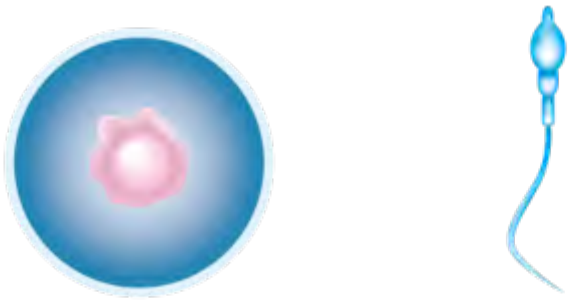



**DNA**
DNA is found within the nucleus of cells.
DNA is stored as long tightly wound strands called chromosomes.
DNA is a polymer made of two strands forming a double helix.
On the DNA there are sections called genes which code for a specific sequence of amino acids.

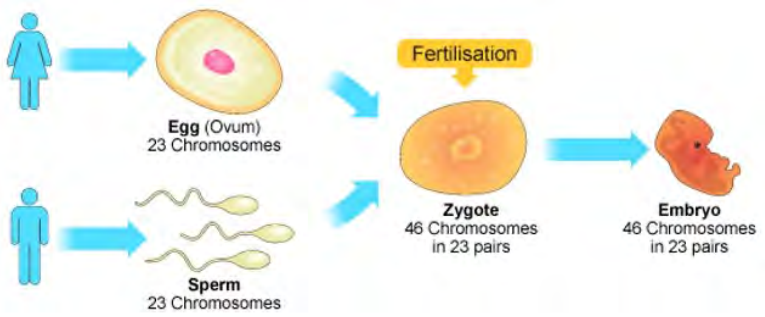
**Genome**
The genome is the entire set of genetic material in an organism.

### 2. What are the differences between sexual and asexual reproduction? (Grade 2)

Red Amber Green



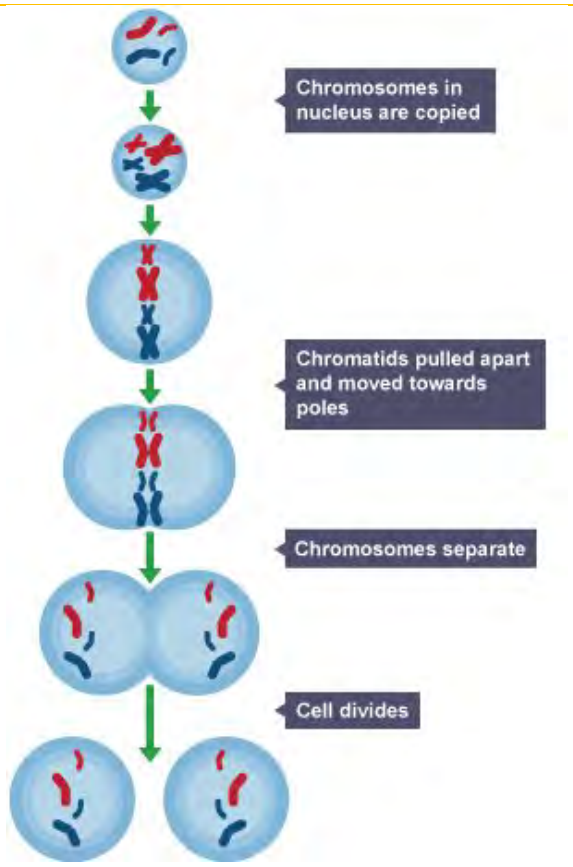
Gametes – Egg cell and sperm cell




**Gametes** - the name given to sex cells. These are specialised cells which contain half the number of chromosomes needed to make a healthy offspring. Sperm and Egg cells are human gametes and each gamete contains 23 individual chromosomes. Sperm cells are made in the testes and egg cells are made in the ovaries.

**Sexual reproduction** - Where two parents provide the genetic information. A unique offspring is created.

**Fertilisation** - The fusion of a sperm cell and egg cell nuclei.




**Asexual reproduction** - Where one parent provides all the genetic information. The offspring is an exact copy (clone) of the parent.

**Mitosis**
For an organism to reproduce asexually it must divide by mitosis.

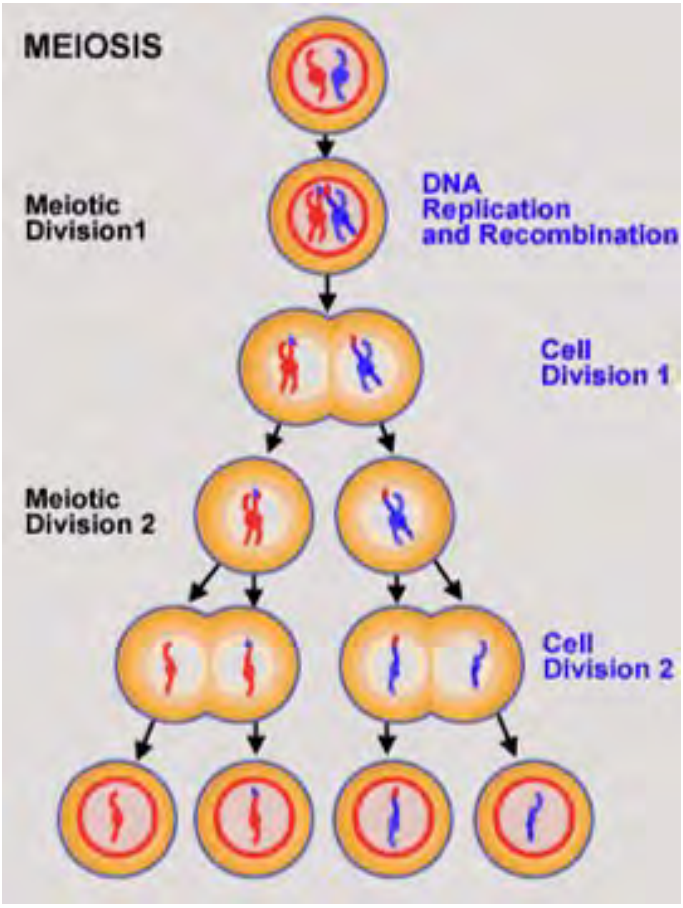
First the chromosomes and cell organelles are copied, then the chromosomes are pulled to opposite sides of the cell (**mitosis**) and the nucleus divides.

Finally, the cytoplasm and cell membrane divides. Two identical 'daughter cells' are produced.

Mitosis happens in humans when a tissue grows or needs repairing, but we do not use it to reproduce.

## 3. How are sex cells made? (Grade 2)

Red Amber Green




**Stages of Meiosis**

1. The cell duplicates its genetic information.

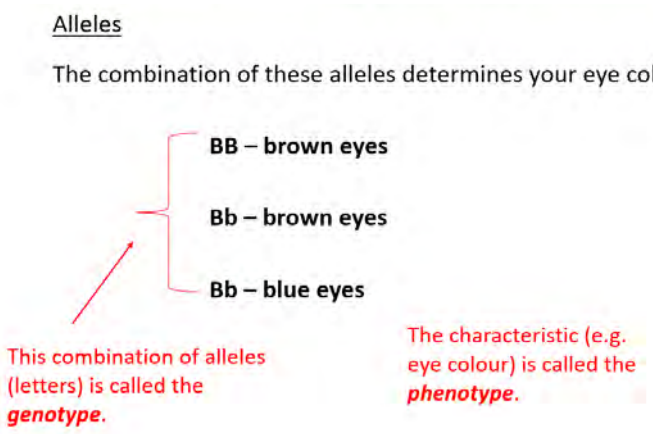
2. Similar chromosomes pair up, genetic information is mixed, and the arms are pulled apart. The cell then divides into two (the first cell division).

3. The chromosomes line up again in the centre, there is more mixing of genetic information, and the chromosome arms are pulled apart. The two cells divide, producing 4 cells.

4. The end result is having four genetically different gametes, each with 23 individual gametes.

## 4. Why does 70% of the global population have brown eyes? (Grade 2)

Red | Amber | Green




**Alleles**
A version of a gene is called an **allele.**

**Homozygous** – the two alleles are the same

**Heterozygous** – the two alleles are different

## 5. How do we draw genetic diagrams to show inheritance of characteristics? (Grade 3)

Red | Amber | Green

Drawing genetic diagrams – Punnett Squares

| | | Male | |
|---|---|---|---|
| | | B | B |
| Female | b | Bb | Bb |
| | b | Bb | Bb |

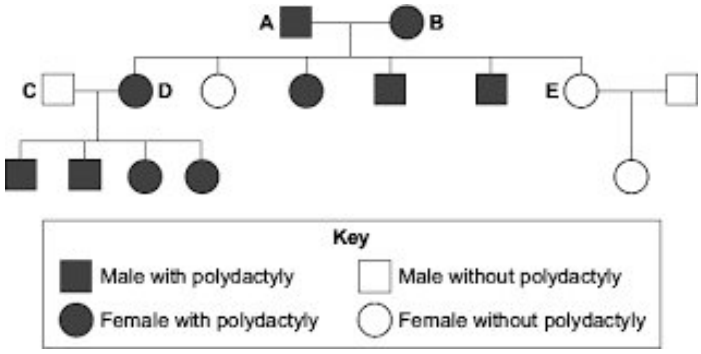
Crossing a black mouse (BB) with a brown mouse (bb)

**Dominant allele** – Always expressed, even if only one copy is present. Dominant alleles are represented by a capital letter.

**Recessive allele** – Only expressed if the individual has two copies and does not have a dominant allele of that gene. Recessive alleles are represented by a lower-case letter.

## 6. What happens when mutations arise in the genome? (Grade 3)

Red | Amber | Green




Mutations in the genome can cause conditions such as Polydactyl and Cystic Fibrosis.

Family tree diagrams can be used to determine if a condition is from a dominant or recessive allele.
The clue to its dominant nature is the breeding between D and C.
As their children all suffer from the disease there is a very strong chance the condition is dominant.

## 7. What are the arguments for and against genetic testing? (Grade 2)

Red | Amber | Green

**Genetic Testing** - Analysis of a person's DNA to see if they carry alleles that cause genetic disorders. This can be done at any stage in a person's life.

**Neonatal testing** - the new born blood spot test involves analysing a sample of blood that is taken from pricking a baby's heel.

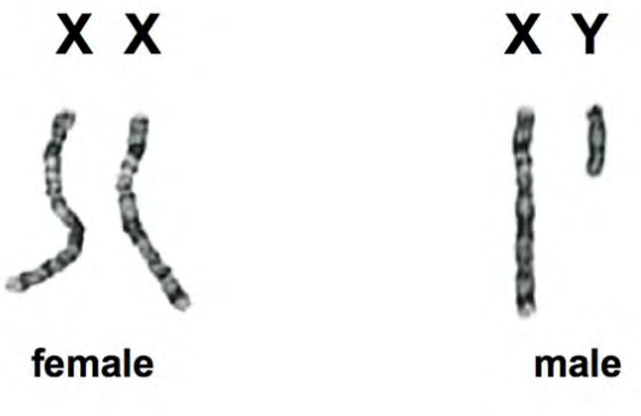
**Embryo Screening** - Pre-implantation genetic diagnosis (PGD) is also known as embryo screening.
Fertility drugs stimulate the release of several eggs.
It is used on embryos before implantation.
The eggs are collected and fertilised in a Petri dish. This is known as in vitro fertilisation (IVF).
Once the embryos have reached the eight-cell stage, one cell is removed.
The cells are tested for the disorder causing alleles. Embryos that don't contain the disorder allele are implanted into the uterus.

**Antenatal testing** - Is used to analyse an individual's DNA or chromosomes before they are born.

| For Genetic Testing | Against Genetic Testing |
|---|---|
| Could avoid having a child suffering with the disorder.<br><br>Faulty allele/gene not passed on to future generations.<br><br>Raising a child with a genetic condition can be expensive. | **False positives:** is a genetic test that wrongly detected a certain allele or faulty chromosome.<br>**False negatives:** if a genetic test has failed to detect a certain allele or faulty chromosome. The parents may be wrongly reassured.<br><br>Ethical or religious issues linked with killing embryos. |

## 8. How do our genes determine our sex? (Grade 2)

Red | Amber | Green




| | | Father | |
|---|---|---|---|
| | | X | Y |
| Mother | X | XX | XY |
| | X | XX | XY |

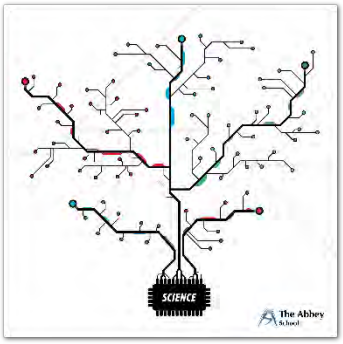
What is the probability that the child will be male?
Percentage: 50%
Ratio: 1:1
Proportion: 0.5

Red | Amber | Green

## HOME LEARNING TASKS

| Task Description | Done? |
|---|---|
| 1) Write out the keywords in bold and their definitions onto flashcards to revise from. | |
| 2) Watch the video Fertilization by Nucleus Medical Media on youtube to observe the journey of the Sperm to the Egg. | |
| 3) Practice drawing a Punnett Square for a cross between two dogs with Db alleles. Straight haired coat (D) is dominant and curly haired coat (d) is recessive.<br>4) Describe the stages of mitosis.<br>5) Describe the stages of meiosis. | |
| 6) Answer the question “What are the differences between sexual and asexual reproduction?” | |
| 7) Write a for and against argument for genetic testing to include; an introduction, arguments for genetic testing, arguments against genetic testing and a conclusion. | |

# Biology Year 11 Block 2 – Evolution and Classification




TERM FOCUS –

**Prior Learning Links**

1. What is DNA?
2. Difference between Meiosis and Mitosis
3. What is a genetic disorder and how can it be identified?

**Future Learning Links**

1. How living matter is classified?
2. How can living matter become extinct?
3. What are fossils?

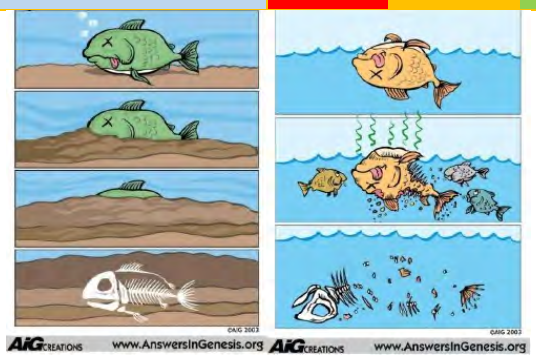
## 1. How do fossil records provide evidence for evolution?

Red Amber Green

The dead organism becomes trapped as the sediments are forming and buried in the layers.

The soft tissues of the organism decay. The bones, teeth, shells and other hard parts of the organism are left behind.

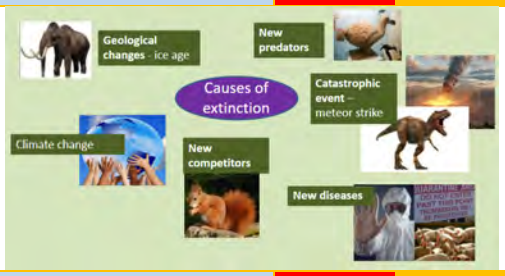
Layers of sediment form on top of these remains which become trapped in the rock and become fossils.




## 2. Why is evolution important for the survival of species?

Red Amber Green

Extinction is the permanent loss of all members of one species. Mass extinction, on the other hand, is the loss of many or most species on Earth, and it usually happens over several million years.

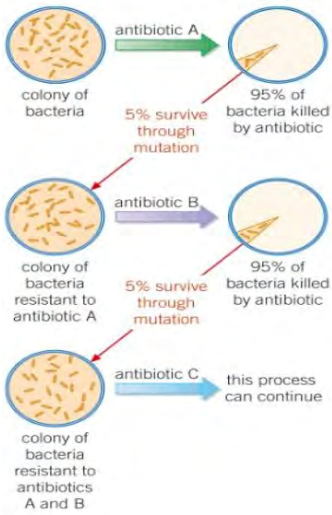



## 3. How do superbugs form?

Red Amber Green

Antibiotic resistance - This is an example of *natural selection*.

- Bacteria that are resistant to the antibiotic survive.
- They then reproduce.
- All offspring are resistant to the antibiotic.
- Bacteria reproduce very quickly




## 4. How do we organise organisms based on their features?

R ed Amber Green

The Greek thinker Aristotle was one of the first people to sort organisms into groups based upon their characteristics (what they look like).

- This is called classification.
- Today scientists have classified over 1.75 million different living things.
- Classification makes it easier to study organisms.

The three domains:

1. **Archea**

- primitive bacteria found in extreme environments such as hot springs or salt lakes

1.

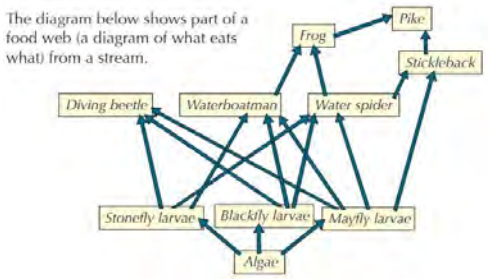
2. **Bacteria**

- bacteria such as *E.coli* and *Staphylococcus*

**3. Eukaryota**
- broad range of organisms such as fungi, plants, animals and protists.
- they are then further subdivided into smaller groups

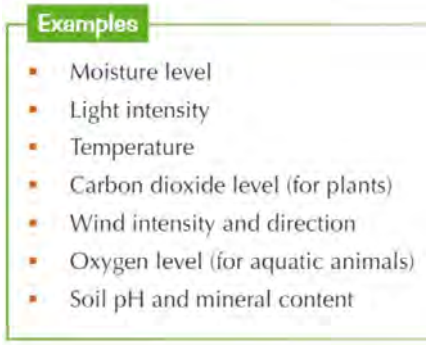
**5.** What do organisms compete for? **Red** **Amber** **Green**

Competition- This describes the interaction of organisms seeking to obtain the same limited resources.



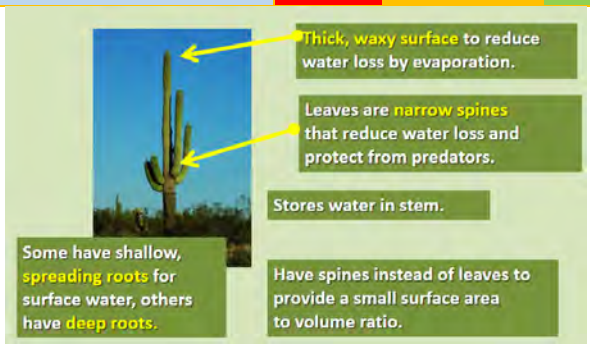

**6.** What external factors can affect a habitat? **Red** **Amber** **Green**

Abiotic factors are non-living factors that can affect a habitat.



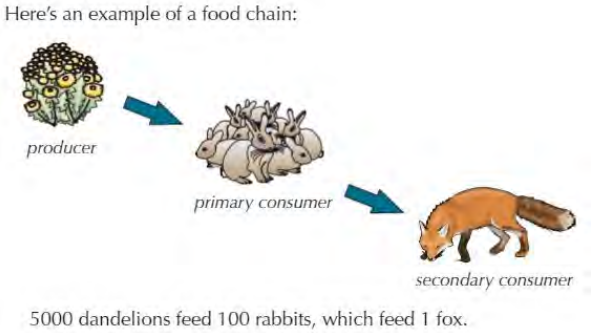

**7.** How are organisms adapted to their environment? **Red** **Amber** **Green**

Organisms need to have special features which help them to survive in their habitat. These special features are called adaptations.



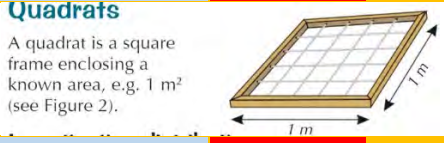

**8.** How do organisms survive in their environment? **Red** **Amber** **Green**

A food chain is a list of organisms in a habitat that shows their feeding relationship, i.e what eats what.




**9.** How can we estimate population size and distribution? **Red** **Amber** **Green**

Quadrats - This method is used by biologists to estimate the number of organisms in a certain location.




**10.** Why is biodiversity declining? **Red** **Amber** **Green**

Biodiversity is the variety of different species of organisms on Earth, or within an ecosystem.

**More People = More Water Pollution**

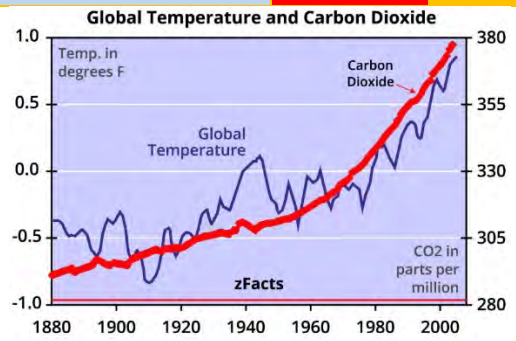
- Sewage and toxic chemicals from industry can pollute waterways, affecting the plants and animals that rely on them for survival.
- Fertilisers used on land can wash into rivers, lakes and oceans.

.

**11.** What are the consequences of global warming? **Red** **Amber** **Green**

Global warming is an overall rise in average global temperatures, due to heat being trapped within the Earth's atmosphere.

- The 'greenhouse effect' is caused by the population producing more and more greenhouse gases.




**12.** What impact does the growing human population have on land use? **Red** **Amber** **Green**

Main reasons for deforestation:

- To grow staple foods or ingredients such as rice and palm oil.
- To rear cattle, particularly for the beef market
- To grow crops that can be used to make biofuels based on ethanol. These include sugarcane and maize, which are readily fermented.

**HOME LEARNING TASKS**

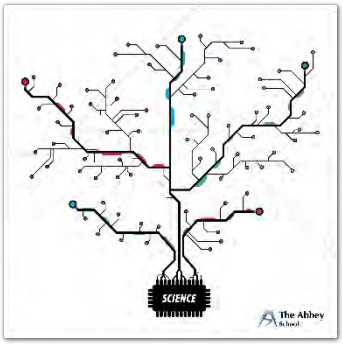
| Task Description | Done? |
|---|---|
| | |
| | |
| | |
| | |
| | |

# Chemistry, Year 11 Term 1 – Organic Chemistry

Term Focus
- BQ – How can we make crude oil useful?
- BQ – How can we test for different substances?
- BQ – What affects the composition of the atmosphere?

**Prior Learning Links**
- KS3 Science – Atoms and Elements
- KS3 Science - Reactions
- KS3 Science – Polymers
- KS3 Science - Chromatography

**Future Learning Links**
World of work
A Level Chemistry
A Level Environmental Sciences
A Level Geography



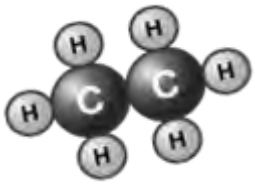

## KEY VOCABULARY

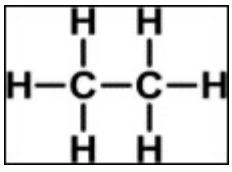
**KEY WORDS**

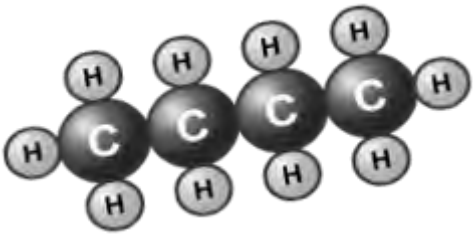
| | | |
|---|---|---|
| Addition polymerisation | Hydrocarbons | Acid rain |
| Alcohols | Nucleotides | Carbon footprint |
| Alkanes | Polyesters | Environmental implication |
| Alkenes | Polymers | Global climate change |
| Amino acids | Polypeptide | Global dimming |
| Carboxylic acids | Repeat unit | Greenhouse effect |
| Catalytic cracking | Steam cracking | Greenhouse gases |
| Combustion | Chromatogram | Particulates |
| Complete combustion | Chromatography | Photosynthesis |
| Crude oil | Flame emission spectroscopy | Pollutants |
| Condensation polymerisation | Flame test | Pure substance |
| Cracking | Formulation | Rf value |
| DNA | Impure substance | Stationary phase |
| Esters | Instrumental methods | Homologous series |
| Fermentation | Litmus paper | Precipitation |
| Fractional distillation | Mobile phase | |

## 1. What are alkanes?

Red Amber Green





An alkane is a saturated compound made of Hydrogen and Carbon. It is known as a hydrocarbon for this reason. The carbon atoms form a chain and the hydrogen atoms are joined around the edges. Each Carbon atom can make 4 bonds and each hydrogen atom can make only one bond.

Each of the hydrocarbons has their own name:

| Number of carbon atoms in the chain | Name given to the alkane |
|---|---|
| 1 | Methane |
| 2 | Ethane |
| 3 | Propane |
| 4 | Butane |
| 5 | Pentane |
| 6 | Hexane |
| 7 | Heptane |
| 8 | Octane |
| 9 | Nonane |
| 10 | Decane |

The ending of each compound –"ane" tells us that it is an alkane.

## 2. What are alkenes?

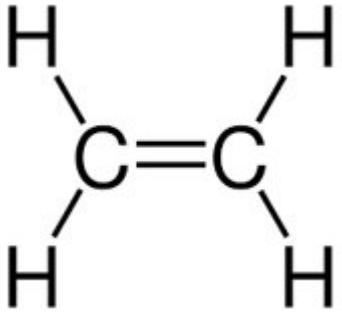
Red Amber Green

An alkene is an unsaturated (with a double bond) compound made of Hydrogen and Carbon. It is known as a hydrocarbon for this reason. The carbon atoms form a chain with a double bond between two of the carbon atoms and the hydrogen atoms are joined around the edges. Each Carbon atom can make 4 bonds and each hydrogen atom can make only one bond. The bonds are the lines drawn between the C and H symbols in the diagram. EXAM TIP: Count the number of bonds carefully around the double bond as this can often cause a mistake.

Each of the hydrocarbons has their own name:

| Number of carbon atoms in the chain | Name given to the alkane |
|---|---|
| 2 | Ethene |
| 3 | Propene |
| 4 | Butene |
| 5 | Pentene |
| 6 | Hexene |
| 7 | Heptene |
| 8 | Octene |
| 9 | Nonene |
| 10 | Decene |

The ending of each compound –"ene" tells us that it is an alkane.




## 3. What reactions do alkanes and alkenes undergo?

Red Amber Green

**Complete Combustion**

All of the fuel is used in combustion because an excess of oxygen is present.

Fuel + oxygen → carbon dioxide + water

**Incomplete Combustion**

The fuel is not burned completely because there is a lack of oxygen. This produces dangerous by-products:

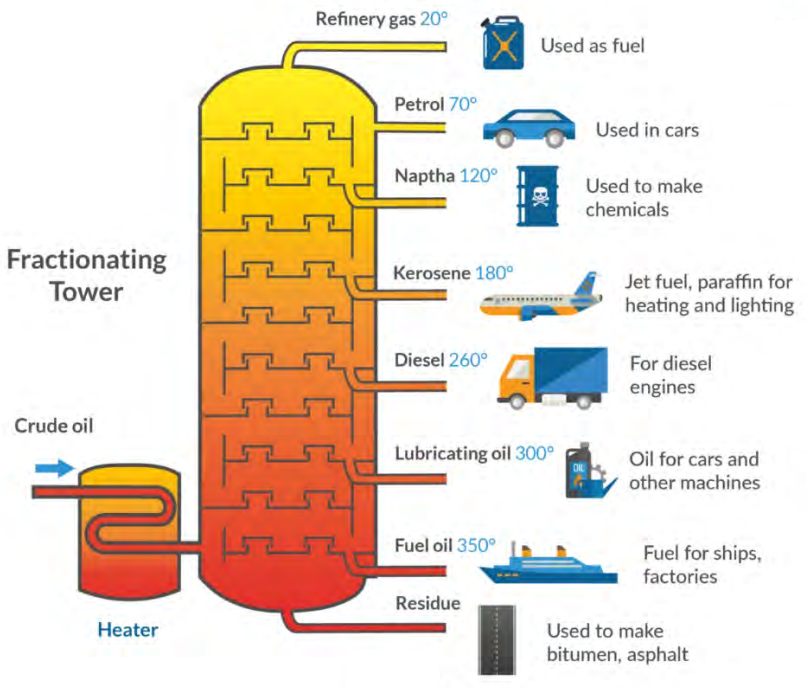
Fuel + Oxygen →Carbon dioxide + water + carbon monoxide + Carbon

**Reaction with Bromine Water**

Alkanes show no change when reacted with Bromine water. Alkenes react with the bromine water to decolourise the solution:


## 4. How is crude oil separated into useful products?

Red Amber Green



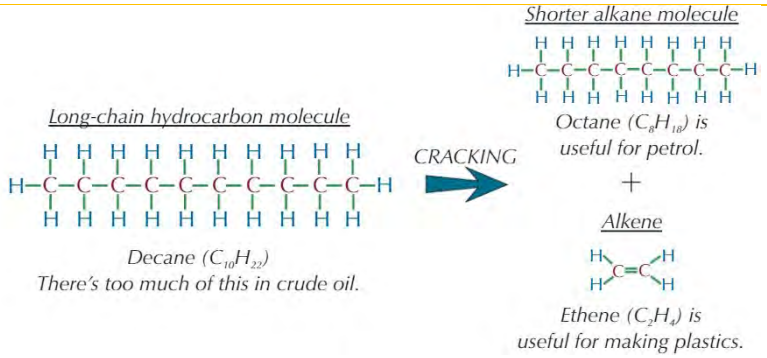

Crude oil is first heated using steam and then passed into a fractionating column. The fractions (useful parts of the crude oil) are separated out based on their boiling points. These boiling points decrease as you go up the fractionating column.

The properties of each fraction (boiling point, viscosity, volatility) mean that each fraction has a different use.

## 5. What is cracking?

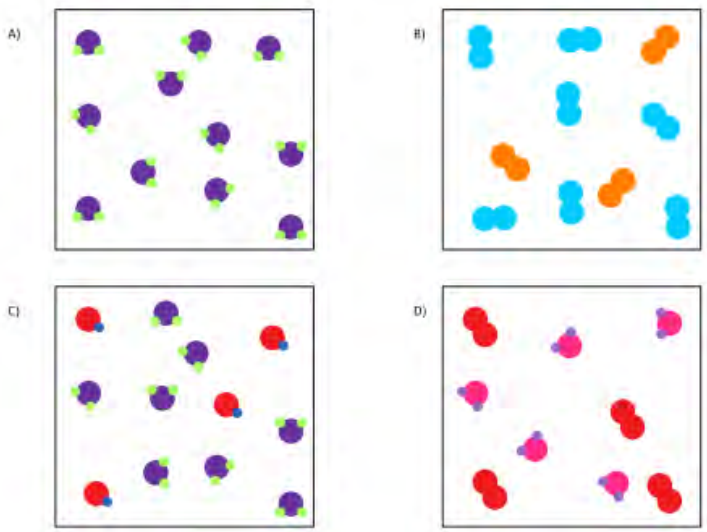
Red Amber Green

The demand for certain fractions is different to the supply from crude oil. For example petrol is needed far more to allow cars to transport people and goods around than lubricating oil. By cracking long chain hydrocarbons, shorter chains can be made that are more useful. The process involves using steam to heat the long chain fraction and a catalyst to speed up the process.




## 6. How do we know if a substance is pure?

Red | Amber | Green




A pure substance is one where all of the particles are the same. They can be atoms (single particles of the same type) molecules (more than one atom of the same type) or compounds (atoms of more than one element). The diagram to the left shows

A – A compound made of 1 purple atom and 2 green atoms. All of the compounds present are identical so this substance is pure.

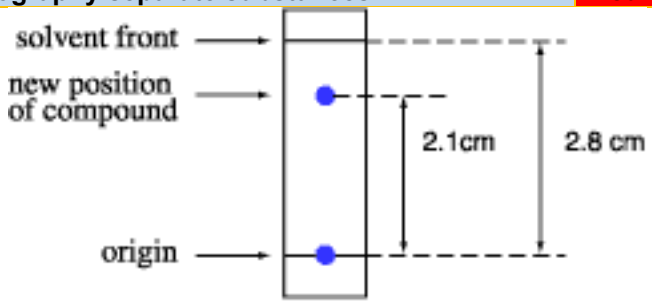
B – Two molecules or two different elements. The blue atoms are joined together to form a molecule and the orange atoms are joined together to form a different molecule. This substance is NOT pure.

C – A mixture of compounds, the same compound as in diagram A and another compound made of a red atom and a blue atom. This substance is NOT pure.

D – A mixture of a compound (pink and purple atoms) and a molecule made of red atoms. This substance is NOT pure.

## 7. How can paper chromatography separate substances?

Red | Amber | Green




An $R_f$ value lets us compare the distance travelled by a compound, compared to the solvent. This means that we can identify any substance because even when the solvent is different, the compound will still have the same $R_f$ value. It will still have the same Rf value even if the time spent in the solvent is longer or shorter.

**The Calculation:**

$$R_f = \frac{\textit{Distance travelled by compound}}{\textit{Distance travelled by solvent}}$$

**Worked Example:**

(From the diagram above)

$$R_f = \frac{2.1}{2.8}$$

$$R_f = 0.75$$

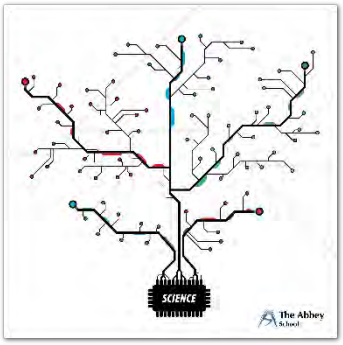
## 8. How can paper chromatography be used to analyse a mixture of food colourings?

Red | Amber | Green

| | |
|---|---|
| Scan the QR Code to watch the required practical for this lesson. | |

| **HOME LEARNING TASKS** | |
|---|---|
| **Task Description** | **Done?** |
| Task 1 – Learn the spellings of the keywords from this topic – look, cover, write and check. | |
| Task 2 – Draw a diagram to show the alkane Octane – $C_8H_{18}$. | |
| Task 3 – Describe the results when Pentane and Pentene react with Bromine water. | |
| Task 4 – Calculate the $R_f$ value for a compound that travels 30mm compared to a solvent distance of 120mm. | |
| Task 5 – Draw a diagram to show a mixture of 2 compounds and 2 molecules of different elements. Label each one and explain why this is not a pure substance. | |
| Task 6 – Explain how to perform a practical using chromatography to identify the different colours used in food dyes. | |

# Chemistry Year 11 Block 2 – Organic Chemistry




TERM FOCUS – Organic Chemistry & Chemical Analysis
Big Ideas – How can we make crude oil useful?
How can we test for different substances?
What affects the composition of the atmosphere?

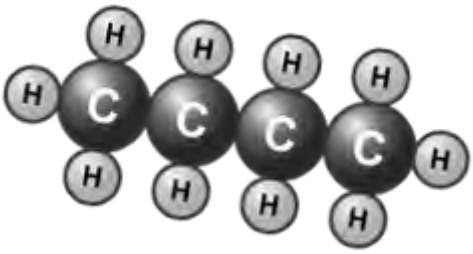
**Prior Learning Links**
1. KS3 – Atoms, Elements and Molecules
2. KS3 – Separating Mixtures
3. KS3 – Properties of elements and compounds
4. KS3 – Atmosphere

**Future Learning Links**
1. A level Chemistry – Organic Chemistry

## 1. What are alkanes?

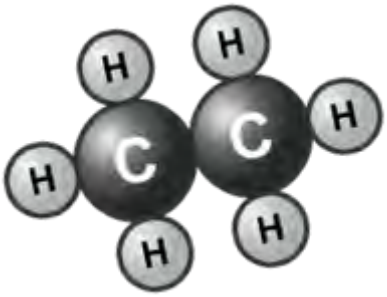
Red Amber Green

| Number of carbon atoms | Start of name |
|---|---|
| 1 | Meth (mice) |
| 2 | Eth (eat) |
| 3 | Prop (peanut) |
| 4 | But (butter) |
| 5 | Pent |
| 6 | Hex |
| 7 | Hept |
| 8 | Oct |
| 9 | Non |
| 10 | Dec |



Butane

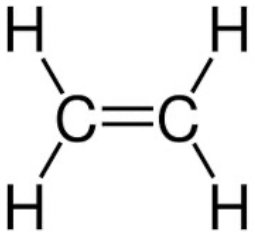
Ethane



## 2. What are alkenes?

Red Amber Green

Alkenes have a double bond. This means they are unsaturated.



<u>Properties of alkenes</u>

- High boiling points
- **Flammable**
- **Volatile -** they easily turn into a gas

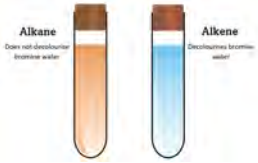
## 3. What reactions do alkanes and alkenes undergo?

Red Amber Green

Combustion reaction

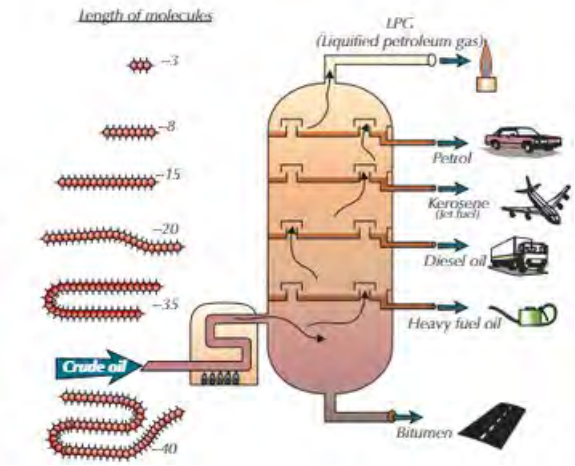
Fuel + oxygen → carbon dioxide + water.

Distinguishing between alkanes and alkenes – The Bromine Water Test



## 4. How is crude oil separated into useful products?

Red | Amber | Green

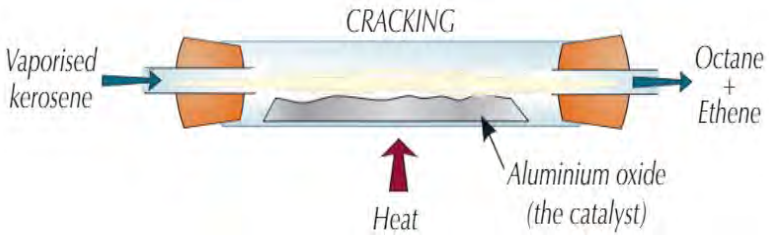



Crude oil must firstly be refined in an oil refinery.

- The hydrocarbons are separated into groups called fractions.
- Each fraction contains compounds with a similar number of carbon atoms

## 5. What is cracking?

Red | Amber | Green




Catalytic cracking - the vapours are passed over a hot catalyst.
Steam cracking - the vapours are mixed with steam and heated to a very high temperature.

Cracking breaks the less useful bigger hydrocarbon molecules into smaller more useful hydrocarbons.

Cracking is when we use heat to break down large alkane molecules into smaller molecules. This is called a thermal decomposition reaction.

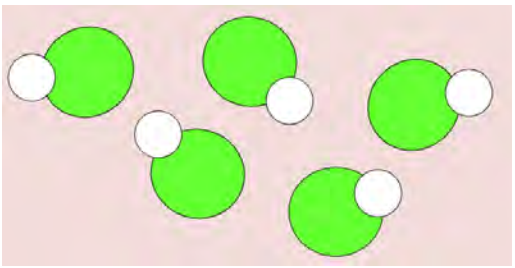
## 6. How do we know if a substance is pure?

Red | Amber | Green

**Pure substances**

In chemistry, a pure substance is defined as;
One that is made up of just one substance.
The substance can be either an element or a compound.

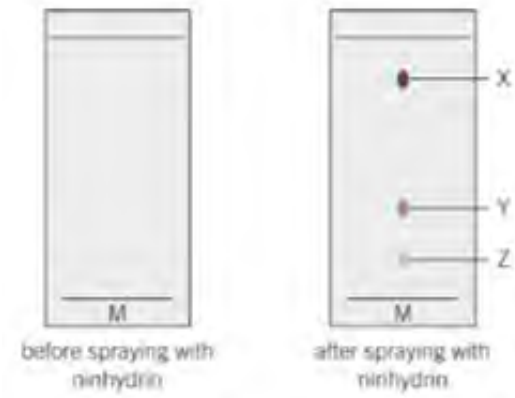
**Formulation:** A formulation is a mixture that has been designed to produce a useful product.



## 7. How can paper chromatography separate substances?

Red | Amber | Green

Paper Chromatography is used to separate mixtures of soluble substances in a solution. Paper chromatography works on the principle that some substances are more soluble than others in a solvent. This is used to separate food colourings, inks and dyes.



## 8. How can paper chromatography be used to analyse a mixture of food colourings?

Red | Amber | Green

**Independent variable** – the variable that is altered during a scientific experiment.
**Dependent variable** – the variable being tested or measured during a scientific experiment.
**Controlled variable** – a variable that is kept the same during a scientific experiment.

| Food colouring | Distance travelled in mm | | Rf value |
|---|---|---|---|
| | Solvent | Spot | |
| A | | | |
| B | | | |
| C | | | |
| D | | | |

## 9. How can we identify different gases?

Red | Amber | Green

### Test for hydrogen

If you hold a lit splint at the open end of a test tube containing hydrogen, you'll get a "squeaky pop". (The noise comes from the hydrogen burning quickly with the oxygen in the air to form $H_2O$.)

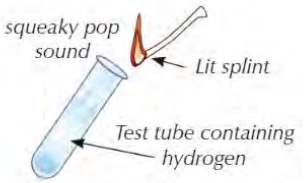



*Figure 3: Testing for hydrogen.*

### Test for carbon dioxide

If you make a solution of calcium hydroxide in water (called limewater) and bubble gas through it, the solution will turn cloudy if there's carbon dioxide in the gas. The cloudiness is caused by the formation of calcium carbonate.

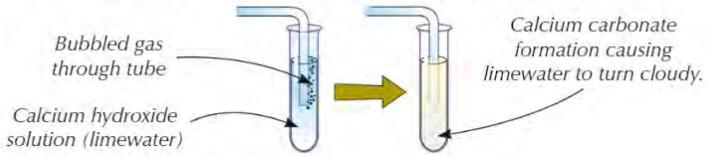



*Figure 5: Testing for carbon dioxide.*

### Test for chlorine

Chlorine ($Cl_2$) bleaches damp litmus paper, turning it white (it may turn red for a moment first though — that's because a solution of chlorine is acidic.)


*Figure 1: Testing for chlorine gas.*

### Test for oxygen

To test for oxygen, put a glowing splint inside a test tube containing the ga
If oxygen is present it will relight the glowing splint — see Figure 2.

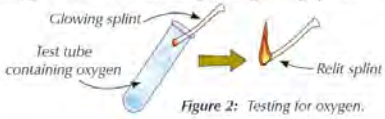
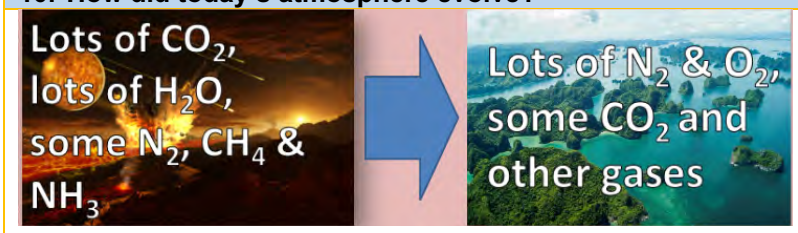



*Figure 2: Testing for oxygen.*

## 10. How did today's atmosphere evolve?

Red | Amber | Green

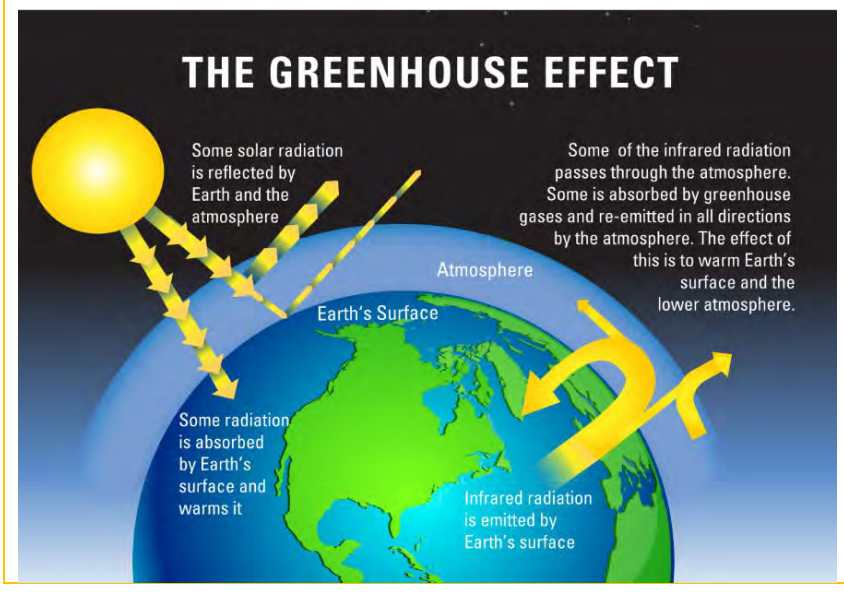



**Today's atmosphere:**
78% nitrogen
21% oxygen
1% other gases (including carbon dioxide)

**The Early atmosphere**
Was formed due to the gases produced by volcanic activity.
It contained:
Lots of carbon dioxide
Lots of water vapour
Small amounts of methane, nitrogen and ammonia

## 11. What is the greenhouse effect?

Red | Amber | Green




<u>The greenhouse effect</u>

What human activities contribute to increases greenhouse gases?

- Carbon dioxide – combustion / deforestation
- Methane – farming, compost heaps / landfill
- Water vapour – combustion

**12. What is a carbon footprint?** Red Amber Green


## Carbon footprint

A carbon footprint is the measure of the amount of carbon dioxide **and other greenhouse gases** that are released over the full life cycle of something.

**13. What are the causes of air pollution?** Red Amber Green

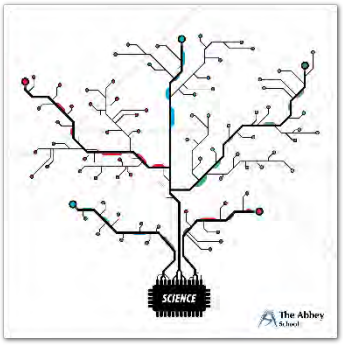
**Causes of air pollution and it's effects**

| Pollutant | Cause | Effect |
|---|---|---|
| **Carbon dioxide** | combustion of fossil fuels | adds to the greenhouse effect increasing global warming and climate change |
| **Carbon monoxide** | incomplete combustion of fossil fuels | CO poisoning which lowers the blood's ability to carry oxygen |
| **Nitrogen oxides** | reaction of $N_2 + O_2$ at high temperature in car engines | acid rain damages lakes, trees, soil and buildings |
| **Sulphur dioxide** | burning fuels (due to sulphur impurities) | acid rain damages lakes, trees, soil and buildings |
| **Particulates** | soot and pieces of unburnt hydrocarbon fuel from incomplete combustion | global dimming, smog, breathing problems such as asthma and lung disease |

**HOME LEARNING TASKS**

| Task Description | Done? |
|---|---|
| 1. Draw these alkanes and give their formulae; Methane, Ethane, Propane, Nonane. | |
| 2. Draw these alkenes and give their formulae; Methene, Ethene, Propene, Nonene. | |
| 3. Draw and label a Fractional Distillation column.<br>Explain the two different types of cracking and what they are used for. | |
| 4. Give five examples of air pollution and explain their effects on the environment. | |
| 5. Explain how the atmosphere of the Early Earth has changed to become today's atmosphere. | |

# Physics Year 11 Term 1
- **P5D Car Safety and Momentum**
- **P6A Properties of Waves**
- **P6B Electromagnetic Waves**




Term Focus
- P5D BQ – How can we make driving safer?
- P6A BQ – What properties do waves have that let them transfer energy?
- P6B BQ – What are the properties, uses and dangers of EM waves?

**Prior Learning Links**
- KS3 Science – Forces and Motion
- KS3 Science– Use of formula and basic formula symbols.
- KS3 Science – Understanding of Particle theory
- KS3 Science – Understanding how light travels.

**Future Learning Links**
Forces, motion and waves all link to the fundamentals of physics and having a comprehensive knowledge of these topics is a necessity to understanding the Physics course.

## KEY VOCABULARY

### KEY WORDS

Stopping Distance
Thinking Distance
Braking Distance
Reaction Time
Work Done
Momentum

Wave
Transverse
Longitudinal
Amplitude
Wavelength
Frequency
Reflection
Absorption
Transmission

Electro Magnetic
EM Spectrum
Radiation

### KEY SUBJECT TERMINOLOGY / FORMULA

| | |
|---|---|
| 1. Calculating **Stopping Distance** | Stopping distance = thinking distance + braking distance |
| 2. Calculating **Final velocity** (V) | $v^2 - u^2 = 2as$ |
| 3. Calculating **Time** (t) | $t = V / a$ |
| 4. Calculating **Force** (F) | $F = m\ a$ |
| 5. Calculating **Momentum** (p) | $p = m \times v$ |
| 6. Calculating **Wave Period** (T) | $T = \frac{1}{\text{frequency}}$ |
| 7. Calculating **Wave Speed** (V) | $v = f\lambda$ |

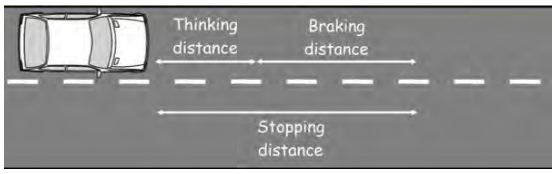
## 1. What factors affect a person's ability to drive?

Red | Amber | Green

Stopping distance
Stopping Distance: The distance covered by a vehicle in the time between the driver spotting a hazard and the vehicle coming to a complete stop.

Thinking Distance
The distance the vehicle travels during the driver's reaction time (from when the driver notices the hazard and applies the brake).

Braking Distance
The distance the vehicle travels after the brakes are applied until it comes to a stop




Stopping distance = Thinking distance + Braking distance

Example of stopping distance of a car travelling at 30mph

Stopping distance = 9m + 14m

Stopping distance = 23m

Thinking distance Is affected by two main things:

- The speed you are travelling
- Reaction time

Reaction time can be affected by:

- Tiredness
- Alcohol
- Drugs
- Lack of concentration / distractions (mobile phones, passengers)

Braking distance Is affected by four main factors:

- The speed you are travelling
- Quality of your brakes.
- Quality of tyres.
- Quality of grip. (Weather conditions can affect the grip the tyres have on the road surface).

The effect of speed on thinking distance
As a car speeds up, the thinking distance increases at the same rate as the speed.
They are directly proportional.

The effect of speed on braking distance

Breaking distance increases with the square of the scale factor of the speed increase.
If speed doubles, the braking distance increases 4-fold ($2^2$).
If speed trebles, the braking distance increases 9-fold ($3^2$).

## 2. How can reaction time be measured?

Red | Amber | Green

There are two ways you can measure your reaction time are:

- Using a computer-based test where you click the mouse when the screen changes colour.
- The ruler-drop test.

Calculating reaction time

Ruler drop test – Method

1. The person being tested sits with their arm resting on the edge of a table.
2. Hold a ruler vertically between their thumb and forefinger at the zero end.
3. Other person lets go of the ruler.

You can calculate the reaction time using:

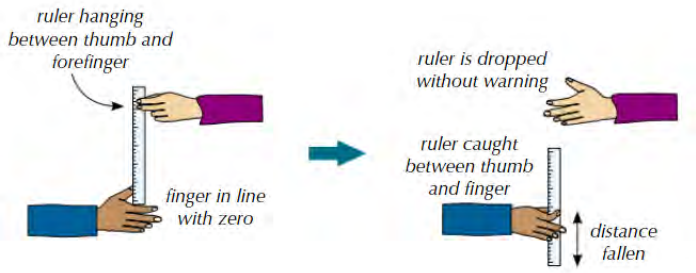
$v^2 - u^2 = 2as$

Because the object (the ruler) is falling, and acceleration due to gravity is constant (9.8 $m/s^2$).

Once the final velocity has been calculated , you can now use the rearranged formula for acceleration to find your reaction time

$t = v/t$

4. Reaction time is measured by the number on the ruler where it is caught.

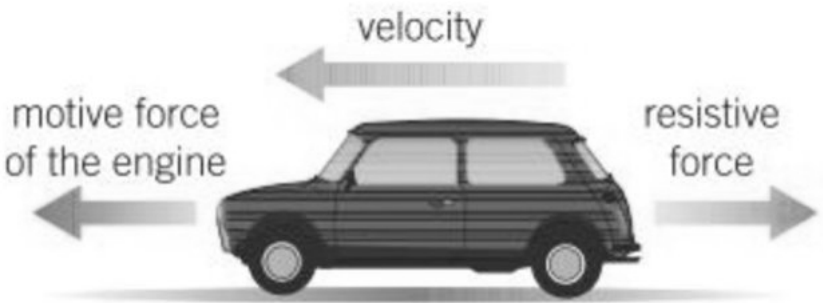



5. Repeat four more times and calculate the mean.
6. The person being tested now pretends to be talking on the phone with the other hand ('distracted').
7. Repeat steps 3 and 4 for a total of five times and calculate the mean when you are distracted.

**3. Why do a cars brakes get hot when used?** | **Red** | **Amber** | **Green**

## Braking

Braking relies on friction between the brakes and wheels. The work done between the brakes and the wheels transfers' energy from the kinetic energy stores of the wheels to the thermal energy stores of the brakes. This means the temperature of the brakes increases.




The faster an object is going the more energy it has in its kinetic energy stores, so more work needs to be done to stop it. A greater braking force is needed to make the object stop in a certain distance. A larger braking force means a larger deceleration.

Very large decelerations mean lots of work is done, so lots of energy is transferred to thermal energy stores and the brakes become very hot.

## 4. How is momentum linked to velocity?

Red | Amber | Green

Momentum is a property of moving objects. The greater the mass of an object and the greater its velocity the more momentum the object has.
Momentum is a Vector quantity as it has size and direction.
Momentum can be calculated using the following formula

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

$$p = m \times v$$

Velocity and momentum both have direction

- Positive momentum in one direction
- Negative momentum in the opposite direction

<u>The Law of conservation of momentum</u>

In a closed system, the total momentum before an event (e.g. a collision or an explosion) is the same as after the event. This is called the conservation of momentum.


The red ball is stationary so has zero momentum, the white ball is moving so has momentum. The white ball hits the red ball causing it to move. The red ball now has momentum and the white ball continues moving with a smaller velocity and so a smaller momentum.
The combined momentum of the red and white ball is equal to the original momentum of the white ball.

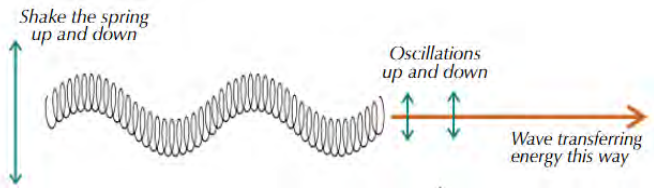
## 5. What are the key properties of a wave?

Red | Amber | Green

A wave is an oscillation (vibration) that transfers energy without transferring any matter, by making the particles of the substance (or fields) that it is moving through oscillate.
Waves DO NOT transfer matter from one place to another, only the energy from the wave.

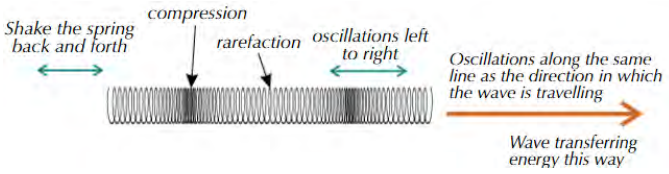
<u>Transverse waves:</u>

Transverse waves vibrate up and down whilst transferring the energy along the length of the wave.
We say the vibrations are at right angles to the direction of energy transfer.
Examples of this kind of wave: Light (and all EM waves), ripples on water, waves on strings.



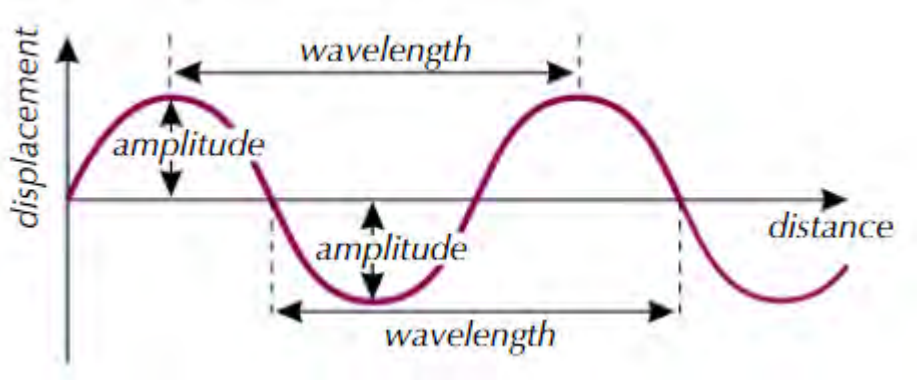

<u>Longitudinal waves:</u>

Longitudinal waves vibrate in the same direction as the energy along the length of the wave.
We say the vibrations are parallel to the direction of energy transfer.
Examples of this kind of wave: Sound waves, pushing a spring backwards and forwards.



| 6. What are the key features that define a wave? | Red | Amber | Green |
|---|---|---|---|

A wave is often shown as if it were drawn on a graph. The bottom axis is usually time (showing how the wave changes in time) the top axis shows the movement of the wave.




Amplitude: The maximum displacement of a point on the wave from the rest position. Also, the distance from the rest point to a crest or trough.

Wavelength: The distance between two points on adjacent waves e.g. from a crest to a crest or a trough to a trough.

Frequency: The number of waves that pass a point per second, this is measured in Hertz, Hz with 1Hz meaning 1 wave per second.

The period of a wave is the amount of time it takes for a full cycle of the wave to be completed. The time it takes between one crest passing a point and the next crest passing the same point.

Wave periods can be calculated using the formula

$$\text{Period} = \frac{1}{\text{frequency}}$$

Or

$$\text{T} = \frac{1}{\text{f}}$$

| 7. How can we link together the properties of a wave to find its speed? | Red | Amber | Green |
|---|---|---|---|

**Wave equation:**

This equation links together the wavelength (how far a wave travels) with the frequency (how many happen each second) to give us the speed of the wave:

$$Wave\ speed = Frequency \times Wavelength$$

$$v = f\lambda$$

Lambda, λ – a Greek letter that we use to mean wavelength (it is not a straight-line length along the wave so we can't use l)

| 8. What happens to a wave when its changes from one material to another? | Red | Amber | Green |
|---|---|---|---|

An incident wave on a surface may produce one of the following effects

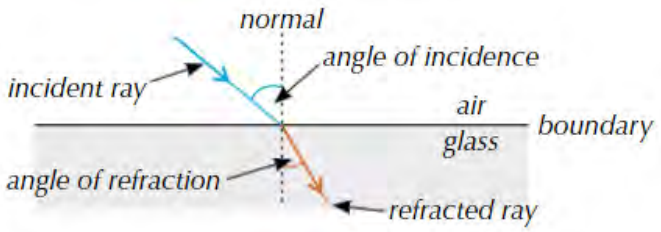
- Reflection
- Absorption
- Transmission

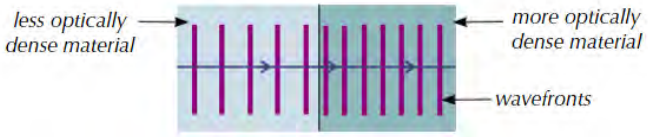
**Transmission of waves:**
This is where a wave passes into a different material. As the wave travels into the different material it changes speed, this phenomenon is known as refraction.

<u>Wavefronts</u>
Wavefronts are lines drawn through certain points on waves e.g. through each crest. They're perpendicular to the direction in which the wave is moving.

If a wave front slows at a boundary it bends towards the normal

If a wave front speeds up at a boundary it bends away from the normal



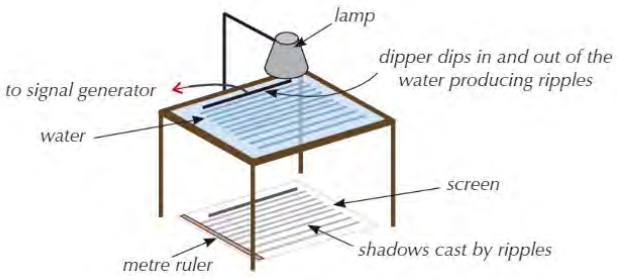

| 9. How can we measure the speed of a wave through experimentation | Red | Amber | Green |
|---|---|---|---|

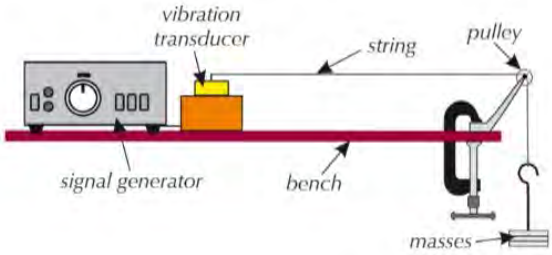
Measuring wavelength with a ripple tank

1. Set up the ripple tank as shown in the diagram with about 5 cm depth of water.
2. Adjust the height of the wooden rod so that it just touches the surface of the water.
3. Switch on the lamp and motor and adjust until low frequency waves can be clearly observed.
4. Measure the length of a number of waves then divide by the number of waves to record wavelength. It may be more practical to take a photograph of the card with the ruler and take measurements from the still picture.
5. Count the number of waves passing a point in ten seconds then divide by ten to record frequency.
6. Calculate the speed of the waves using the correct formula

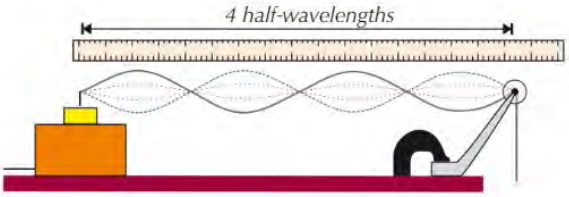
Measuring wavelength using a signal generator

1. Attach a string or cord to a signal generator and use a 200 gram (g) hanging mass and pulley to pull the string taut .Switch on the signal generator and adjust until stationary waves can be clearly observed.




2. Measure the length of as many half wavelengths (loops) as possible, divide by the number of half wavelengths (loops). This is half the wavelength, doubling this gives the wavelength.

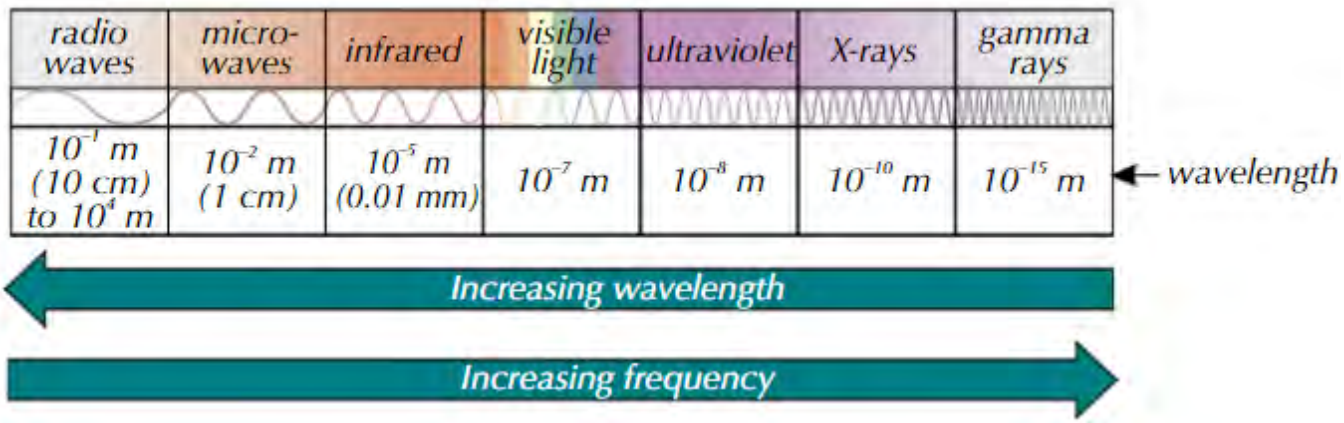



3. The frequency is the frequency of the power supply.
4. Calculate the speed of the waves using the correct formula.

**10. What are EM waves?** | **Red** | **Amber** | **Green**

EM Waves and the Spectrum

The EM (Electromagnetic) Spectrum is a continuous spectrum of all the possible wavelengths of electromagnetic waves. EM waves are all transverse – their energy transfer is at right angles to the direction of travel.
EM waves are made by electric and magnetic fields that oscillate about each other.

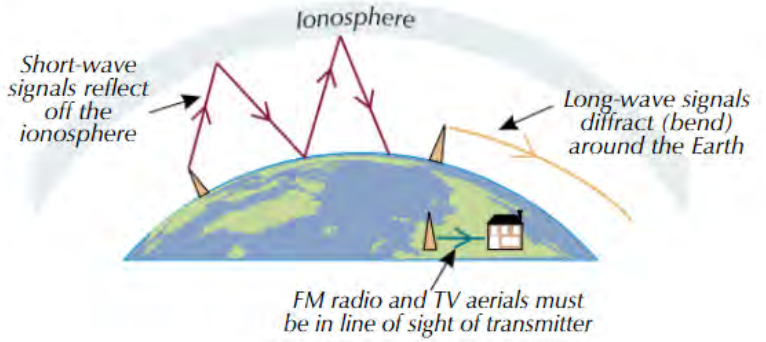


| 11. What are the properties , uses and dangers of EM radiation | Red | Amber | Green |
|---|---|---|---|

Radio waves:
These types of waves are the lowest in energy in the electromagnetic spectrum, they typically have wavelengths of between 0.1m and 10,000m.

Uses:
Radio waves are used primarily for communication - walkie talkie radios as used by the emergency services, radio that we listen to and terrestrial TV signals are good examples of how we can use radio waves.

Radio waves are not considered harmful

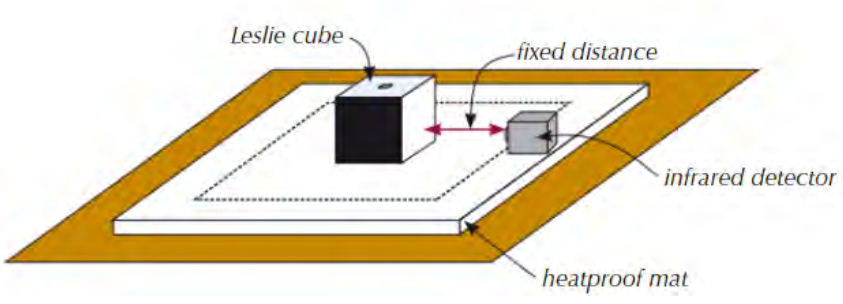



| Type of EM wave | Uses | Dangers of EM wave |
|---|---|---|
| Microwaves | Communication , Cooking | Not considered harmful |
| Infrared | Cameras, Cooking, Heaters | Not considered harmful |
| Visible Light | Seeing, Fibre Optics | Not considered harmful |
| Ultraviolet | Sun tanning lamps. Security, Energy efficient lamps | At the skin's surface it can cause sun burn, blindness to the eyes and increases the risk of skin cancer. |
| X rays / Gamma rays | Medical Imaging, Medical treatment | These radiations can penetrate the body and are high energy. When they strike an atom, they can cause changes known as ionisation. This can lead to mutations in DNA which can ultimately lead to cancers. |

| 12. How does infrared radiation emit from surfaces and what factors affect this? | Red | Amber | Green |
|---|---|---|---|

**Infrared radiation:**
The hotter an object is, the more infrared radiation will be emitted. Not only does the temperature of an object have an effect but the type of surface will also change how much and how quickly infrared radiation is emitted (or absorbed)

1. Place a Leslie cube on a heat-resistant mat. Fill it, almost to the top, with boiling water and replace the lid.
2. Leave for one minute. This is to enable the surfaces to heat up to the temperature of the water.
3. Use the infrared detector to measure the intensity of infrared radiation emitted from each surface, or the temperature of the surface. Make sure that the detector is the same distance from each surface for each reading.



| HOME LEARNING TASKS | |
|---|---|
| **Task Description** | **Done?** |
| Task 1 – Read, Cover and Recall the formula for calculating stopping distance | |
| Task 2 – Read , Cover and Write a definition for the terms, braking, thinking and stopping distance | |
| Task 3 – Recall and write a method to calculate the speed of a wave using a ripple tank | |
| Task 4 – Rearrange the formula for momentum to allow Mass to be calculated | |
| Task 5 – Explain the uses and dangers of at least 2 EM waves | |
| Task 6 – Explain the difference in terms of the rate of absorption and emission of thermal energy from a Leslie cube | |

# Physics Year 11 Block 2 – Electromagnetism

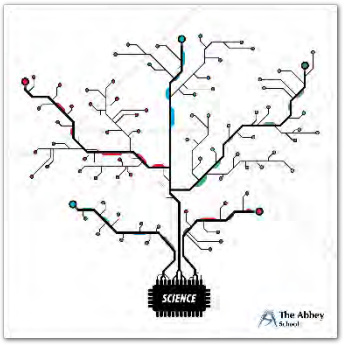
TERM FOCUS – Electromagnetism
Big Ideas – What are the effects of magnetic fields?

**Prior Learning Links**

1. KS3 – Forces
2. KS3 – Magnetic fields
3. KS3 - Electromagnetism

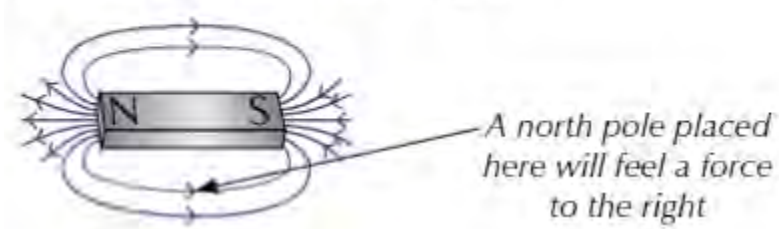
**Future Learning Links**

1. A Level Physics – electricity and magnetism
2. Applied Sciences
3. Electromagnetic appliances in the home
4. Electromagnets within the world of work




## 1. What are magnetic fields? (Grades 4 – 6)

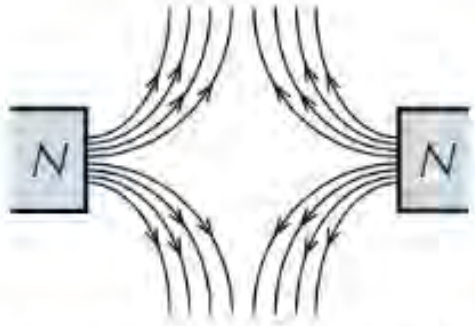
**Red** **Amber** **Green**

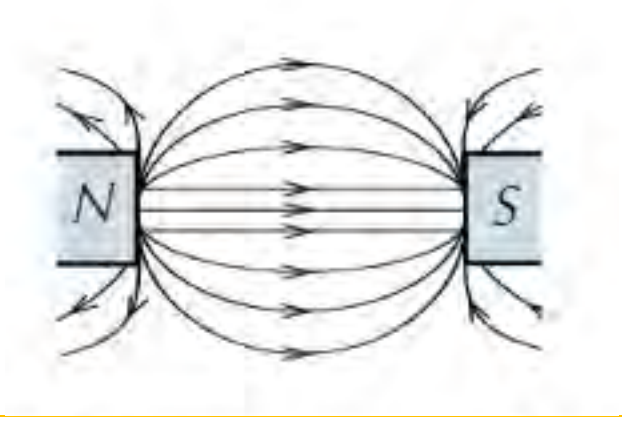



A magnet has a field surrounding it that can be used to attract magnetic materials, making them into induced magnets. The magnet will point towards North if it is allowed to move freely.

Where two like magnetic fields are brought together (north to north OR south to south), the filed lines will push against each other causing the magnets to repel one another.

This repelling can be felt as a force, it can also be used to make objects levitate for example in the bullet trains of Japan, creating a friction free way to travel.




When two unlike magnetic fields are brought together, the filed lines will pull towards each other, creating a force of attraction.

This attraction can be used to hold things together e.g. clasps on bags and the seal around the door of a fridge.

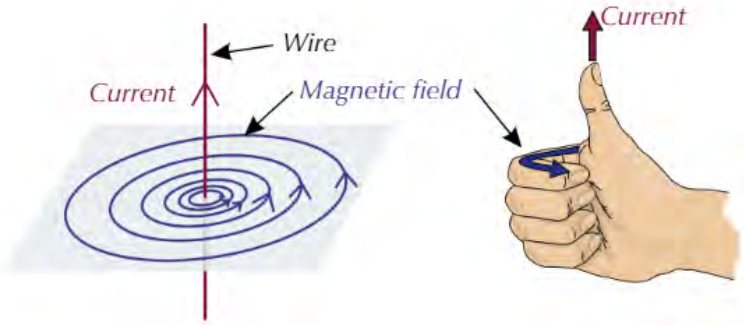
**INCS**

The four magnetic materials are:
Iron
Nickel
Cobalt
Steel

Remember: INCS

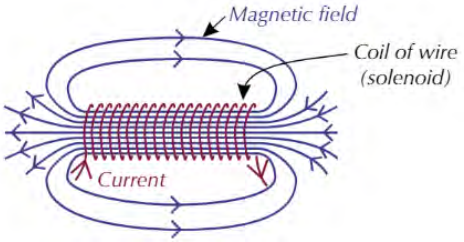
## 2. Is it only magnets that have magnetic fields? (Grades 5 – 8)

Red Amber Green



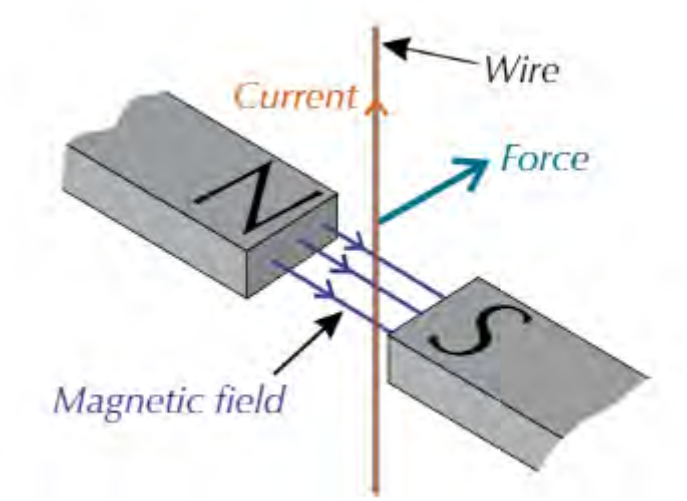

A wire that is carrying a current can induce or cause a magnetic field.
The magnetic field is at right angles to the wire and travels around it in a coil.

If the wire is coiled around, then the shape of the magnetic field becomes like a bar magnet. The coil of wire is known as a solenoid. This kind of component can be used to attract other objects that are made of magnetic materials. For example cranes that pick up and drop cars or magnetic door locks. The useful feature is that the magnet only works when the current is turned on, so the magnet can be turned on and off by closing or opening the circuit.



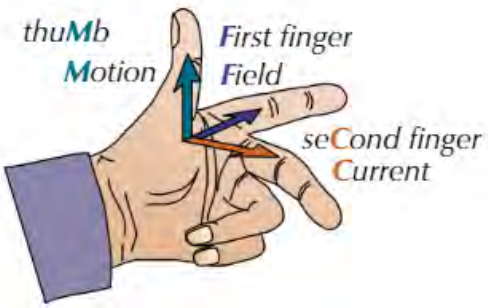
## 3. How can magnetic fields cause motion (Grades 5 – 9)

Red | Amber | Green




When a current carrying wire is placed into a permanent magnet's field, there is a force felt on the wire. This is because the magnetic field of the magnet repels the magnetic field of the wire.

To work out the direction of the force, use Fleming's left hand rule. The **F**irst **F**inger represents the **F**ield of the permanent magnet. The Se**C**ond finger represents the direction of the **C**urrent in the wire and the Thu**M**b represents the force or **M**otion that is made.




**Higher Tier Only**

The force that is felt by the wire can be calculated using the formula:

$$Force = Magnetic\ Field\ Strength \times Current \times Length$$

$$F = BIl$$

Force, F – measured in Newtons
Mangetic field strength, B – Measured in Teslas
Length of wire in the magnetic field, **I** – Measured in metres

Worked example:

**A 10 cm length of wire carrying a current of 3 A sits inside a magnetic field. The current flows at 90° to the direction of the magnetic field. It experiences a force of 0.12 N from the motor effect.**

**Calculate the magnetic flux density of the magnet.**

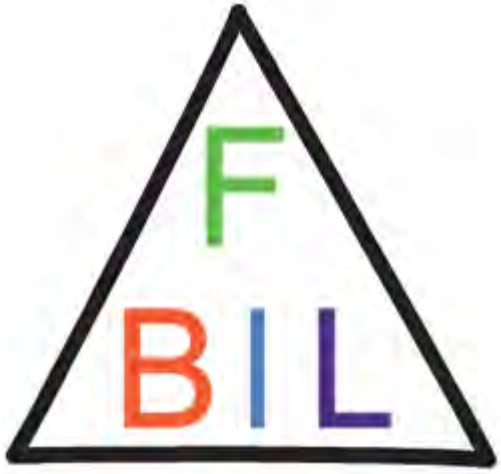
First, convert the length into metres.

$l = 10\ cm = 0.1\ m$

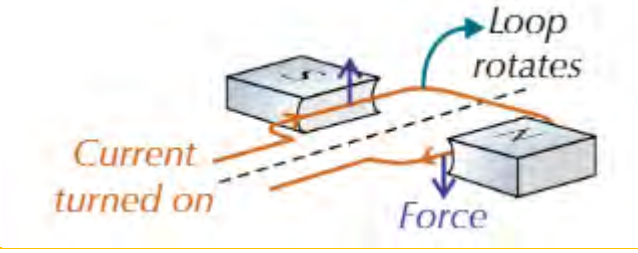
You're looking for the magnetic flux density, so rearrange $F = BIl$ to find $B$, then substitute in the values you're given.

$F = BIl$, so $B = F \div (I \times l)$

$= 0.12 \div (3 \times 0.1) = 0.4\ T$

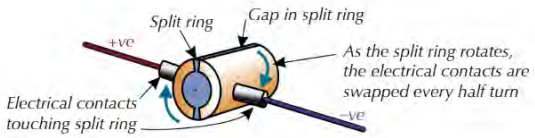


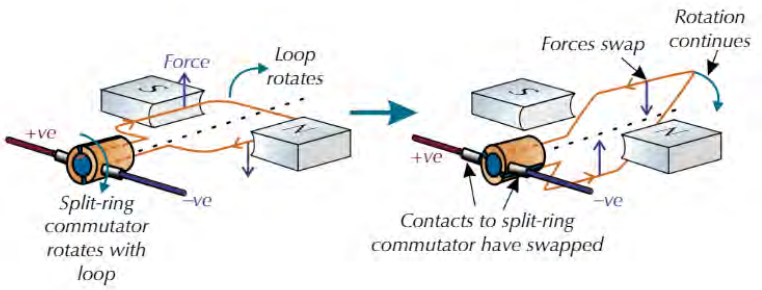
| 4. What are the uses of electromagnetic fields for motion? (Grades 5 – 9) | Red | Amber | Green |
|---|---|---|---|




When a loop of wire is placed into a magnetic field, the force on the wire is different on each side of the loop.

After half a rotation, the wire would be vertical and there would be no force acting on the coil. A split ring commutator is used to change the direction of the current so that the motion can continue.




Each swap in the direction of the current caused by the split ring commutator, causes more motion in the coil of wire. This is an electric motor.

**HOME LEARNING TASKS**

| Task Description | Done? |
|---|---|
| Learn and recall the four magnetic materials using look cover write check to help. | |
| Draw from memory the magnetic field for:<br>a) A bar magnet<br>b) Two repelling magnets<br>c) Two attracting magnets | |
| Use Fleming's Left Hand Rule to prove the direction of the force on the wire shown in the first diagram of lesson 3.<br>Recall and describe the direction of a magnet field that surrounds a current carrying wire. | |
| Calculate the force on a wire if it is in a magnetic field for 5cm and the magnet has a field strength of 0.8T when the current is:<br>a) 5A<br>b) 0.1A<br>c) 3.7A | |
| Use Fleming's left had rule to prove that the coil of wire in a motor is pushed in opposite directions for each of the sides of the loop. | |

# History Year 11 Term 2 – GCSE Paper 1: Medicine Through Time Revision

**Prior Learning Links**

- Year 7 Term 1 – 6: Ancient Rome and Medieval, Early Modern and Renaissance Europe
- Year 8 Term 1: Britain & the Industrial Revolution
- Year 8 Term 3: World War One
- Year 9 Term 1-4 Paper 1: Medicine Through Time. Introduction of all units

**Future Learning Links**

- Revision of Source Usefulness Exam Question (Appears in Paper 3: Weimar & Nazi Germany)
- Revision of Two features Exam Question (Appears in Paper 2: (B1) Anglo-Saxon & Norman England)
- Revision of Explain Why Exam Question (Appears in Paper 2: (B1) Anglo-Saxon & Norman England) and Paper 3: Weimar & Nazi Germany)
- Revision of 'How far do you agree…' Exam Question (Appears in Paper 2: (B1) Anglo-Saxon & Norman England) and Paper 3: Weimar & Nazi Germany)

SCAN ME

**GCSE Pod**

## KEY VOCABULARY

### Historical Skills Vocabulary

**Cause –** the reason for something happening
**Change** – when things are different to how they were before
**Consequence** – the result of something happening
**Continuity** – the opposite of change; when something stays the same or continues
**Difference** – the ways in which things are different to one another
**Factor** – something that can affect, or determine an event or outcome
**Inference -** a conclusion drawn about something using the information you already have about it
**Rate of change** – the pace at which change occurs; e.g. very quickly or slowly
**Reliability –** the degree to which something can be trusted or relied upon as accurate
**Significance –** the importance of something
**Similarity –** the quality of being similar, or the same
**Trend** – when there are a number of similar and related changes continuing in the same direction over a period of time
**Turning point** – a significant change happens – something that is different from what has happened before and which will affect the future

### Paper 1 GCSE: Medicine Through Time Core Vocabulary

**Care** – to provide help and support for someone who is unwell
**Diagnosis** – the act of identifying what is wrong with someone who is ill
**Disease** – an illness which affects people, spread by bacteria or infection
**Prevention** - to prevent something, is to ensure that it does not happen
**Public Health** – the health of the general population, and the activities and services that are designed to improve or protect this
**Surgery** – a medical treatment in which someone's body is cut open so that a doctor can repair, remove, or replace a diseased or damaged part
**Treatment** – medical attention given to a sick or injured person or animal

### Medicine Through Time Vocabulary

**Medieval Vocabulary**

1. **Apothecaries** – People who mixed herbal remedies and had good knowledge of the healing powers of plants.
2. **Astrology** - The study of the alignment of the planets and stars, used for diagnosing illness. Many people believed the Black Death was caused by a bad alignment of the planets.
3. **Barber surgeon** - Barbers worked with sharp knives and, as well as cutting hair, they often performed surgical procedures. Barbers would do surgery and not physicians.
4. **The Black Death** - An outbreak of the bubonic plague, spread by fleas on rats. Usually fatal within 3-5 days.
5. **Decaying matter** - Material, such as vegetables or animals, that has died and is rotting

6. **The four humours -** The theory that ill health is caused by an imbalance of the four humours in the body. These are blood, phlegm (what is coughed up or sneezed out of the nose), black bile (excrement) and yellow bile (pus or vomit).
7. **Mass** - Roman Catholic service where bread and wine is given.
8. **Miasma** - Smells from decaying matter that were believed to cause disease.
9. **Phlebotomy or bloodletting** - A common treatment for imbalance of the humours. This was done by cutting a vein, using leeches or cupping (piercing the skin with a knife).
10. **Physicians** - Medieval doctors were known as physicians. They would diagnose illness and recommend a course of treatments but rarely got involved in treating the patients themselves.
11. **Printing press** - A machine for printing text or pictures
12. **Purging** - Inducing people to vomit or giving them a laxative to clear out their digestive system; used to balance out the humours.
13. **Regimen Sanitatis** - A set of instructions by physicians to help a patient maintain good health. This would have included bathing, not over-eating and taking moderate exercise.
14. **Supernatural cures** - Religious cures such as healing prayers, paying for a mass, fasting and going on pilgrimages.
15. **Urine charts** – Physicians would examine people's urine, checking colour, thickness, smell (and even taste) to diagnose illness.

**Renaissance Vocabulary**

1. Alchemy - An early form of chemistry. Alchemists tried to turn one material into another, mainly with metals.
2. Anatomy - The science of understanding the structure and make-up of the body.
3. Dissection - The dismembering of a body to study its anatomical structure.
4. Iatrochemistry - A way of treating disease using chemical solutions. Pioneered by Paracelsus.
5. Renaissance - The French word that means rebirth. The Medical Renaissance refers to a period in the 16th and 17th centuries when new ideas were beginning to influence medicine.
6. The Royal Society - A group of people who promote scientific experiments and the sharing of knowledge. The Society received a royal charter from Charles II which gave it more credibility.
7. Secular - Not religious; not connected with spiritual beliefs.
8. Syphilis - A sexually transmitted infection, also known as the Great Pox. Can cause blindness, paralysis and madness.

**18th-19th Century Vocabulary**

1. **Amputation** - The removal of a limb by surgery.
2. **Anaesthetic** - A drug or drugs given to produce unconsciousness before and during surgery.
3. **Antiseptics** - Chemicals used to destroy bacteria and prevent infection.
4. **Chloroform** - A liquid whose vapour acts as an anaesthetic and produces unconsciousness.
5. **Diarrhoea** - A symptom of a disease (such as cholera); frequent, fluid bowel movements.
6. **The Enlightenment** - A European intellectual movement of the 18th century emphasising reason and science over religion and tradition; also known as the "Age of Reason".
7. **Germ theory** - The theory that germs cause disease, often by infection through the air.
8. **Inoculation** - Putting a low dose of a disease into the body to help it fight against a more serious one.
9. **Laissez-faire** - Belief that governments should not interfere in people's lives.
10. **Microbe** - A living organism that is too small to see without a microscope.
11. **Pasteurisation** - A way of preserving food or drink by heating to 55 degrees C and thus killing the bacteria.
12. **Public Health Act (1875)** - Government legislation that made it compulsory for city authorities to dispose of sewage, build public toilets and provide clean water. New houses had to be built to better quality and food sold in shops had to be checked for safety.
13. **Spontaneous generation** - The theory that decaying matter turns into germs.
14. **Vaccination** - Injection into the body of weakened organisms to give the body resistance. Comes from the word vacca which means cow in Latin. This was because the first vaccination involved injecting cow pox samples into people to develop immunity against small pox.

**1900-Present Vocabulary**

1. **Antibiotic** - A treatment that destroys or limits the growth of bacteria in the human body.

2. **Beveridge Report** - A 1942 report chaired by William Beveridge which identified five "Giant Evils" in society: squalor, ignorance, want, idleness, and disease, and went on to propose widespread reform to the system of social welfare.
3. **DNA** - Short for deoxyribonucleic acid, a substance that carries genetic information that determines characteristics such as hair and eye colour.
4. **Genome** - The complete set of DNA containing all the information needed to build a particular organism.
5. **Haemophilia** - A genetic disease passed from parent to child that stops blood from clotting.
6. **Human Genome Project** - A 10-year project which decoded and mapped all the genomes in DNA. This made it possible for scientists to better understand genetic diseases such as cancer and haemophilia.
7. **Magic Bullet** - A chemical treatment that targets specific microbes without harming the rest of the body.
8. **Mastectomy** - Surgery to remove one or both breasts.
9. **NHS** - National Health Service which provides free medical care for the entire population of Britain.
10. **Penicillin** - First antibiotic to be discovered.
11. **Prontosil** - A bright red dye which was discovered by scientist Gerhard Domagk to kill bacterial infections in mice, then successfully tested on his daughter who had blood poisoning in 1935.
12. **Salvarsan 606** - First magic bullet drug which treated Syphilis.
13. **Streptomycin** - Powerful antibiotic, discovered in 1943, effective against tuberculosis which until then, had been considered incurable.

**Western Front Vocabulary**

1. **Barbed wire** - Metal wire with sharp points used in no-man's-land to protect from enemy attack. It made it difficult for men to get through without being trapped by the wire.
2. **Blighty wound** - A wound serious enough to get a soldier away from the fighting and back to Britain.
3. **Brodie helmet** - Steel helmet held with a strap. Introduced in 1915, it reduced fatal head wounds by 80%.
4. **Chlorine gas** - Causes burning pain in throat and eyes and can lead to death by suffocation. First used by Germans in the second battle of Ypres, 1915.
5. **First Aid Nursing Yeomanry (FANY)** - A women's voluntary organisation which provided medical services on the frontlines such as driving ambulances and emergency first aid.
6. **Machine guns** - Guns that could fire 450 rounds a minute; their bullets could fracture bones or pierce organs.
7. **Mustard gas** - Odourless gas which passes through clothing to burn the skin, causing internal and external blisters. Gas masks offer little protection against mustard gas, as it goes through clothing. First used by the Germans in 1917.
8. **No-man's-land** - The area between two opposing lines of trenches.
9. **Phosgene gas** - Similar to chlorine gas but faster acting and can kill exposed person within 2 days. First used end of 1915.
10. **Royal Army Medical Corps (RAMC)** - The branch of the army responsible for medical care.
11. **Salient** - An area of a battlefield that is surrounded by enemy territory on 3 sides.
12. **Trench system** - A complex network of trenches in which men could live and fight. Trenches were dug to a depth of about 2.5m in a zig-zag pattern to confuse the enemy. Trenches were built over a distance of 400 miles all the way from the northern French coast to Switzerland.
13. **Shrapnel** - Fragments of metal from exploded shells.

| | | | |
|---|---|---|---|
| **1. What were the main ideas and approaches to the cause, prevention, and treatment of disease in medieval England?** | **Red** | **Amber** | **Green** |
| **Are you able to explain supernatural, religious, and rational explanations for disease?**<br>**Can you describe methods such as bloodletting, purging, and purifying the air?**<br>**Can you assess the influence of Hippocrates and Galen on medieval medicine?** | | | |
| **2. What roles did different medical practitioners and hospitals play in medieval England?** | **Red** | **Amber** | **Green** |
| **Are you able to differentiate between the roles of physicians, apothecaries, and barber surgeons?**<br>**Can you describe the approaches to hospital care in the thirteenth century?**<br>**Can you assess the care provided within the community and in hospitals from c1250–1500?** | | | |
| **3. How was the Black Death dealt with in 1348-49 in terms of treatment and prevention?** | **Red** | **Amber** | **Green** |
| **Are you able to explain the approaches to treatment of the Black Death?**<br>**Can you discuss attempts to prevent the spread of the Black Death?**<br>**Can you compare the effectiveness of different strategies used during the Black Death outbreak?** | | | |
| **4. How did explanations of the causes of disease and illness evolve during the Medical Renaissance?** | **Red** | **Amber** | **Green** |

| | | | |
|---|---|---|---|
| **Are you able to identify continuities and changes in disease explanations from medieval to Renaissance periods?**<br>**Can you describe Thomas Sydenham's contributions to improving diagnosis?**<br>**Can you explain the impact of the printing press and the Royal Society on medical ideas?** | | | |
| **5. What were the significant changes and continuities in medical care, treatment, and training during the Medical Renaissance?** | **Red** | **Amber** | **Green** |
| **Are you able to describe continuities in community and hospital care?**<br>**Can you identify changes in medical training and treatment methods?**<br>**Can you discuss the influence of Vesalius's work in England?** | | | |
| **6. What were William Harvey's contributions to medical knowledge during the Renaissance, and how did they impact medicine?** | **Red** | **Amber** | **Green** |
| **Are you able to explain Harvey's discovery of the circulation of the blood?**<br>**Can you assess the significance of Harvey's work on subsequent medical practice?**<br>**Can you compare Harvey's ideas with previous understandings of blood and the body?** | | | |
| **7. How did the understanding of the causes of disease and prevention evolve in the eighteenth and nineteenth centuries?** | **Red** | **Amber** | **Green** |
| **Are you able to explain the continuity and changes in disease explanations during this period?**<br>**Can you discuss the influence of Pasteur's Germ Theory on British medicine?**<br>**Can you describe the development and use of vaccinations and the Public Health Act (1875)?** | | | |
| **8. What were the significant changes in medical care, treatment, and public health in the eighteenth and nineteenth centuries?** | **Red** | **Amber** | **Green** |
| **Are you able to explain improvements in hospital care influenced by Nightingale?**<br>**Can you describe the impact of anaesthetics and antiseptics on surgery?**<br>**Can you discuss the role of public health measures in improving community health?** | | | |
| **9. How did Edward Jenner and John Snow contribute to the development of vaccination and the fight against cholera?** | **Red** | **Amber** | **Green** |
| **Are you able to explain Jenner's method for developing the smallpox vaccine?**<br>**Can you discuss John Snow's investigation of the Broad Street pump and its significance?**<br>**Can you assess the impact of these contributions on public health and modern epidemiology?** | | | |
| **10. What advancements have been made in understanding and diagnosing the causes of illness and disease in modern Britain?** | **Red** | **Amber** | **Green** |
| **Are you able to explain the influence of genetic and lifestyle factors on health?**<br>**Can you describe improvements in diagnostic techniques such as blood tests and scans?**<br>**Can you assess the impact of these advancements on disease management?** | | | |
| **11. How has the NHS and advancements in science and technology changed care, treatment, and prevention since 1900?** | **Red** | **Amber** | **Green** |
| **Are you able to explain the role of the NHS in improving access to medical care?**<br>**Can you describe advancements in medicines, including antibiotics and magic bullets?**<br>**Can you discuss high-tech medical and surgical treatments available in modern hospitals?** | | | |
| **12. What were the medical challenges and advancements on the Western Front during World War I?** | **Red** | **Amber** | **Green** |
| **Are you able to describe the trench system and its impact on soldier health?**<br>**Can you explain the types of injuries and illnesses common on the Western Front?**<br>**Can you discuss the significance of new medical techniques and the creation of a blood bank during the war?** | | | |

**HOME LEARNING TASKS**

| **Task Description** | **Done?** |
|---|---|
| Use 'Look, Cover, Write, Check' **or** flash cards to learn Medicine Through Time Vocabulary | |
| Complete GCSE Pod Tasks for all units using the QR code at the top of the page | |
| Complete revision tasks for each unit using the GCSE History Course Booklet | |
| Complete a 12 mark exam question for one of Medieval, Renaissance, 18th-19th Century, and Modern Medicine from the GCSE History Course Booklet | |
| Complete a 16 mark exam question for one of Medieval, Renaissance, 18th-19th Century, and Modern Medicine from the GCSE History Course Booklet | |
| Complete the an inference, usefulness, and follow up enquiry question for the Medicine on the Western Front unit from the GCSE History Course Booklet | |
| Complete a past paper | |

# Geography Year 11 Term 2 – Tectonic Hazards

In this topic, students will explore the processes that drive natural hazards, particularly those related to tectonic plate movement. They will examine different types of plate boundaries—constructive, destructive, and conservative—and the natural hazards associated with each, such as earthquakes and volcanoes. Through case studies of earthquakes in Chile (2010) and Nepal (2015), students will compare the effects and responses in high-income countries (HICs) and low-income countries (LICs), assessing the differences in impacts based on economic development. Students will also explore methods of predicting and reducing the impacts of natural disasters, while considering why people continue to live near hazardous areas like volcanoes and fault lines.

| Prior Learning Links | Future Learning Links |
|---|---|
| • Year 8 Term 1 Dangerous places, studying structure of the earth, volcanoes and earthquakes. | • Term 3 Weather Hazards |

**KEY WORDS**

- **Constructive Boundary:** A type of plate margin where two tectonic plates move apart, allowing magma to rise and form new crust. This creates features like mid-ocean ridges and volcanic islands.
- **Destructive Boundary:** A plate boundary where an oceanic plate is forced beneath a continental plate (subduction), leading to the formation of deep ocean trenches and volcanic activity.
- **Conservative Boundary:** A boundary where two tectonic plates slide past each other horizontally, often causing earthquakes. No crust is created or destroyed.
- **Plate Margins:** The edges where two tectonic plates meet. Different types of plate margins include constructive, destructive, and conservative, each associated with specific geological processes and hazards.
- **Ocean Trenches/Ridges:** Ocean trenches are deep depressions in the sea floor created by subduction at destructive boundaries. Ocean ridges are underwater mountain ranges formed at constructive boundaries where plates pull apart.
- **Convection Currents:** Circular currents in the mantle caused by the heating of molten rock near the Earth's core. These currents drive the movement of tectonic plates on the Earth's surface.

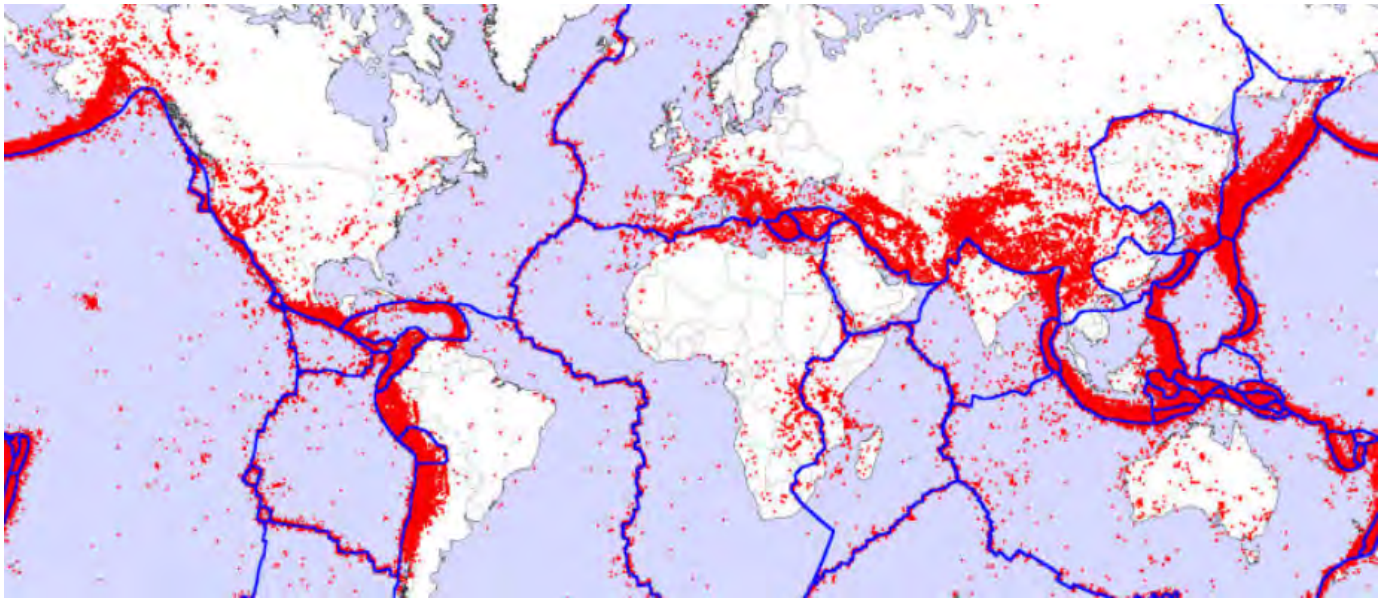
## 1. Where are all the earthquakes and volcanoes?

Red | Amber | Green

**Overview of plate boundaries:**
Earthquakes and volcanoes predominantly occur along tectonic plate boundaries. The Earth's crust is divided into large plates, and their movement is driven by convection currents in the mantle.

**Convection currents and plate movement:**
Convection currents in the Earth's mantle are caused by heat from the core, which rises to the surface, cools, and then sinks again. This motion drives tectonic plates, causing them to move and creating hazards such as earthquakes, volcanic eruptions, and tsunamis.

**Mapping tectonic plates:**
Most earthquakes and volcanoes are concentrated along plate boundaries, such as the Pacific Ring of Fire. This area, circling the Pacific Ocean, is home to 75% of the world's active volcanoes and 90% of its earthquakes.



## 2. What happened in Chile in 2010?

Red | Amber | Green

**Case study overview:**
The 2010 Chile earthquake (magnitude 8.8) was a high-magnitude earthquake that struck off the coast of central Chile, a high-income country (HIC). The country experienced significant but manageable damage due to its well-developed infrastructure and preparedness.

**Impacts and responses:**
Primary effects included 500 deaths and 220,000 homes destroyed. Secondary effects involved fires, power cuts, and a tsunami. Chile's well-established emergency response systems, including earthquake-proof buildings, meant that recovery was rapid, with aid delivered swiftly.

**Why less damage?**
In HICs like Chile, preparedness (building codes, emergency plans) and robust infrastructure help reduce damage and speed up recovery.

## 3. What happened in Gorkha, Nepal in 2015?

Red | Amber | Green

**Case study overview:**
The 2015 earthquake in Gorkha, Nepal (magnitude 7.8) struck a low-income country (LIC), resulting in far greater damage and a slower recovery compared to Chile. The earthquake severely affected a region already struggling with poverty and weak infrastructure.

**Impacts and responses:**
Primary effects included 9,000 deaths and the destruction of 600,000 homes. Secondary effects involved landslides and avalanches, which worsened the death toll. Nepal's lack of resources, poor infrastructure, and slow emergency response meant recovery was difficult and prolonged.

**Why more damage?**
LICs like Nepal face greater challenges due to limited financial resources, less resilient infrastructure, and a lack of preparedness measures.

## 4. Are we ever able to predict a natural disaster?

Red | Amber | Green

**Prediction methods:**
Predicting earthquakes is extremely difficult. However, scientists use various tools such as seismic activity monitoring and gas emissions from volcanoes to try and predict when an event might occur. The **Richter Scale** measures the magnitude of earthquakes, but it does not predict them.

**Effectiveness of predictions:**
While volcanic eruptions can sometimes be predicted based on gas and ash emissions, earthquakes provide little to no warning. This makes preparation, rather than prediction, the key to reducing damage.

| 5. Why do people risk living next to a volcano? | Red | Amber | Green |
|---|---|---|---|

**Reasons people live near hazards:**
Despite the risks, many people live near volcanoes due to factors such as fertile soils (which support agriculture), the availability of geothermal energy, and tourism opportunities. In many cases, people may have limited alternatives due to poverty or lack of mobility.

**Low perceived risk:**
In some areas, people feel the risk of an eruption is low or manageable. Advances in technology and the availability of early warning systems can give people a sense of security, even in hazard-prone areas.

| 6. Are we able to reduce the impacts of a natural hazard or disaster? | Red | Amber | Green |
|---|---|---|---|

**Mitigation strategies:**
Approaches to reducing the impacts of natural hazards include the **three P's**: prediction, planning, and protection. Earthquake-proof buildings, emergency drills, and evacuation plans can help reduce casualties. For example, countries like Japan implement strict building regulations to ensure structures can withstand earthquakes.

**Examples of mitigation:**

- **Earthquake-proof buildings:** Designed to absorb seismic energy and prevent collapse.
- **Evacuation plans:** Pre-planned routes and shelters to ensure rapid evacuation during a disaster.
- **Drills and education:** Regular practice of evacuation drills and education campaigns raise public awareness.


| HOME LEARNING TASKS | |
|---|---|
| **Task Description** | **Done?** |
| Homework revision books completed weekly | |

Subject: Religion Year Group: 11
Topic: Human rights Term: 2

Big Questions

What is social justice?

Do we have a moral responsibility to look after others?

How are the poor being exploited?

**What is social justice?**

This means in terms of wealth distribution, the law, equal rights and opportunities for all people. For social justice to exist, society must be fair to all regardless of race, age, gender, sexuality and disability. It also means that society has to be organised so that is open for all in terms of education, health care, housing and social welfare.

Social justice is difficult to achieve. Some argue that the poor need preferential treatment and a society is judge on how it treats its most vulnerable. Other believe that too much help can make people reliant on others.

**What is the minimum wage?**

The minimum wage is a law that protects those who are paid the least. This means that you cannot be paid less than the minimum wage. Low paid workers often do jobs of great necessity for everyday living, yet the wages they are paid don't reflect this. Remember fair doesn't mean equal as this would be impossible to achieve.

| Wage band | Current rate (from 1 April 2023) |
|---|---|
| Age 23 or over (National Living Wage) | £10.42 |
| Age 21 to 22 | £10.18 |
| Age 18 to 20 | £7.49 |
| Under 18 | £5.28 |
| Apprentice | £5.28 |

**What are loans?**

If you do not have the money for something you can borrow money. You will have to pay it back with interest. The higher the interest the more you must pay back.

The main ways people borrow money are:

Mortgage
Bank loans
Catalogues - Littlewoods etc
Credit cards
Car loans

**Religious views on Human rights**

**Buddhism and Karuna**

Compassion is a feeling of concern for others who are suffering and therefore makes a person want to do something to help. In Buddhism, compassion is called karuna. The Buddha taught that showing compassion to others is something all people can do, even if they find other parts of his teaching difficult to follow. Buddhists believe that they should show compassion to everyone. They should also try to think about how they would feel if it was them suffering, as this will help them to want to free others from that suffering. Compassion is one of the Four Sublime States, which the Buddha taught that people should work on and develop within themselves. People should do this so that they know (through wisdom) how to help others.

**Loving kindness (metta)**

Another one of the Four Sublime States is metta, or loving kindness. It is important as Buddhists want to develop this quality in order to help others to be free from suffering. Metta is a more positive way of looking at life than karuna, as metta is about trying to show love to others before they need help. A good example of this would be giving something to a friend to make them happy (metta) rather than helping someone if they fell over (karuna). Although both are important, metta is more positive as it involves acting before being prompted to do so by a bad situation. Metta leads people to be kinder, more considerate and more helpful.

**Christian View**

Christians believe that we are created in God's image and therefore we have a duty to protect and care for one another. This is called stewardship.

- "Love thy neighbour" (Jesus)
- "Love your enemies" (Jesus)
- "Treat others as you want to be Treated" (Jesus)

**Key words:**

**Loans** - a thing that is borrowed, especially a sum of money that is expected to be paid back with interest.

**Payday loan** - Payday loans are short-term loans for small amounts of money. They are available from high street shops and internet sites.

**Minimum wage** - the lowest wage permitted by law or by a special agreement.

**Gender discrimination** - Gender discrimination is when someone is treated unequally or disadvantageously based on their gender

# Subject Art Year 11 Term 1 & 2 – ‘Flight’

Term Focus – *Walking Talking Mock Exam Past Question- ‘Flight’ Artists, craftspeople and designers have often created work inspired by flight and flying. Aboriginal peoples of Australia carved and painted wooded boomerangs with decorative patterns. Nicola Godden created sculptures in response to the story of the flight of Icarus. The wall-mounted sculptures of Tom Hare are a response to flying seed pods. Air travel has led to designs for commemorative memorabilia and the development of in-flight services, such as the eco-friendly meal trays design by Priestman Goode. Students will be asked to consider appropriate sources and produce their own response* ***to Flight.***

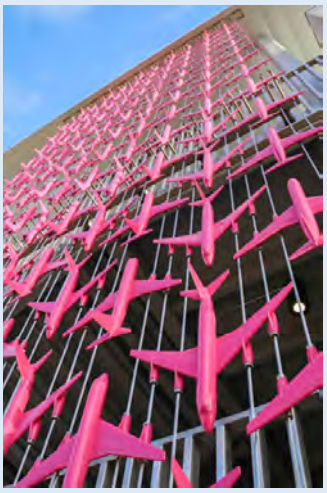
**Prior Learning Links**

In year 10 they have developed most of their coursework, extending their knowledge from KS3, by thoroughly going through the creative design process, they have focused on idea generation, artist influence and how they can translate the ideas of others into their own work by creating artist responses to their work, developing techniques with clay and wood. They have idealised designs through creating prototypes using, card and foamboard, addressing concerns by using ACCESSFM. Whilst constantly referring to initial ideas and growth of their idea ensuring they are still on track and adhering to the overall point and purpose of the work. They have branched in working on technical drawings such as isometric, orthographic and drawing techniques such as mark making. Creating ranges of 3D structures to in visualise their ideas from 2D to 3D.

**Future Learning Links**

Students will continue their Flight project shifting the focus from Investigating artists and recording primary and secondary sources more towards developing ideas, experimenting with media and completion of a final piece under exam conditions (5hr Exam).

The Ultimate Guide on Different Art Mediums – ARTDEX



A Flight Inspired Art Installation For The San Diego International Airport (contemporist.com)

**KEY VOCABULARY**

| KEY WORDS | KEY SUBJECT TERMINOLOGY |
|---|---|
| ***Theme...***<br>*Aeroplane/Parachute/Rocket/Balloon/Journey/Wings/Bird/Aeronautic/Navigation/ Transatlantic/Trajectory/Engine/Glide/Launch/Landing/Aviation/Speed Cockpit/Soaring/Tail/Boomerang/Helicopter/Drone/Fledge/Sky…*<br><br>***Technical...***<br>*Tone/Texture/Shape/Colour/Form/Scale/Media/Technique/ Composition/Research/Primary Source/Secondary Source*<br><br>**I will be expected to recall keywords learned in previous projects and use them in the appropriate context.** | Record<br>Develop<br>Refine<br>Realise<br>Evaluate |

| 1. Can you describe the process of development in artists work? | Red | Amber | Green |
|---|---|---|---|

***Develop ideas through investigations, demonstrating critical understanding of sources (AO1):***

**I will learn how to confidently record…**

- images and information appropriate to a given theme of 'Flight'

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently evaluate…**

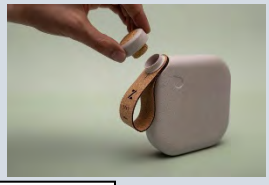
- artists/designers using analytical writing skills and forming opinions

Aboriginal Art and Boomerangs

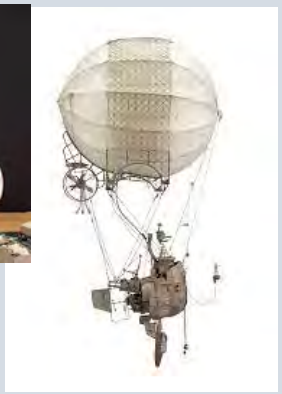
Nicola Goddan

Alex Hevari

Tom Hare



PriestmanGoode



Daniel Agdad

Ed Hill

Makaon

| 2. How can the study of other artists help you find your own direction in the development of ideas? | Red | Amber | Green |
|---|---|---|---|

***Develop ideas through investigations, demonstrating critical understanding of sources (AO1):***

**I will learn how to confidently develop…**

- and hone my observation and modelling skills using a range of 3D media, techniques and processes.
- my knowledge and understanding of 3D styles and techniques
- my drawing and planning skills
- ideas in response to a given theme, linking to artists/designers work.
- my higher order thinking skills

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to a given theme of 'Flight'
- using wet and dry media
- using drawing, photography and technology e.g. CAD
- building on their knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a design specialising in 3D

| 3. Why primary sources are the richest form of research? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to a given theme of 'Flight'
- using wet and dry media
- using drawing, photography and technology e.g. CAD
- building on their knowledge and understanding of how artists use materials and imagery to create meaningful work
  ideas for a design specialising in 3D

This person is sculpting from direct observation of a primary source.

| 4. How can Secondary sources enrich the development of ideas? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to a given theme of 'Flight'
- using wet and dry media
- using drawing, photography and technology e.g. CAD
- building on their knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a design specialising in 3D

A secondary source is very useful when you can't get to the real thing. This sculptor obviously can't meet this prehistoric creature in real life and will have very likely looked at pictures and / or computer generated images based on the skeleton in creating this giant model.

| 5. Can you list 5 different ways you could record observations of the subject matter? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to a given theme of 'Flight'
- using wet and dry media
- using drawing, photography and technology e.g. CAD
- building on their knowledge and understanding of how artists use materials and imagery to create meaningful work
- ideas for a design specialising in 3D

Take a photograph, Do a drawing, make a collage, write it down, print it, paint it, model it in 3D….

| 6. Why should you plan a wide range of ideas before selecting a final one? | Red | Amber | Green |
|---|---|---|---|

***Develop ideas through investigations, demonstrating critical understanding of sources (AO1):***

**I will learn how to confidently develop…**

- and hone my observation and modelling skills using a range of 3D media, techniques and processes.
- my knowledge and understanding of 3D styles and techniques
- my drawing and planning skills
- ideas in response to a given theme, linking to artists/designers work.
- my higher order thinking skills

The statue above is called **'Fly Away Plane'** by Randolph Rose. Consider how you could be inspired by the artists shown.

| 7. Why is it important to annotate work as it progresses? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently evaluate…**

- *analysing and reflecting on the development of my own work*
- *making connections between my own artists' / Designers' work*
- *suggesting ways I could I improve*

| 8. How can the refining process help you to fully realise intentions? | Red | Amber | Green |
|---|---|---|---|

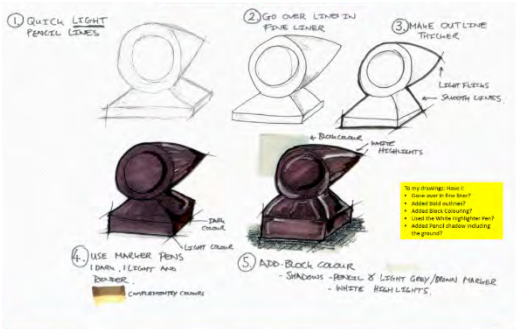
***Refine work by exploring ideas, selecting and experimenting with media, materials, techniques and processes (AO2):***

**I will learn how to confidently refine…**

- by selecting and experimenting with a range of 3D media and techniques
- by selecting ideas to adapt and improve e.g. adjustments to size, colour and composition.
- through developing a piece of work from one media into another

Can you see how this student is refining their 3D designs?

Which one do you think is the final design?




***Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language (AO4):***

**I will learn how to confidently realise intentions…**

- using 3D techniques and processes.

Here is a sculpture made from recycled plastic cutlery. Consider the planning steps the designer might have gone through before making this piece.

## EVALUATING ARTISTS' WORK

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

**Think!**

**See?**

**Know?**

**Think?**

## ANNOTATING YOUR OWN WORK

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

**Think!**

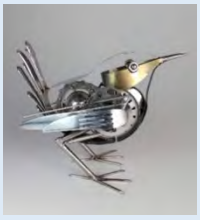
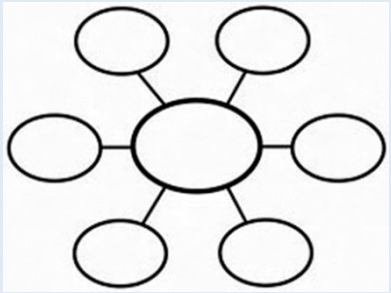
**What?**

**How?**

**Why?**

## END OF PROJECT EVALUATION

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

| Task Description | Done? |
|---|---|
| ***Homework- tasks linked to 'Personal Histories' (2 hours per cycle)*** | |
| <u>Can you describe the process of development in artists work?</u><br><br>Research your favourite artist from the one you have studied in class, find an example to evaluate using the 'See Know Think' questions. | |
| <u>How can the study of other artists help you find your own direction in the development of ideas?</u><br><br>Ed Hill is known for his metal scultptures using everyday items complete the follwing tasks to show how artists can help you find your own direction of ideas:<br>• List the items you could use in your own metal bird sculpture<br>• Make a sketch of one of the sculptures below<br>• Describe it in your own words<br><br>     | |
| <u>Why primary sources are the richest form of research?</u><br><br>• List the primary sources used in this GCSE 3D Art sculpture<br>• Sketch it<br>• Describe it in your own words<br><br>  | |
| <u>How can Secondary sources enrich the development of ideas?</u><br><br>Create a mind map of words linking to the theme 'Flight'. Use google image to collect 6 images from your mind map and sketch them.<br>If you don't have access to a computer then extend your mind map.<br><br>   | |

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

- Draw a bird pencil
- Draw plane in biro
- Draw butterfly in colour pencil
- Draw helicopter using felt tip
- Photograph birds (if at home) add to your homework book




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

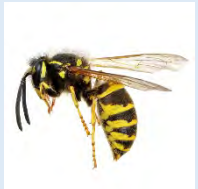
Below are 3 pictures of sculptures inspired by the theme 'Flight', the insects and the aeroplanes have been made using recycled materials. Plan a 3D piece of your own:

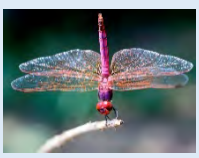
- Choose one of these 3 themes- Birds in Flight, Insects with wings, aircraft
- List the recycled materials you could use
- Complete 6 thumbnail sketches showing different parts and viewpoints








A thumbnail sketch might sound weird and a waste of time. Why draw whatever I want to draw, but in a smaller size?

The answer is straightforward: **planning!**

Thumbnail sketches are great tools to avoid problems with composition and perspective, as well as to prototype a larger painting quickly.

<u>Why is it important to annotate work as it progresses?</u>

- Annotate your Thumbnail sketches of your 3D model using What, How and Why

<u>How can the refining process help you to fully realise intentions?</u>

- Choose your best 3D idea and draw it out in full detail showing different viewpoints and labelling how you would construct it.
- Annotate the developments

This amazing honey bee sculpture has been handcrafted by an artisan in Zimbabwe on a fair trade basis, it is one of many a truly stunning works of art and very highly detailed. Drinks cans are recycled and cut into strips before being wrapped around a steel wire frame. Each one has its own character and uniqueness.

# Subject Art Year 11 Term 2 & 2 – ‘Personal Histories’

Term Focus – *Students will continue their Personal Histories project shifting the focus from Investigating artists and recording primary and secondary sources more towards developing ideas, experimenting with media and completion of a final piece under exam conditions (5hr Exam).*

***Personal Histories'*** *(Past Exam Question)- Many artists use personal histories as the inspiration for their work. Paula Rego frequently creates paintings that refer to episodes in her childhood. Frida Kahlo's paintings often related to her life experiences. The images and memories of his early years in Belarus were a major inspiration for the work of Marc Chagall. The vivid colours found in India influenced the early sculptures of Anish Kapoor. Students will be asked to consider appropriate sources and produce their own response* ***to Personal histories.***

The Ultimate Guide on Different Art Mediums – ARTDEX

**Prior Learning Links**

During Terms 5 and 6 students embarked on their final coursework project ‘Personal Histories’. They will spend the next two terms completing this project which will culminate with a 5hr Practical Mock Exam designed to prepare them for the real exam in May.

**Future Learning Links**

*Students will select from a choice of 7 externally set questions and prepare a personal response to their chosen theme. This will culminate with a 10 hr practical exam.*

**KEY VOCABULARY**

| KEY WORDS | KEY SUBJECT TERMINOLOGY |
|---|---|
| ***Theme...***<br>*Identity/Personality/Heritage/Culture/Society/ Family/Relationships/Belongings/Hobbies/ Memories/Events etc.*<br><br>***Technical...***<br>*Tone/Texture/Shape/Colour/Form/Scale/Media/Technique/ Composition/Research/Primary source/Secondary Source*<br><br>**I will be expected to recall keywords learned in previous projects and use them in the appropriate context.** | Record<br>Develop<br>Refine<br>Realise<br>Evaluate |

| 1. Can you describe the process of development in artists work? | Red | Amber | Green |
|---|---|---|---|

***Develop ideas through investigations, demonstrating critical understanding of sources (AO1):***

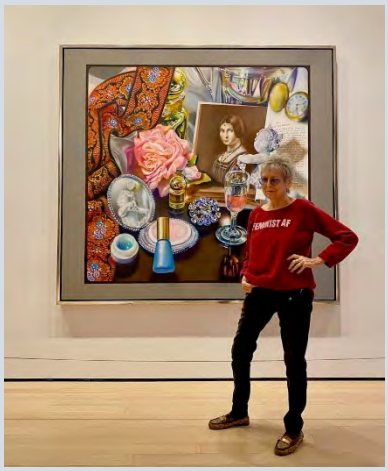
**I will learn how to confidently record…**

- images and information appropriate to the theme 'Personal Histories'

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently evaluate…**

- artists using analytical writing skills and forming opinions



Audrey Flack

Joseph Cornell

Lisa Milroy

Anish Kapoor

Marc Chagall

Paula Rego

Frida Kahlo

| 2. How can the study of other artists help you find your own direction in the development of ideas? | Red | Amber | Green |
|---|---|---|---|

***Develop ideas through investigations, demonstrating critical understanding of sources (AO1):***

**I will learn how to confidently develop…**

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

Can you see how this student's artwork has been inspired by Frida Kahlo?

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

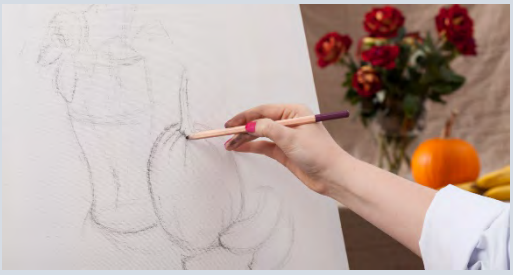
- images and information appropriate to the theme ‘Personal Histories’
- using wet, dry and digital media
- examples of artists work appropriate to the theme
- information about artists, showing appreciation of how they use media and techniques to create meaningful work.

| 3. Why primary sources are the richest form of research? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to the theme ‘Personal Histories’
- using wet, dry and digital media
- examples of artists work appropriate to the theme
- information about artists, showing appreciation of how they use media and techniques to create meaningful work.



This person is drawing still life from direct observation of a primary source.

| 4. How can Secondary sources enrich the development of ideas? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to the theme ‘Personal Histories’
- using wet, dry and digital media
- examples of artists work appropriate to the theme
- information about artists, showing appreciation of how they use media and techniques to create meaningful work.

A secondary source is very useful when you can’t get to the real thing. This student obviously can’t meet this celebrity can use a picture from the internet to work from.

| 5. Can you list 5 different ways you could record observations of the subject matter? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently record…**

- images and information appropriate to the theme ‘Personal Histories’
- using wet, dry and digital media
- examples of artists work appropriate to the theme
- information about artists, showing appreciation of how they use media and techniques to create meaningful work.

Take a photograph, Do a drawing, make a collage, write it down, print it, paint it, model it in 3D….

| 6. Why should you plan a wide range of ideas before selecting a final one? | Red | Amber | Green |
|---|---|---|---|

***Develop ideas through investigations, demonstrating critical understanding of sources (AO1):***

**I will learn how to confidently develop…**

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


A student’s response to Lisa Milroy
Consider how you could be inspired by Lisa Milroy?

| 7. Why is it important to annotate work as it progresses? | Red | Amber | Green |
|---|---|---|---|

***Record ideas, observations and insights relevant to intentions as their work progresses (AO3):***

**I will learn how to confidently evaluate…**

- *analysing and reflecting on the development of my own work*
- *making connections between my own artists’ work*
- *suggesting ways I could I improve*

| 8. How can the refining process help you to fully realise intentions? | Red | Amber | Green |
|---|---|---|---|

***Refine work by exploring ideas, selecting and experimenting with media, materials, techniques and processes (AO2):***

**I will learn how to confidently refine…**

- by selecting and experimenting with a range of 2D/3D media and techniques
- by selecting ideas to adapt and improve e.g. adjustments to size, colour and composition.

- through developing a piece of work from one media into another

Can you see how this student is refining her portrait idea?

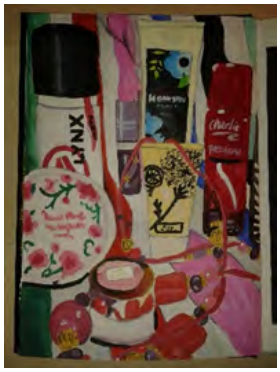
Which one do you think is her chosen final idea?


***Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language (AO4):***

**I will learn how to confidently realise intentions…**

- using 2D/3D techniques and processes.

Here is a student example of a personal response inspired by Audrey Flack. Consider how you could be inspired by Audrey Flack?



**EVALUATING ARTISTS' WORK**

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

**Think!**

**See?**

**Know?**

**Think?**

**ANNOTATING YOUR OWN WORK**

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

**Think!**

**What?**

**How?**

**Why?**

**END OF PROJECT EVALUATION**

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

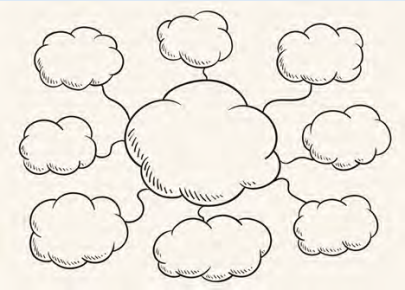
| Task Description | Done? |
|---|---|
| ***Homework- tasks linked to 'Personal Histories' (2 hours per cycle)*** | |
| <u>Can you describe the process of development in artists work?</u><br><br>Research your favourite artist from the one you have studied in class, find an example to evaluate using the 'See Know Think' questions. | |
| <u>How can the study of other artists help you find your own direction in the development of ideas?</u><br><br>Lisa Milroy is famous for drawing everyday items in columns and rows, complete the follwing tasks to show how artists can help you find your own direction of ideas:<br>• Arrange the items in your pencil case in columns or rows and draw theme<br>• If working at home your could arrange personal belongings or house hold items in rows and draw them.<br><br>     | |

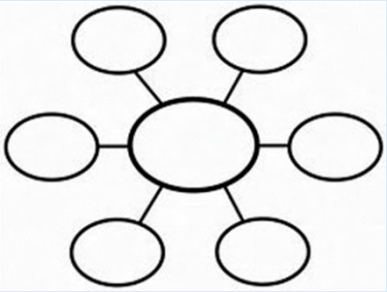
Why primary sources are the richest form of research?

- Collect personal items that mean something to you and document them through photography and sketching.
- Explain why they are meaningful to you

How can Secondary sources enrich the development of ideas?

Create a mind map of things that link to a hobby or an interest e.g. A particular sport, fishing, gaming, cooking, sewing etc. Use google image to collect 6 images from your mind map and sketch them.
If you don't have access to a computer then extend your mind map.





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

- Draw a personal belonging in pencil
- Draw a personal belonging in biro
- Draw a personal belonging in colour pencil
- Draw a personal belonging using felt tip
- Photograph 5 different personal belongings (if at home) add to your homework book

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

Below are 4 pictures of sport themed Still Life. STILL LIFE is when a group of objects are deliberately arranged on a surface for the purpose off drawing. Complete the following tasks:

- Label the still life which links most to Lisa Milroy and explain why
- Label the still life which links most to Audrey Flack and explain why
- Complete 3 rough sketches from the pictures
- Complete one best drawing from the pictures

<u>Why is it important to annotate work as it progresses?</u>

- Annotate your sports still life work using What, How and Why

<u>How can the refining process help you to fully realise intentions?</u>

- Choose your best sports still life to develop further in a different media e.g. Colour pencil, paint, felt tip, biro etc.
- Annotate the developments

# ICT Year 11 Term 1 – Learning Aim C
# Wider Implications Of Digital Systems

Term Focus –

- Explain how data is shared between organisations
- Understand the responsible use of data with respect to privacy
- Understand the impact of manufacture, use and disposal of IT systems on the environment
- Understand the importance of providing equal access to digital services and information
- To understand the purpose and use of acceptable use policies
- To understand Data protection principles
- To understand the criminal use of computer systems including unauthorised access and modification of materials

**Prior Learning Links**

**Learning Aim A: Exploring User Needs**

**Basic IT Skills**: Students may have developed these skills while conducting research on user needs and preferences, using software tools to analyse and present findings.

**Digital Communication**: Understanding effective communication methods may come from learning how to gather user feedback and interact with stakeholders, a skill reinforced in both Components 1 and 2.

**Research Skills**: Researching user needs involves evaluating information sources, aligning with skills learned in Component 1, where students analyse digital systems and their effectiveness.

**Learning Aim B: Developing Digital Solutions**

**Data Management**: Students gain insights into data handling when designing digital solutions, including organising data for use in applications, a concept introduced in

**Future Learning Links**
**Component 3: Effective Digital Working Practises:**

**Cyber Security:** Deepening your understanding of cyber security within the context of effective digital working practises.

**Legal and Ethical Considerations:** Learning about the legal and ethical issues related to digital technologies, including data protection laws and intellectual property rights.

**Impact of Digital Technologies:** Understanding how digital technologies impact individuals and organisations, including the role of cyber security in protecting digital assets.

**Further Studies and Specialisations:**

**Advanced Cyber Security:** Exploring more complex cyber security topics such as network security, ethical hacking, and digital forensics.

**IT and Computing Courses:** Applying your cyber security knowledge in higher-level IT and computing courses, which may cover topics like system administration, cloud computing, and software development.

Component 2 when they explore data analysis.

**Collaboration Tools**: While working on projects, students likely used collaboration tools to share ideas and resources, supporting teamwork skills developed in both components.

**Problem-Solving**: This aim emphasises troubleshooting and refining digital solutions, helping students enhance their critical thinking skills when facing challenges in project development, as practised in Component 2.

**Project Management Basics**: Understanding project lifecycles and management principles is essential when planning and developing digital solutions, building on concepts covered in Component 1, where students learn about project planning and implementation.

**Basic IT Skills:**

Using Software Applications: Gaining proficiency in common software applications like word processors, spreadsheets, and presentation tools.

Understanding Hardware and Software: Knowing the basic components of a computer and how different software interacts with hardware.

**Digital Literacy:**

Online Safety: Learning how to stay safe online by recognizing threats like phishing and malware.

Privacy Settings: Understanding how to manage privacy settings on various digital platforms to protect personal information.

**Career Opportunities:**

**IT and Cyber Security Roles**: Preparing for careers in IT support, network administration, and cyber security.

**Further Education and Training:** Pursuing further education in colleges or universities that offer specialised courses in IT and cyber security

| KEY VOCABULARY |
| --- |
| KEY WORDS |
| **Shared data**: Information made accessible to multiple users or systems for collaborative purposes. |

**Location-based data:** Information linked to a specific geographical location, often collected via GPS or other location technologies.

**GPS (Global Positioning System):** A satellite-based navigation system that provides location and time information anywhere on Earth.

**Transactional data**: Data generated from transactions, such as purchases or sales, that records the details of the transaction.

**Cookies**: Small pieces of data stored on a user's device by a web browser, used to remember user preferences and enhance browsing experiences.

**Data exchange**: The process of transferring data between systems, organisations, or individuals.

**Privacy**: The right of individuals to control how their personal information is collected and used.

**Ethics**: Moral principles that govern a person's or group's behaviour, particularly in relation to technology and data use.

**Manufacture**: The process of producing goods using machinery, labour, and raw materials.

**Disposal**: The method of getting rid of unwanted materials or products in a responsible manner.

**Energy**: The capacity to do work; in technology, often refers to power consumption and efficiency.

**Waste**: Unwanted or unusable materials that are discarded after use.

**Rare materials**: Natural resources that are limited in availability and are often essential for manufacturing electronic devices.

**Upgrade**: To improve or enhance a system or device by adding new features or capabilities.

**Replace**: To take out an old component or system and put in a new one.

**Policy settings**: Configurations that determine how a system or application behaves in terms of security, privacy, and usage.

**Auto power off**: A feature that automatically turns off a device after a period of inactivity to save energy.

**Power-saving:** Features or practices designed to reduce energy consumption of devices.

**Equal access**: Ensuring that all individuals have the same opportunity to access resources or services, particularly in digital contexts.

**Equality**: The state of being equal, especially in rights and opportunities.

**Net neutrality**: The principle that internet service providers must treat all data on the internet equally, without discriminating or charging differently.

**Acceptable use policies**: Rules that outline the appropriate use of resources, such as the internet and organisational technology.

**Scope**: The extent of coverage or range of influence regarding a project, policy, or topic.

**Assets**: Valuable resources owned by an individual or organisation, including digital data and equipment.

**Monitoring**: The ongoing observation and analysis of systems or activities to ensure compliance and performance.

**Sanctions**: Penalties imposed for violations of rules or regulations.

**Social media**: Online platforms that allow users to create and share content or engage in social networking.

**Professional life**: Aspects of an individual's career and workplace responsibilities.

**Data protection**: Measures and laws designed to safeguard personal data from unauthorised access or misuse.

**Lawful processing**: The handling of personal data in accordance with legal requirements and regulations.

**Accuracy**: The degree to which data is correct, precise, and reliable.

**Data subject**: An individual whose personal data is collected and processed.

**Right to be forgotten**: The right of individuals to request the deletion of their personal data from databases and systems.

**Trademarks**: Symbols, words, or phrases legally registered to represent a company or product.

**Patents**: Exclusive rights granted for inventions, allowing the patent holder to prevent others from making, using, or selling the invention.

**Copyright**: Legal protection granted to creators of original works, allowing them to control how their works are used and distributed.

**Permissions**: Authorisations granted to users or systems to access or perform certain actions on data or resources.

**Licensing**: The process of granting permission to use intellectual property under specified conditions.

**Attribution**: Acknowledging the original creator of a work when it is used or shared.

**Unauthorised access**: Gaining access to a system or data without permission.

**Unauthorised modification**: Making changes to a system or data without appropriate permission.

**Malware**: Malicious software designed to harm, exploit, or otherwise compromise a computer system or network.

**KEY SUBJECT TERMINOLOGY**

**Annotate the diagram**: Identifying and Labelling XX ¬ Stating XX Identify and label the diagram and state what each, i.e. feature/process/characteristic is for, their purpose etc.

**Describe:** Present two (or more) linked descriptive points on characteristics, features, uses or processes. Do not need to include a justification or reason.

**Discuss:** Consider the different aspects in detail of an issue, situation, problem or argument and how they interrelate.

**Draw:** Produce a diagram or process flow using information from the given context.

**Evaluate:** Consider various aspects of a subject's qualities in relation to its context such as: strengths and weaknesses, advantages and disadvantages, pros and cons. Come to a judgement supported by evidence which will often be in the form of a conclusion.

**Explain:** Present one point that identifies a reason, way, benefit, or importance, etc. and a second point that justifies/explains the first point. Where used, a third point is a further expansion of the justification/explanation.

**Give:** Provide a response, i.e. feature, characteristic or use of. Identity Select the correct answer from the given context.

**State:** Recall from memory facts, terms, processes, legal implications, etc. or provide the correct answer to the given context.

| 1. Communication technologies: | Red | Amber | Green |
|---|---|---|---|

- The use of email, instant messaging, video conferencing (e.g., Zoom, Teams).
- Social media platforms for business communications.
- Cloud-based communication tools.

Questions

1. What is the difference between synchronous and asynchronous communication technologies? Provide an example of each.
2. How can instant messaging improve communication in a business setting?
3. What are the security risks associated with using email for business communications?
4. In what ways can social media be used as an effective communication tool for businesses?
5. How do video conferencing platforms facilitate collaboration between remote teams?

| 6. Collaborative technologies: | Red | Amber | Green |
|---|---|---|---|

- Cloud-based storage (e.g., Google Drive, Microsoft OneDrive) for document sharing and collaboration.
- Collaborative software (e.g., Microsoft Teams, Google Docs).
- Project management software (e.g., Trello, Asana, Monday.com).

Questions

1. How does using cloud-based storage improve the efficiency of file sharing within a team?
2. What features of project management software (e.g., Trello) make it suitable for team collaboration?
3. How does version control in collaborative documents, like Google Docs, prevent data loss?
4. What are the challenges of using collaborative technologies when working across different time zones?
5. Explain how real-time collaboration in tools like Microsoft Teams or Google Docs can increase productivity

| 7. Scheduling and planning tools: | Red | Amber | Green |
|---|---|---|---|

- Calendar and scheduling apps (e.g., Outlook, Google Calendar).

- Time management software and task prioritisation tools.

Questions

1. Why is it important to integrate calendar apps with task management tools in a team environment?
2. How do scheduling apps help teams manage deadlines more effectively?
3. What is the role of priority setting in time management software, and why is it important?
4. How can automated reminders in scheduling apps reduce the risk of missed deadlines?
5. How does the use of shared calendars promote transparency and accountability within a team?

| 6. How modern technologies affect working practices: | Red | Amber | Green |
|---|---|---|---|

- Remote working and virtual teams.
- Flexibility in work patterns (e.g., working from home).
- Advantages and disadvantages of using these technologies.

Questions

1. What are the main advantages of allowing employees to work remotely using modern technologies?
2. How has the availability of cloud services changed the traditional office work environment?
3. What are the potential drawbacks of using technology to enable flexible work patterns?
4. How does the ability to work from anywhere affect the balance between personal and professional life?
5. What role do modern communication tools play in maintaining team cohesion among remote workers?

| 7. Impact on individuals and organisations: | Red | Amber | Green |
|---|---|---|---|

- Positive and negative effects on productivity.
- Considerations of work-life balance.
- Data security issues in using digital technologies

Questions

1. What are the main advantages of allowing employees to work remotely using modern technologies?
2. How has the availability of cloud services changed the traditional office work environment?
3. What are the potential drawbacks of using technology to enable flexible work patterns?
4. How does the ability to work from anywhere affect the balance between personal and professional life?
5. What role do modern communication tools play in maintaining team cohesion among remote workers?

| Managing risks associated with modern technologies | Red | Amber | Green |
|---|---|---|---|

- Data protection (GDPR).
- Cybersecurity risks (e.g., phishing, malware).
- Ensuring data integrity and confidentiality.
- Digital backups and disaster recovery planning.

Questions

1. What are the most common cybersecurity threats that organisations face when using digital technologies?
2. How can organisations ensure compliance with GDPR when using cloud-based services?
3. What are the risks of not having a robust backup and disaster recovery plan for digital data?
4. How does encryption protect sensitive data in transit over digital communication platforms?
5. Why is it important to train employees on recognising phishing emails and other digital threats?

**HOME LEARNING TASKS**

| Task Description | Done? |
|---|---|
| Know It All Ninja Quiz: Shared Data | |
| Know It All Ninja Quiz: Environmental Concerns | |
| Know It All Ninja Quiz: Equal Access & Net Neutrality | |

| | |
|---|---|
| Know It All Ninja Quiz: Acceptable Use & Boundaries | |
| Know It All Ninja Quiz: Data Protection | |
| Know It All Ninja Quiz: Intellectual Property & Criminal Use | |

**Dance Year 11 Term 2**
**Choreography**

**Term Focus**

Students must learn how to respond creatively to an externally set stimulus, to choreograph their own complete dance. The dance created must be either:

- A solo dance of a minimum of two minutes and a maximum of two and a half minutes

Or

- A group dance of a minimum of three minutes and a maximum of three and a half minutes for two to five dancers

Which

- Includes a chosen aural setting
- Can be in any style or style fusion(s) (as long as it meets the assessment criteria)
- Communicates their own chosen choreographic intention

Students are not required to perform in their choreographed dance but may do so if they wish.

**Prior Learning Links**

Students' will apply their knowledge of the following to devise their NEA Component 1 choreography:

- Safe Practice
- Expressive Skills
- Physical Skills
- Mental Skills
- Technical Skills
- Choreographic Devices
- Evaluating a Performance
- Choreographic Processes

**Future Learning Links**

- All skills will be integral to the final performance of students' exam.
- All skills explored practically will be analysed in Component 2 of the examination.

**KEY VOCABULARY: PHYSICAL SKILLS**

**Physical Skills enable a dancer to physically complete the action therefore giving an effective performance.**

**TOP TIP: We use BASIC SPEC FM to help us remember these skills.**

| | |
|---|---|
| **Balance** | A steady or held position achieved by an even distribution of weight. |
| **Alignment** | The correct placement of body parts in relation to each other. |
| **Stamina** | The ability to maintain energy over a period of time. |
| **Isolation** | An independent movement of part of the body. |
| **Control** | The ability to stop and start movement, change direction and hold shape efficiently. |
| **Strength** | Muscular Power. |
| **Posture** | The way the body is held. |

| | |
|---|---|
| **Extension** | The lengthening of muscles or limbs. |
| **Coordination** | The ability to move 2 or more body parts at the same time efficiently. |
| **Flexibility** | The range of movement at a joint. |
| **Mobility** | The ability to move fluently from movement to movement. |

**KEY VOCABULARY: EXPRESSIVE SKILLS**

**Expressive Skills are aspects that contribute to performance artistry and that engage the audience.**

**TOP TIP: We use FAT FROGS POUNCE MASSIVELY SIDEWAYS SOUTH to help us remember these skills.**
**FFPMSS**

| | |
|---|---|
| **Facial Expressions** | The use of the face to show mood, character or feeling. |
| **Focus** | The use of the eyes to enhance performance or interpretative qualities. |
| **Projection** | The energy the dancer uses to connect with and draw the audience in. |
| **Musicality** | The ability to make the unique qualities of the accompaniment evident in performance. |
| **Sensitivity to Other Dancers** | Awareness of and connection to other dancers. EG: Timing. |
| **Spatial Awareness** | Consciousness of the surrounding space and its effective use. |

**KEY VOCABULARY: CHOREOGRAPHIC DEVICES**

**Choreographic devices are the techniques that can be applied to choreography in order to present content in an interesting way.**

| | |
|---|---|
| **Unison** | Performing the same movement at the same time. |
| **Canon** | Performing the same movement one after another. |
| **Manipulation of Number** | How the dancers are used. Example 2 V 1. |
| **Motif and Development** | Ways in which a movement phrase can be varied. |
| **Highlights** | Important moments of the dance. |
| **Climax** | The most significant moment of the dance. |
| **Complementary** | The performance of movements which are similar but not the same. |
| **Contrast** | The performance of movements which have nothing in common. |

**KEY VOCABULARY: CHOREOGRAPHIC PROCESSES**

**The choreographic process refers to the stages in which a dance is created.**

| | |
|---|---|
| **Research** | Exploration of themes and information to inform the performance. |
| **Improvise** | Generating movement without any planning or consideration. |
| **Generate** | The creation of movement. |
| **Develop** | How movement can be changed and varied. |

| | |
|---|---|
| **Select** | Movements chosen to remain in the piece. |
| **Structure** | How the dance is arranged. |
| **Refine and Synethesise** | The final tweaks in order to make the performance complete. |

| **KEY VOCABULARY: SAFE PRACTICE** | |
|---|---|
| **Safe Practice refers to the personal care, respect for others, safe execution and preparation when dancing.** | |
| **Warm Up** | The process completed prior to a dance activity in order to physically and mentally prepare the body.<br><br>- Joint Mobiliser<br>- Cardiovascular activity<br>- Stretches |
| **Cool Down** | The process completed after dance activity in order to physically and mentally prepare the body for less activity.<br><br>- Stretches<br>- Movement to lower the heart rate such as walking<br>- Joint mobilier |
| **Hydration** | The ability to retain water in the body.<br><br>- Drink water regularly |
| **Nutrition** | Food groups eaten by a dancer.<br><br>- Carbohydrates – slow release of energy<br>- Protein – supports tissue repair<br>- Calcium – strong bones |
| **Attire** | What the dancer is wearing.<br><br>- Tight fitted clothing<br>- Appropriate footwear<br>- Hair up<br>- Jewellery off |
| **Environment** | The space/environment in which the dancer is performing in.<br><br>- No spillages<br>- No obstacles<br>- Large, clear space<br>- Well ventilated<br>- Sprung floor<br>- Mirrors |
| **Technical Accuracy** | How the dancer maintains personal care for the body and others when dancing.<br><br>- Hands flat on the floor<br>- Bending of the knees with correct alignment<br>- Not over exerting oneself<br>- Sensitivity to others |

| 1. What action content demonstrates your choreographic intention? | Red | Amber | Green |
|---|---|---|---|

Action content including:

- travel
- turn
- elevation
- gesture
- stillness
- use of different body parts
- floor work
- transfer of weight.

| 2. What dynamic content demonstrates your choreographic intention? | Red | Amber | Green |
|---|---|---|---|

Dynamic content including:

- fast/slow
- sudden/sustained
- acceleration/deceleration
- strong/light
- direct/indirect
- flowing/abrupt.

| 3. What spatial content demonstrates your choreographic intention? | Red | Amber | Green |
|---|---|---|---|

Spatial content including:

- pathways
- levels
- directions
- size of movement
- patterns
- spatial design .

| 4. What relationship content demonstrates your choreographic intention? | Red | Amber | Green |
|---|---|---|---|

Relationship content including:

- lead and follow
- mirroring
- action and reaction
- accumulation
- complement and contrast
- counterpoint

- contact
- formations.

| 5. How can aural setting contribute to the understanding of a performance? | Red | Amber | Green |
|---|---|---|---|

Aural setting including:

- song
- instrumental
- orchestral
- spoken word
- silence
- natural sound
- found sound
- body percussion.

| 6. How has the use of choreographic devices enhanced the choreographic intention of your work? | Red | Amber | Green |
|---|---|---|---|

Choreographic devices including:

- motif and development
- repetition
- contrast
- highlights
- climax
- manipulation of number
- unison and canon.

| 7. How has the use of structure supported the choreographic intention of your performance? | Red | Amber | Green |
|---|---|---|---|

Structure including:

- binary
- ternary
- rondo
- narrative
- episodic
- beginning/middle/end
- unity
- logical sequence
- transitions.

| HOME LEARNING TASKS | |
|---|---|
| Task Description | Done? |
| Use ‘Look, Cover, Write, Check’ to learn the Key Vocabulary | |
| Discuss how technical skills contributed to your group performance? (6 marks) | |
| Discuss mental skills contributed to your group performance? (6 marks) | |
| Discuss how the use of choreographic devices contributed to the intention of your choreography? (6 marks) | |
| Discuss how the use of spatial content contributed to the intention of your choreography? (6 marks) | |
| Discuss how the use of relationship contributed to the intention of your choreography? (6 marks) | |

# Media Year 11 Term 1 – Component 2 (cont)

Term Focus – Students will be working on their Component 2 coursework in response to a brief set by the exam board

**Prior Learning Links**

Year 11 Term 1 Comp 2 Start
Year 10 terms 4-6 Component 2 Practice

**Future Learning Links**

- Year 11 Term 3 Exam prep

## KEY VOCABULARY

**KEY WORDS/ SUBJECT TERMINOLOGY**

**Convention** – Something we would expect to see, for example a convention of an action film would be explosions. A product convention would be something we expect to see in a certain product, e.g. a film poster would usually have the title of the film
**Copy**- text that you would have on a media product
**Creative Commons**- images that have been created for anyone to use (no copyright issues)

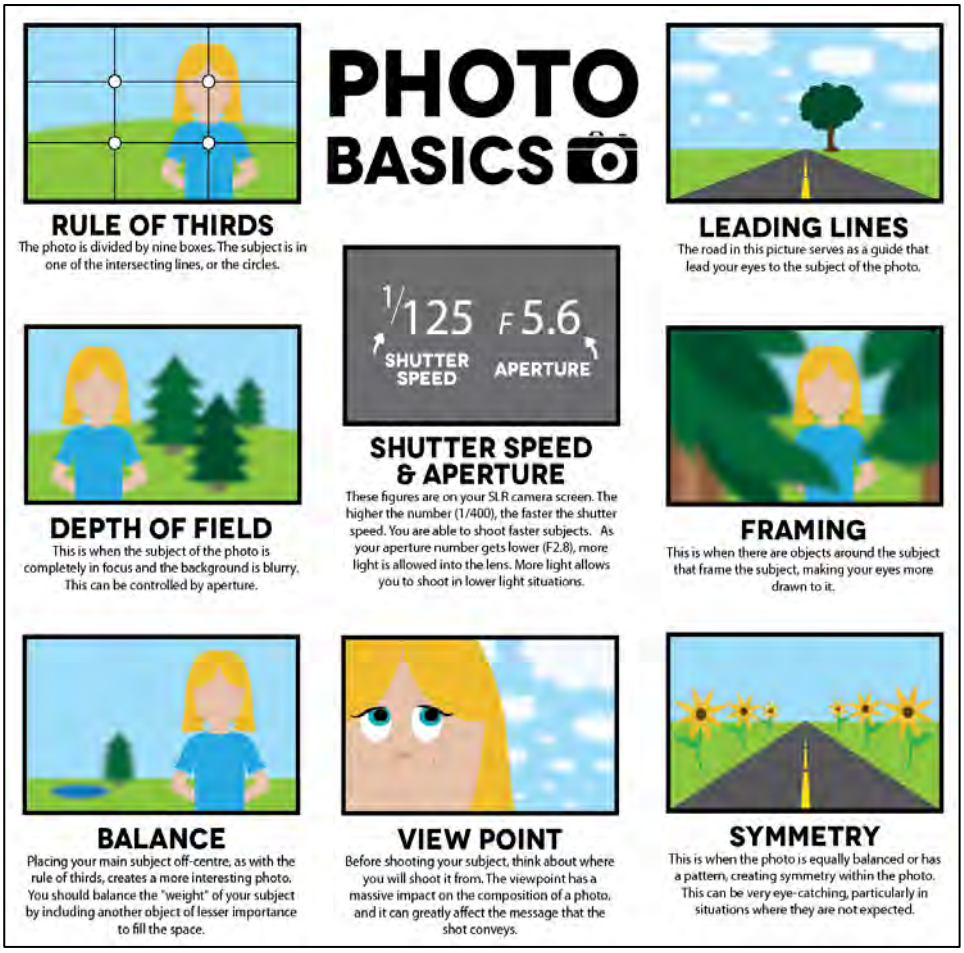
## 1. How do I conduct a successful first Photoshoot?

Red Amber Green

**When you have completed your mock-ups you need to take your photographs.**

**Follow these tips for taking photos:**

- **Where possible get set up in advance- make sure you have set up the area where the photo will be taken and you know the best place for light. Your model (if a person) should be given clear instructions of what you want from them and should be dressed appropriately for the shoot.**
- **Use artificial lighting**
- **Get up close! It seem uncomfortable to get in someone's face for the photos but they look more professional this way**
- **Take a lot of them- some will turn out better than others and it is best to have a lot to choose from**
- **Try to be creative- think about different angles, lenses, filters, standing in unusual places, shooting through something etc to get the best shots**



## 2. How do I reflect on my photos?

Red Amber Green

**Once you have your photos you need to upload them to your PowerPoint.**

**After this you need to evaluate them- what do you like about certain photos, what do you not like and need to improve or experiment with next time.**

**This is critical as it will allow you to plan your next photoshoot and get better images second time around.**


## 3. How do I conduct my second photoshoot?

Red Amber Green


**This is very similar to your first, but this time you need to ensure that you get the pictures that you did not get first time or that you were not happy with first time. If you said you were going to try something new in your evaluation of your first shoot then make sure you get it this time round.**

**As before, you still need to review your photos and discuss what comes next.**

## 4. What is a sourced image and how do I reference them?

Red Amber Green

**You may be wondering if you can use images from the internet.**

**The answer is yes, only if you cannot get the image yourself, for example you want a city landscape or an explosion.**

**However you must collate these images on a slide with a link as to where you got it from. All images should not infringe copyright. You can make sure they don't by adjusting the search parameters for Creative Commons images.**

## 5. How do I manipulate or edit photos?

Red Amber Green

**You can use any software package to edit your photos or sourced images. Examples we have used in class include; ipiccy, photopea, photoshop, remove.bg etc**

**The most important thing you can do is to log each tool that you use with a screenshot and explain what you have done and why.**

**The more complicated the tool/skill the better!**


## 6. How do I write copy?

Red Amber Green

**For all text on your products (this includes titles etc) you must write it out in advance so that it can be checked for mistakes. It is vital that these are picked up early and corrected.**

**If you have made any mistakes you need identify what these were and what you did about it**


## 7. How do I develop my pages?

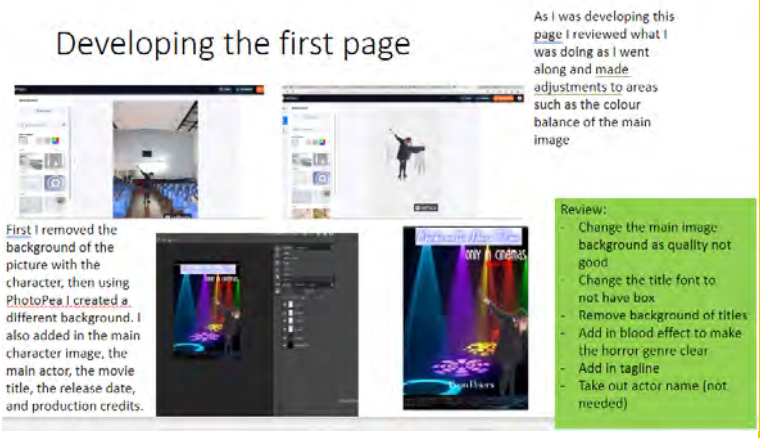
Red Amber Green

**You should now be in a position to start making your pages.**

**It is vitally important that you document the processes you go through to create them.**

**Screenshot skilful bits of editing and explain what you are doing.**

**Also remember that just because you complete it once, does not mean the process is finished. You need to review and look for further improvements and experimentations that you can do.**




**There should 3-4 different versions of the page before you even get close to finishing!**

## 8. What should I be looking at when I reflect on my products?

Red Amber Green

**In order to keep improving your work I would suggest review and reflecting on the follow:**

- **The fonts you have used- are they suitable? Are they big enough? Are they in the right place? Are there any special effects you could use or try- e.g. a clipping mask?**
- **The images- are they good quality? Have you edited them? Have you put any effects on them?**
- **The copy- are there any mistakes? Does it cover all the information you need? Is it long/short enough?**
- **Graphics- have you made them yourself?**
- **Layout- is it interesting and professional looking? Have you compared what you have done with an actual media products already out there?**

## 9. How do I present my finished products?

Red Amber Green

**Put all three pages on the final slide of your powerpoint**

## 10. What is mark scheme for this piece of coursework?

Red | Amber | Green

| Mark Band 0 | Mark Band 1<br>Basic, limited, superficial, tentative | Mark Band 2<br>Adequate, sufficient, some/partial, straightforward | Mark Band 3<br>Competent, appropriate, mostly clear | Mark Band 4<br>Confident, effective, thorough, in-depth |
|---|---|---|---|---|
| **Learning outcome A: Develop and apply media pre-production processes, skills and techniques** | | | | |
| **0 marks** | **1 – 3 marks** | **4 – 6 marks** | **7 – 9 marks** | **10 – 12 marks** |
| No rewardable material | Tentative application of skills and techniques used to produce limited pre-production material showing basic understanding of pre-production processes and practices. | Sufficient application of skills and techniques used to produce straightforward pre-production material showing adequate understanding of pre-production processes and practices. | Competent application of skills and techniques used to produce appropriate pre-production material showing good understanding of pre-production processes and practices. | Effective application of skills and techniques used to produce accurate and detailed pre-production material showing thorough understanding of pre-production processes and practices. |
| **Learning outcome B: Develop and apply media production and post-production processes, skills and techniques to create a media product** | | | | |
| **0 marks** | **1 – 3 marks** | **4 – 6 marks** | **7 – 9 marks** | **10 – 12 marks** |
| No rewardable material | Superficial engagement with production processes and practices and limited application of skills and techniques to create basic content for a media product. | Partial engagement with production processes and practices and adequate application of skills and techniques to create straightforward content for a media product. | Competent engagement with production processes and practices and good application of skills and techniques to create appropriate content for a media product. | Thorough engagement with production processes and practices and accomplished application of skills and techniques to create effective content for a media product. |

| Mark Band 0 | Mark Band 1<br>Basic, limited, superficial, tentative | Mark Band 2<br>Adequate, sufficient, some/partial, straightforward | Mark Band 3<br>Competent, appropriate, mostly clear | Mark Band 4<br>Confident, effective, thorough, in-depth |
|---|---|---|---|---|
| **Learning outcome B: Develop and apply media production and post-production processes, skills and techniques to create a media product** | | | | |
| **0 marks** | **1 – 3 marks** | **4 – 6 marks** | **7 – 9 marks** | **10 – 12 marks** |
| No rewardable material | Superficial engagement with post-production processes and practices and limited application of post-production skills and techniques to tentatively edit and combine content for a media product. | Partial engagement with post-production processes and practices and sufficient application of post-production skills and techniques to adequately edit and combine content for a media product. | Good engagement with post-production processes and practices and appropriate application of post-production skills and techniques to competently edit and combine content for a media product. | Thorough engagement with post-production processes and practices and accomplished application of post-production skills and techniques to effectively edit and combine content for a media product. |
| **0 marks** | **1 – 3 marks** | **4 – 6 marks** | **7 – 9 marks** | **10 – 12 marks** |
| No rewardable material | Produce a basic media product that shows limited cohesion and superficially addresses the purpose outlined in the brief. | Produce an adequate media product that is partially cohesive and sufficiently addresses the purpose outlined in the brief. | Produce a competent media product that is mostly cohesive and clearly addresses the purpose outlined in the brief. | Produce an effective media product that is cohesive throughout and thoroughly addresses the purpose outlined in the brief. |

| Mark Band 0 | Mark Band 1<br>Basic, limited, superficial, tentative | Mark Band 2<br>Adequate, sufficient, some/partial, straightforward | Mark Band 3<br>Competent, appropriate, mostly clear | Mark Band 4<br>Confident, effective, thorough, in-depth |
|---|---|---|---|---|
| **Learning outcome A: Develop and apply media pre-production processes, skills and techniques**<br>**Learning outcome B: Develop and apply media production and post-production processes, skills and techniques to create a media product** | | | | |
| **0 marks** | **1 – 3 marks** | **4 – 6 marks** | **7 – 9 marks** | **10 – 12 marks** |
| No rewardable material | Basic use of review, making limited links between the impact of decisions in the development process and outcomes, used tentatively to refine work. | Sufficient use of review, making some relevant links between the impact of decisions in the development process and outcomes, used adequately to refine work. | Good use of review, making mostly relevant links between the impact of decisions in the development process and outcomes, used clearly to refine work. | In-depth use of review, making relevant links between the impact of decisions in the development process and outcomes, used effectively to refine work. |

Red | Amber | Green

**HOME LEARNING TASKS**

| Task Description | Done? |
|---|---|
| Experiment with photography – watch tutorials on YouTube about how to get interesting photos and practice! | |
| Use Photopea or other photo editing software to improve your images and to practice the basic skills | |
| Find existing media products similar to what you are going to produce to inspire your designs | |
| | |
| | |
| | |

# Subject Year 11 Term 2 – Theme Unit 2 NEA

Term Focus – **Controlled Assessment**

| **Prior Learning Links** | **Future Learning Links** |
|---|---|
| • WJEC Hospitality and Catering | • WJEC Hospitality and Catering |

| **KEY VOCABULARY** | |
|---|---|
| **KEY WORDS** | **KEY SUBJECT TERMINOLOGY** |
| **Unit 2 Content:**<br>2.1.1 Understanding the importance of nutrition<br>2.1.2 How cooking methods can impact on nutritional value<br>2.2.1 Factors affecting menu planning<br>2.2.2 How to plan production<br>2.3.1 How to prepare and make dishes<br>2.3.2 Presentation techniques<br>2.3.3 Food safety practices 2.4.1 Reviewing of dishes 2.4.2 Reviewing own performance. | Reduce, reuse, recycle.<br>Accompaniments<br>Garnish<br>Decoration<br>Portion control<br>Creativity<br>Safety and hygiene<br>Reviewing dishes<br>Planning<br>Time management<br>Organisation |

**1. What is the task set by the exam board?** **Red** **Amber** **Green**

The task will be given to students at the start of the Unit. Students will then immediately begin the NEA coursework. Students will have the use of WJEC knowledge organisers

**2. What must be done to achieve well?** **Red** **Amber** **Green**

All areas of the coursework must be completed in full. There must be a sufficient amount of information included which will enable the teacher to see that the student is knowledgeable in all specified unit areas.

**3. What dishes will fit the brief in all areas?** **Red** **Amber** **Green**

You need to be aware of the following factors when planning menus: • cost (ingredients as well as business costs) • portion control (value for money without waste) • balanced diets/current national advice • time of day (breakfast, lunch, and dinner menus as well as small plates and snacks) • clients/customers (a menu with prices that will suit the people who visit your establishment)

**4. Which are the complex skilled dishes to fit the brief?** **Red** **Amber** **Green**

**Dishes which use skills:**
**Crimping**
**Laminating (pastry)**
**Measuring accurately**
**Melting using a bain marie**
**Piping**
**Shaping**
**Unmoulding**
**Whisking (aeration)**
**Chopping (Brunoise)**
**Chopping (julienne)**
**Chopping (mincing)**
**Deboning**

**Filleting**
**Segmenting**
**Baking Blind**
**Caramelising**
**Deep fat frying**
**Emulsifying**
**poaching**
**Tempering**

| **HOME LEARNING TASKS** | |
|---|---|
| **Task Description** | **Done?** |
| Practice complex level skills at home | |
| Practice developing presentation skills | |
| Select possible serving dishes from home | |

# Sport Science // Year 11 // Terms 1-5

Cambridge National Level 1 / 2 Sport Science
R180: Reducing the risk of sports injuries and dealing with common medical conditions

**Prior Learning Links**

- Knowledge of warm-ups and cool downs from Core PE.
- Knowledge of sporting examples from R181 and R182 and Core PE.
- Risk assessments and EAPs covered in R181.

**Future Learning Links**

- BTEC Level 3 Unit 17 – Sports Injury Management
- BTEC Level 3 Unit 2 – Fitness Training and Programming

## KEY VOCABULARY

### KEY WORDS & TERMINOLOGY

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

**Key Terms**:

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

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

**Key Terms:**

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

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

**Key Terms**:

- ✓ **Acute injuries** – injuries caused by impacts or collisions.

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

**Key Terms**:

- ✓ **Hazard** - something that can cause harm.
- ✓ **Risk** - the likelihood of danger.

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

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

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

**Key Terms**:

- ✓ **Asthma** - a condition in which the airways narrow and swell, which can make breathing difficult.
- ✓ **Inhaler** - device that allows medicine to be breathed in.
- ✓ **Nebuliser** - machine that allows medicine to be breathed in.
- ✓ **Glucose** - simple sugar found in blood used as an energy source.
- ✓ **Insulin** - a hormone that lowers blood glucose levels.
- ✓ **Diabetes** - condition in which blood sugar levels are not regulated by the body effectively.
- ✓ **Ketones** – chemicals produced by the liver during fat breakdown.
- ✓ **Diabetic ketoacidosis (DKA)** - a condition caused by excess ketones in the blood.
- ✓ **Insulin-dependent** - another name for Type 1 diabetes.
- ✓ **Insulin-resistant** – another name for Type 2 diabetes.
- ✓ **Hypoglycaemia** - low blood sugar level.
- ✓ **Hyperglycaemia** – high blood sugar level.
- ✓ **Epilepsy** – abnormal brain activity that causes recurring seizures.
- ✓ Seizures - bursts of electrical activity that temporarily affect how the brain works.
- ✓ **Triggers** - things that make epileptic seizures more likely.
- ✓ **Fatigue** - a feeling of overwhelming tiredness.
- ✓ **Anti-epileptic drugs (AEDs)** - medicine taken to help control seizures.
- ✓ **Ketogenic diet** - a diet high in fats and low in carbohydrates and proteins.

- ✓ **Sudden cardiac arrest (SCA)** - a condition in which the heart suddenly and unexpectedly stops beating.
- ✓ **Commotio cordis** – a sudden trauma, such as a blow to the chest directly over the heart at certain points in the heartbeat cycle that can cause sudden cardiac arrest.
- ✓ **Electrolytes** – minerals found in blood, urine and sweat that carry an electric charge when dissolved in water.

| 1. How do different extrinsic factors influence the risk and severity of injury? | Red | Amber | Green |
|---|---|---|---|

**Type of Activity**

One extrinsic factor that can influence injury is the type of activity i.e. contact sports versus non-contact sports. Different sports and activities present different risks of injury, due to the requirements and demands of the sport.

**Contact sports**, such as rugby, football and field hockey, can increase risk of injury due to **impact**. **Written rules** are in place to reduce risk, e.g. no high tackle, or spear tackle, due to dangers.

**Non-contact sports**, such as gymnastics and trampolining, can still result in injury due to **complex routines** and the use of **apparatus** which is above the ground.

| 2. How do different intrinsic factors influence the risk and severity of injury? | Red | Amber | Green |
|---|---|---|---|

**Individual Variables**

One of the main intrinsic factors is individual variables. Some individual variables have been shown to increase injury. However, some of these we cannot change, such as age.

Experience is one of 11 different individual variables you need to know…

**Experience**

- Experienced performers are more likely to have a body which has **adapted** to regular training and become **robust**, helping reduce the risk of injury.
- Experienced performers will know to complete an appropriate **warm-up** prior to exercising to help reduce the risk of injury.
- Experienced performers will also be able to **identify situations** which have the potential to result in injury, such as an opponent in football flying into a tackle, allowing them to pull out to save getting injured.
- Experienced performers are able to perform skills with the correct **technique**, preventing injury caused by poor execution of skills.

| 3. What are the key components of a warm-up? | Red | Amber | Green |
|---|---|---|---|

**Warm-ups**

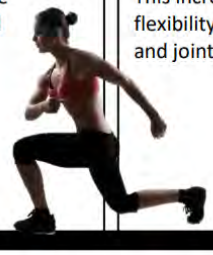
Below are the four key components of a warm-up:

1. **Pulse** should be **raised** gradually, e.g. by jogging, cycling or skipping.

This increases heart rate and helps deliver blood (and oxygen) to the working muscles.

2. **Mobility** – joints should be taken through their full range of movement, e.g. arm swings / hip circles.

This helps increase the pliability of the ligaments and tendons.

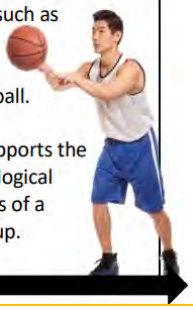


3. **Dynamic stretching** to move the muscle through its range of motion while on the move, e.g. performing lunges.

This increases the flexibility of muscles and joints.

4. **Skill-rehearsal phase** which replicates movement and skills of the sport, e.g. dribbling drills in football and passing drills in ball sports such as netball and basketball.

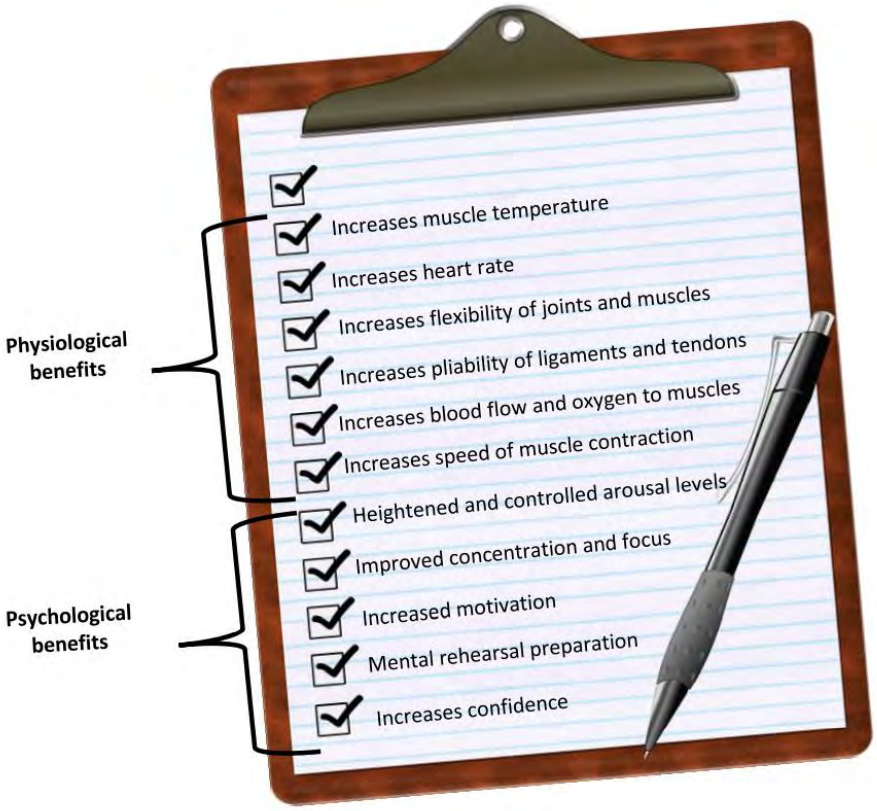
This supports the psychological benefits of a warm-up.



| 4. What are the physiological and psychological benefits of a warm up? | Red | Amber | Green |
|---|---|---|---|

**Benefits of a Warm-up**

Warming up is one of the most effective methods for the prevention of injury in sport. The clipboard below highlights the physiological and psychological benefits of a warm-up:




| 5. What are the key components and physiological benefits of a cool down? | Red | Amber | Green |
|---|---|---|---|

**Cool Downs**

A cool down is one of the most effective methods for the prevention of injury in sport and physical activity after exercise.

A **cool-down** should include the following:

1. **Pulse-lowering exercises** (e.g. easy movements, light running and stretching) – this is to gradually lower the heart rate and reduce muscle temperature back to resting levels.
2. **Stretching**, e.g. maintenance and static stretches, such as hamstring stretches after running, which helps return muscle length to its resting state. Proprioceptive neuromuscular facilitation (PNF) can also be used, where a partner or an external resistance is used to help move the muscle beyond its usual range of motion, increasing flexibility.

| 6. What are the types and causes of acute injuries? | Red | Amber | Green |
|---|---|---|---|

**Acute Injuries**

What are acute injuries?

## Acute injuries

- Caused by **immediate trauma** to the body
- Result in **immediate pain**
- **Swelling** is common
- May result in **loss of function**
- Examples of how they can happen include:
  - **being hit by a ball**, e.g. a cricket ball
  - **a hard rugby tackle**

## Sprain

Twisting of the **ligaments**, often caused by a sharp or sudden change in direction. The joint does not dislocate.

Leads to pain at the affected area, and may display swelling and a bruise (contusion). You may not be able to bear your weight.

**Examples include:** *anterior cruciate ligament (ACL) in the knee, which accounts for around 40% of all sports injuries*

## 7. What are the types and causes of chronic injuries?

Red | Amber | Green

**Chronic Injuries**

What are chronic injuries?

### Chronic/overuse injuries

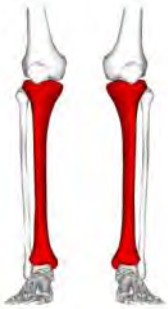
- Caused by **continuous stress / overuse**
- Injury develops over a **long period** of time

**REVISION TIP!**

Remember...

**A**cute = **A**t the time (i.e. immediate trauma)

**C**hronic = **C**onstantly or **C**ontinuous



**Shin splints**

Overuse injury caused by repeated impact during weight-bearing activities that causes pain when you start exercising.

## 8. How can you reduce the risk and severity of an injury or medical condition?

Red | Amber | Green

There are various measures that can be taken before and during participation in sport and physical activity to reduce the risk of injury; for example, emergency action plans (EAPs), safety checks, and risk assessments.

**Risk Assessments**

| | Hazard | Risk | Control measures |
|---|---|---|---|
| Facilities | *Deep water in swimming pool* | *Drowning, especially with beginners* | *Use depth markings and have a lifeguard present* |
| | *Leak from roof onto floor of sports hall* | *Slippery surface, resulting in injury* | *Use wet floor sign and mop up excess liquid* |
| Equipment | *Heavy weights in the gym* | *Failure to lift or maintain full control* | *Use a spotter and ensure equipment is loaded safely* |
| | *Cricket balls* | *Hard contact with unprotected areas of the body* | *Wear protective equipment such as pads, guards and helmets* |
| Clothing | *Poor ventilation* | *Risk of overheating* | *Wear well-ventilated clothing* |
| | *Lack of grip on footwear* | *Trip hazard* | *Ensure appropriate footwear is worn for the activity* |

## 9. What are common responses and treatments to medical conditions?

Red | Amber | Green

With any injury, it is important to respond to it quickly in order to allow for the quickest recovery and to prevent any further or permanent damage to the body.

**SALTAPS**

If you see an athlete injured on the field, you should follow this routine to assess their injury status.

| | |
|---|---|
| **See** | This involves **viewing the injury** taking place, and starting the **assessment process**. |
| **Ask** | **Ask questions** to determine the nature, severity and location of the injury. |
| **Look** | Try to discover any **physical signs** of an injury, e.g. cuts, bruises, etc. |
| **Touch** | **Gently touch** the injured area (if the player permits you to) to assess damage. |
| **Active** | Have the athlete move the injured area to help determine their **range of movement**. |
| **Passive** | This is the external **physical movement** of the injured area by someone else (e.g. a first-aider). |
| **Strength** | **Determine the strength** of the injured area against resistance. |


## 10. What are the common causes, symptoms and treatments of medical conditions?

Red | Amber | Green

There are several common medical conditions that can affect athletes and participants in sport. Asthma, diabetes, epilepsy, sudden cardiac arrest (SCA), hypothermia, heat exhaustion and dehydration are all covered in your exam.

**Asthma**

An asthma attack is where the symptoms have worsened to the point that the airways are so inflamed that oxygen delivery to the lungs is severely reduced.

Causes can be either environmental or induced by exercise.

| | |
|---|---|
| **Environmental** | • Polluted air, e.g. from cars in congested areas, or smoke produced by factories<br>• Cold, dry air, such as that experienced in the evening and in winter months<br>• Pollen, e.g. during the summer months<br>• Dusty environments |
| **Exercise-induced** | High-intensity exercise can cause a shortness of breath, reducing oxygen delivery to the lungs |

### Symptoms

Symptoms of asthma may include, but are not limited to:

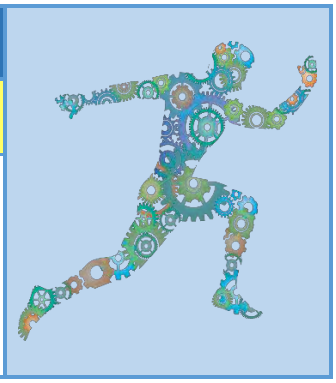
- Coughing
- Wheezing
- Shortness of breath
- Tightness in the chest

| HOME LEARNING TASKS | |
|---|---|
| **Task Description** | **Done?** |
| **1) Complete Checkpoint 1 on The EverLearner at a minimum grade of 70%:** Different Factors Which Influence the Risk & Severity of Injury | |
| **2) Complete Checkpoint 2 on The EverLearner at a minimum grade of 70%:** Warm Up and Cool Down Routines | |
| **3) Complete Checkpoint 3 on The EverLearner at a minimum grade of 70%:** Different Types & Causes of Sports Injuries | |
| **4) Complete Checkpoint 4 on The EverLearner at a minimum grade of 70%:** Reducing risk, treatment and rehabilitation of sports injuries and medical conditions | |
| **5) Complete Checkpoint 5 on The EverLearner at a minimum grade of 70%:** Causes, Symptoms & Treatment of Medical Conditions | |

# Sport Science // Year 9 & 10 // Terms 1-6

Cambridge National Level 1 / 2 Sport Science

**Unit R182: The body's response to physical activity and how technology informs this.**



**Prior Learning Links**

- Knowledge of basic anatomy and physiology from Core PE.
- Knowledge of sporting examples R181 and Core PE.

**Future Learning Links**

- Some links to questions in exam paper for R180.
- BTEC Level 3 Unit 1 – Anatomy and Physiology

## KEY VOCABULARY

### KEY WORDS & TERMINOLOGY

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

**Key Terms**:

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

**Topic Area 1 (Continued…):**

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

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

**Key Terms:**

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

**Topic Area 2 (Continued…):**

- ✓ **Pectorals** - muscles in the chest that move the upper arm.
- ✓ **Biceps** - muscles at the front of the upper arm.
- ✓ **Triceps** - muscles at the back of the upper arm.
- ✓ **Abdominals** – stomach muscles that protect internal organs.
- ✓ **Gluteals** - buttock muscles, which are used when running.
- ✓ **Hamstrings** - muscles at the back of the upper leg.
- ✓ **Quadriceps** - muscles at the front of the upper leg.
- ✓ **Gastrocnemius** - one of the calf muscles; used in walking.
- ✓ **Soleus** - one of the calf muscles; used in walking.

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

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

**Key Terms**:

- ✓ **Anticipatory rise** – slight increase in heart rate before exercise.
- ✓ **Heart rate –** Number of times the Heart beats per minute
- ✓ **Stroke volume –** Volume of blood that leaves the Heart during each contraction
- ✓ **Cardiac output –** Volume of blood that the Heart pumps out in one minute
- ✓ **Breathing rate –** Number of breaths taken per minute
- ✓ **Gaseous exchange –** The exchange of gases in the lungs (Oxygen in – Carbon dioxide out)
- ✓ **ROM –** Range of movement at joints

**Topic Area 4**: Long-term effects of exercise on the cardio-respiratory and musculoskeletal systems

**Key Terms**:

- ✓ **Fast twitch fibres** – muscle fibres that contract quickly and/or with high force; used during high-intensity work.
- ✓ **Slow twitch fibres** – muscle fibres that contract with a low force but do not fatigue quickly.
- ✓ **Bradycardia** – decrease in the resting heart rate because of training.
- ✓ **Goniometer** - device used to measure flexibility (range of movement at a joint).
- ✓ **Lung capacity** - the amount of air the lungs can hold.
- ✓ **Tidal volume** - the amount of air breathed in and out at rest.
- ✓ **Bone density** - the amount of bone mineral in bone tissue.
- ✓ **Capillarisation** – an increase in the number of capillaries as a result of endurance training.

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| | ✓ **Heart disease** - when the heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries that supply the heart with blood.<br>✓ **Heart attack** – medical emergency in which the supply of blood to the heart is suddenly blocked. |

| 1: What is the function and role of the cardio-respiratory system? | Red | Amber | Green |
|---|---|---|---|

- **What is Heart Rate and how is it measured?**

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- **What is Stroke Volume?**

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- **What is Cardiac Output?**

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- **What is Breathing Rate and how is it measured?**

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- **What is Tidal Volume?**

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- **What is Gaseous Exchange?**

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| 2: How is technology used to inform us about the cardio-respiratory system? | Red | Amber | Green |
|---|---|---|---|

**Key terms**

**Technology** Putting scientific knowledge into practical use to solve problems or invent useful tools.

**Wearable technology** Technology worn on the body during exercise to provide data.

**Laboratory-based technology** The use of technology inside a laboratory to provide data.

**Field-based technology** Technology that can be used to provide data outside of a laboratory in the setting where sports take place, for example a football pitch.

- **How could a coach use data from a Central Midfielder's Heat Map to assess the performance of his/her Football player?**

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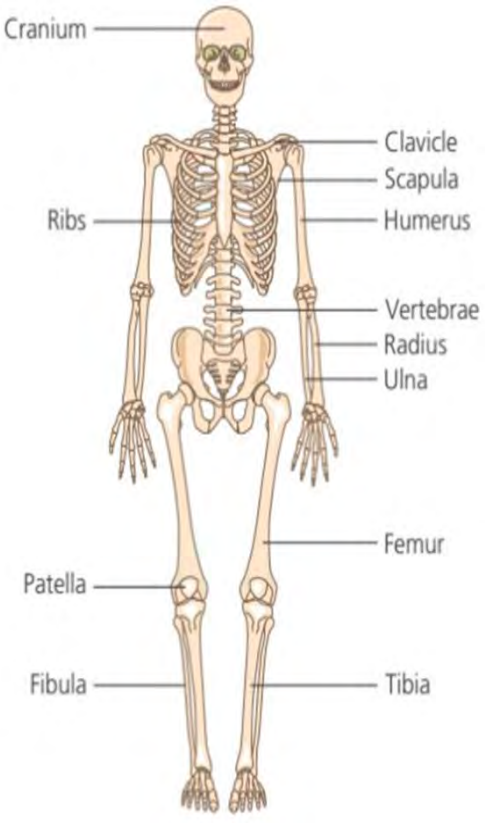
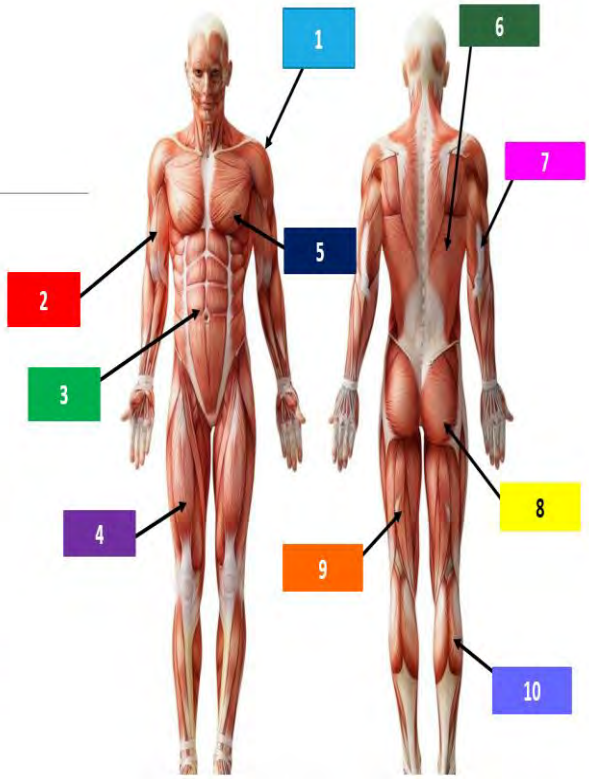
| 3: What are the components and role of the musculo-skeletal system? | Red | Amber | Green |
|---|---|---|---|




1 = Deltoid
2 = Bicep
3 = Abdominals
4 = Quadriceps
5 = Pectorals
6 = Latissimus Dorsi
7 = Triceps
8 = Gluteal
9 = Hamstring
10 = Gastrocnemius



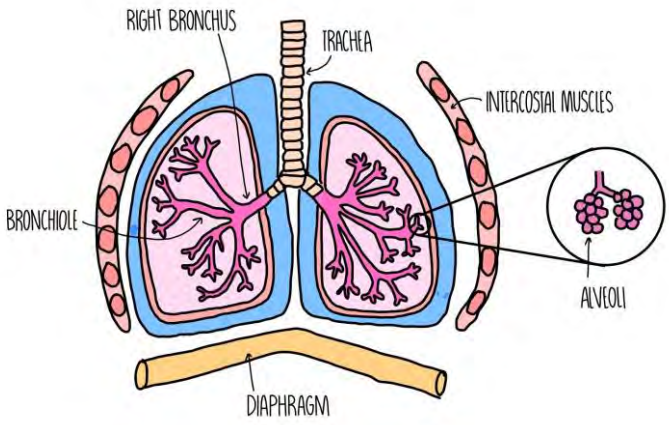
| 4: How is technology used to inform us about the musculo-skeletal system? | Red | Amber | Green |
|---|---|---|---|

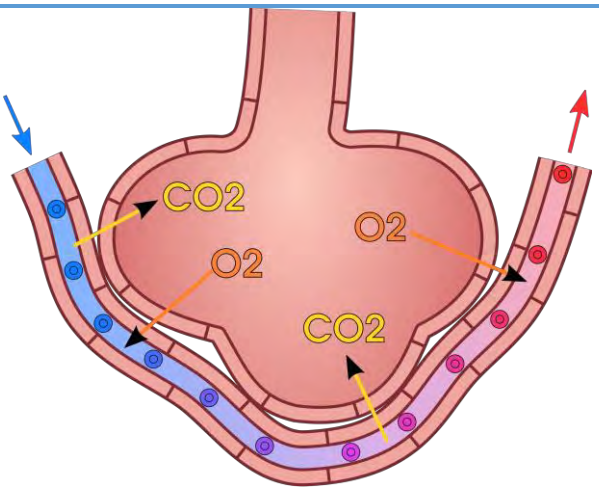
- **How could a High Jump coach use the data gathered from Slow Motion Capture to assess the performance of his/her athlete?**

| 5: What are the short-term effects of exercise on the cardio-respiratory system? | Red | Amber | Green |
|---|---|---|---|

- **What would you notice occurring to your Heart Rate and Cardiac Output during exercise?**

- **What would you notice occurring to your Breathing Rate during exercise?**




| 6: What are the short-term effects of exercise on the musculo-skeletal system? | Red | Amber | Green |
|---|---|---|---|

- **During exercise, what happens to blood flow to muscles and why does this occur?**
- **What effect would this have on muscle temperature and pliability?**

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**Think:**

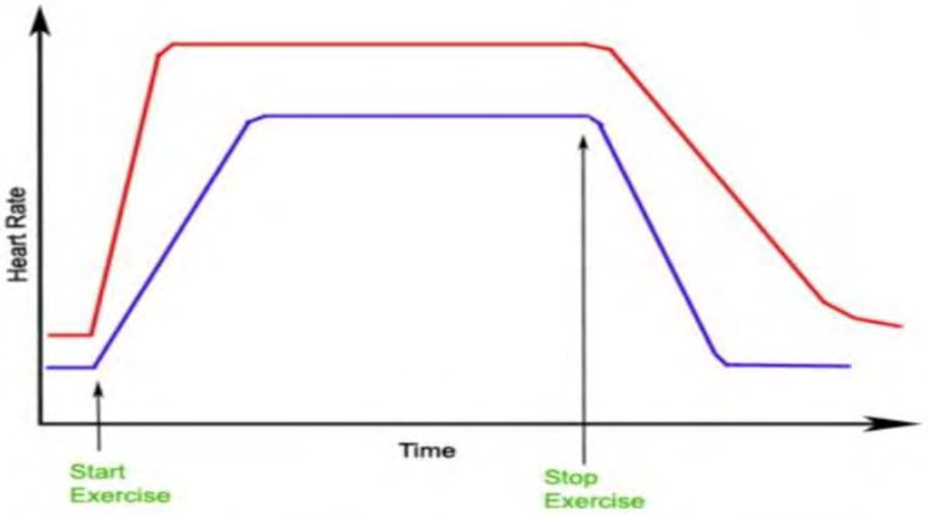
- ✓ **Heart rate** – Number of times the Heart beats per minute
- ✓ **Stroke volume** – Volume of blood that leaves the Heart during each contraction
- ✓ **Cardiac output** – Volume of blood that the Heart pumps out in one minute
- ✓ **Breathing rate** – Number of breaths taken per minute
- ✓ **Gaseous exchange** – The exchange of gases in the lungs (Oxygen in – Carbon dioxide out)

| 7: What are the long-term effects of exercise on the cardio-respiratory system? | Red | Amber | Green |
|---|---|---|---|

## Long-term effects of exercise on the cardio-respiratory system occurs to:

- **Heart Rate**
- **Stroke Volume**
- **Cardiac Output**
- **Heart Rate recovery**
- **Lung capacity**

- This graph shows the **Heart Rates** of two performers running 100m. One of them is fit, while the other is unfit. Which is which? Back up your answer with **two reasons** as to why you have come to your conclusions. **(4 marks)**

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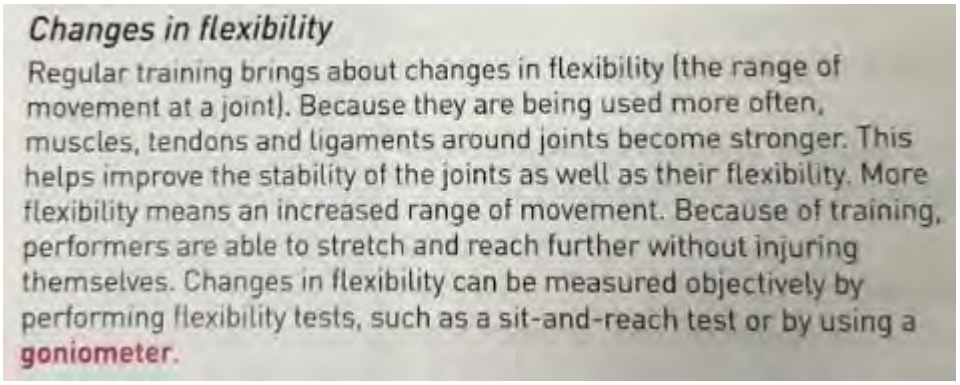
| 8: What are the long-term effects of exercise on the musculo-skeletal system? | Red | Amber | Green |
|---|---|---|---|

## Long-term effects of exercise on the musculo-skeletal system occurs to:

- Changes in muscle size
- Changes in strength
- Changes in flexibility
- Quicker muscle recovery



*Changes in flexibility*

Regular training brings about changes in flexibility (the range of movement at a joint). Because they are being used more often, muscles, tendons and ligaments around joints become stronger. This helps improve the stability of the joints as well as their flexibility. More flexibility means an increased range of movement. Because of training, performers are able to stretch and reach further without injuring themselves. Changes in flexibility can be measured objectively by performing flexibility tests, such as a sit-and-reach test or by using a **goniometer**.

- **The long-term changes to an athlete's flexibility due to training will enable them to perform at a much higher level than someone who has not been training over time. How would their performances in Badminton differ? Give two explicit examples of how flexibility benefits Badminton performance.**
  **(4 marks)**

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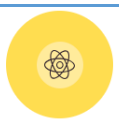
| HOME LEARNING TASKS | | |
|---|---|---|
| **Task Description** | | **Done?** |
| **1) Complete Checkpoint 1 on The EverLearner at a minimum grade of 70%:** *"The cardio-respiratory system and how the use of technology supports different types of sports and their intensities"* |   | |
| **2) Complete Checkpoint 2 on The EverLearner at a minimum grade of 70%:** *"The musculo-skeletal system and how the use of technology supports different types of sports and their movements"* |   | |
| **3) Complete Checkpoint 3 on The EverLearner at a minimum grade of 70%:** *"Effects of Exercise"* |   | |

# Modern Languages – Spanish
# Module 7 – ¡A currar! – World of work

**Year: 11**
**Term: 2**

## BIG QUESTIONS

1) **¿Qué idiomas hablas?**
   What languages do you speak?

2) **¿Por qué aprender idiomas?**
   Why learn languages?

3) **¿Qué planes tienes para el futuro?**
   What plans do you have for the future?

4) **¿Por qué quieres trabajar aquí?**
   Why do you want to work here?

5) **¿Cómo hablo de mi trabajo?**
   How do I talk about my job?

6) **¿Cómo se describe una foto?**
   How do you describe a photo?

## Talking about languages

| | | | |
|---|---|---|---|
| Domino el (I am fluent in)<br>Hablo (I speak)<br>Hablo un poco de (I speak a bit of) | alemán (German)<br>español (Spanish)<br>francés (French)<br>inglés (English) | ruso (Russian)<br>polaco (Polish)<br>árabe (Arabic)<br>mandarín (Mandarin) | y lo estudio desde hace (and I've been studying it for) | dos años (two years)<br>tres años (three years)<br>seis meses (six months) |
| Lo bueno de hablar otros idiomas es que (The good thing about learning other languages is that)<br>Lo más importante es que (The most important thing is that)<br>Hablar otro idioma (Speaking another language) | te permite (is that it allows you) | | hacer nuevos amigos (to make new friends)<br>descubrir nuevas culturas (to discover new cultures)<br>viajar a otros países (to travel to other countries) | encontrar un buen trabajo (to find a good job)<br>trabajar en el extranjero (to work abroad)<br>estudiar en el extranjero (to study abroad) |

## Talking about future plans

| | | | | |
|---|---|---|---|---|
| En el futuro (In the future) | espero (I hope)<br>quiero (I want) | me gustaría (I would like)<br>voy a (I am going to) | aprender a conducir (learn how to drive)<br>aprobar mis exámenes (pass my exams)<br>buscar un trabajo (look for a job) | casarme (get married)<br>tener hijos (have children)<br>trabajar como voluntario (work as a volunteer) |
| Para mí (To me)<br>Creo que (I believe that)<br>Mi amigo dice que (My friend says that)<br>Diría que (I would say that) | el matrimonio (marriage)<br>la familia (family)<br>sacar buenas notas (get good grades)<br>el paro (unemployment) | encontrar un buen trabajo (finding a good job)<br>la independencia (independence) | es (it is)<br>no es (is not) | esencial (essential)<br>importante (important)<br>preocupante (worrying) |
| Si tengo buena suerte (If I am lucky)<br>Si apruebo mis exámenes (If I pass my exams)<br>Si tengo dinero (If I got money) | Si tengo éxito (If I am successful)<br>Si trabajo mucho (If I work a lot) | encontraré un trabajo (I will find a job)<br>compartiré piso con mi amigo (I will share a flat with my friend) | compraré un coche (I will buy a car)<br>iré a la universidad (I will go to university) | tendré hijos (I will have children)<br>me tomaré un año sabático (I will take a gap year) |
| Si me tomo un año sabático (If I take a gap year) | haré Interrail por Europa (I will go Interrailling around Europe.)<br>mejoraré mi nivel de español (I will improve my level of Spanish)<br>trabajaré en un proyecto medioambiental (I will work on an environmental project) | viajaré por el mundo (I will travel around the world)<br>pasaré un año en Latinoamérica (I will spend a year in Latin America) | ¡Qué emocionante! (How exciting!)<br>Sería (It would be) | inolvidable (unforgettable)<br>una experiencia única en la vida (a once in a lifetime experience) |

## How to: Describe a photo

| | | | | |
|---|---|---|---|---|
| En la foto (In the photo) | hay (there is) | | un hombre (a man)<br>una mujer (a woman)<br>un chico (a boy)<br>una chica (a girl) | un grupo de amigos (a group of friends)<br>unos jóvenes (some young people)<br>unos niños (some children)<br>unos estudiantes (some students) |
| Están (They are) | en el parque (at the park)<br>en el centro comerical (at the shopping centre)<br>en el colegio (at school)<br>en el polideportivo (at the leisure centre)<br>en el campo (in the countryside) | en la ciudad (in the city)<br>en la costa (on the coast)<br>en la playa (at the beach)<br>en la montaña (in the mountains)<br>en casa (at home) | donde (where) | se divierten (they are having fun)<br>hablan (they are talking)<br>comen (they are eating)<br>beben (they are drinking)<br>juegan (they are playing) | estudian (they are studying)<br>trabajan (they are working)<br>tocan instrumentos (they are playing instruments)<br>usan sus móviles (they are using their phones)<br>van de compras (they are shopping) |

## November Mocks Preparation

Any of the following topics could come up in your mocks:

- Holidays
- School
- Family and relationships
- Free time
- Your town and region
- Celebrations
- Work
- The environment

| | Listening | Reading | Writing |
|---|---|---|---|
| Foundation | Section A = Questions in English, answers in English<br><br>Section B = Questions in Spanish, answers in Spanish | Section A = Questions in English, answers in English<br><br>Section B = Questions in Spanish, answers in Spanish<br><br>Section C = Translation into English | Q1 = Describe a photo<br>Q2 = 40 words (present + future tense)<br>Q3 = 90 words (present, past + future tense)<br>Q4 = x5 translation sentences into Spanish |
| Higher | | | Q1 = 90 words (present, past + future tense)<br>Q2 = 120 words (present, past + future tense)<br>Q3 = translation paragraph into Spanish |

## HOMEWORK

Every week you will be set an assignment on sentence builders.
My homework day is:

_____

The website is:

www.sentencebuilders.com

You should have your log-in details stuck in your planner. If you forget these, you must email your teacher or ask in lesson time for these details.

Your knowledge organiser has every answer that you will need to complete your homework. Have it open when you do your homework!

SentenceBuilders

**Modern Languages – French** **Year: 11**
**Module 7 – Au boulot – World of work** **Term: 2**

## BIG QUESTIONS

1) **Tu as fait un stage?**
   Did you do work experience?
2) **Que faisais-tu au stage?**
   What did you do at work experience?
3) **Tu parles quelles langues?**
   What languages do you speak?
4) **Pourquoi apprendre une nouvelle langue?**
   Why learn a new language?
5) **Pourquoi veux-tu ce poste?**
   Why do you want this job?
6) **How do I write about the world of work?**

### Taking about work experience

| | | | | | | |
|---|---|---|---|---|---|---|
| L'année dernière (Last year) | j'ai travaillé (I worked) | dans un bureau (in an office) | où je servais des café, (where I used to serve coffees) | et je donnais des renseignements aux touristes, (and I used to give information to tourists,) | ce qui était ennuyeux (which was boring) | ce qui était enrichissant (which was enriching) |
| La semaine dernière (Last week) | j'ai fait un stage (I did a work experience) | dans un magasin (in a shop) | où je rangeais le magasin (where I used to tidy the shop) | et je répondais au téléphone, (and I used to answer the phone,) | ce qui était barbant (which was boring) | ce qui était passionant (which was exciting) |
| | | dans un centre de loisirs (in a leisure centre) | où je servais les clients (where I used to serve the customers) | et je faisais des photocopies, (and I used to make photocopies,) | ce qui était inutile (which was useless) | ce qui était amusant (which was fun) |
| | | dans un salon de coiffure (in a hair salon) | où je pliais les vêtements (where I used to fold clothes) | et je tapais des lettres, (and I used to type letters,) | ce qui était fatigant (which was tiring) | ce qui était sympa (which was nice) |
| | | dans un office de tourisme (in a tourist office) | où j'aidais les mécaniciens (where I used to help the mechanics) | et je travaillais avec les enfants, (and I used to work with children,) | | |
| | | dans une école (in a school) | | | | |

### Taking about languages

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Je parle (I speak) | couramment (fluently) | un peu (a little) | l'allemand (German) | le français (French) | le polonais (Polish) | et je l'étuidie depuis (and I have been studying it for) | huit semaines (eight weeks) | |
| | assez bien (quite well) | seulement (only) | l'anglais (English) | l'italien (Italian) | le portugais (Portuguese) | | deux mois (two months) | |
| | très bien (very well) | mal (badly) | l'arabe (Arabic) | le japonais (Japanese) | le roumain (Romanian) | | cinq ans (five years) | |
| | | | l'espagnol (Spanish) | le mandarin (Mandarin) | le russe (Russian) | | | |

| | | | |
|---|---|---|---|
| J'utilise des langues étrangères (I use foreign languages) | pour (in order to) | faire des amis (make friends) | demander mon chemin (ask for directions) |
| | | découvrir une nouvelle culture (discover a new culture) | communiquer avec des clients (communicate with customers) |
| | | parler avec des clients (speak to customers) | faire des annonces (make announcements) |
| | | parler avec des collègues à l'étranger (speak to colleagues abroad) | donner des renseignements aux passagers (give information to passengers) |
| | | commander quelque chose à manger (order something to eat) | aider des touristes (to help tourists) |

## How to: Describe a photo

| | | | | | |
|---|---|---|---|---|---|
| Sur la photo (In the photo) | il y a (there is) | | un homme (a man) | une groupe d'amis (a group of friends) | |
| | | | une femme (a woman) | des jeunes (some young people) | |
| | | | un garçon (a boy) | des enfants (some children) | |
| | | | une fille (a girl) | des étudiants (some students) | |
| Ils sont (They are) | au parc (at the park) | à la campagne (in the countryside) | où (where) | ils s'amusent (they are having fun) | ils étudient (they are studying) |
| | au centre commercial (at the shopping centre) | à la plage (at the beach) | | ils se discutent (they are chatting) | ils travaillent (they are working) |
| | au collège (at school) | à la montagne (in the mountains) | | ils mangent (they are eating) | ils regardent la téle (they are watching TV) |
| | au centre de loisirs (at the leisure centre) | à la maison (at home) | | ils boivent (they are drinking) | ils utilisent leurs portables (they are using their phones) |
| | au bord de la mer (by the sea) | en ville (in town) | | ils jouent (they are playing) | ils font les magasins (they are shopping) |

## November Mocks Preparation

Any of the following topics could come up in your mocks:

- Family and relationships
- Free Time
- Celebrations
- My town and region
- Holidays
- School
- Work
- The Environment

| | Listening | Reading | Writing |
|---|---|---|---|
| Foundation | Section A = Questions in English, answers in English<br><br>Section B = Questions in French, answers in French | Section A = Questions in English, answers in English<br><br>Section B = Questions in French, answers in French<br><br>Section C = Translation into English | Q1 = Describe a photo<br>Q2 = 40 words (present + future tense)<br>Q3 = 90 words (present, past + future tense)<br>Q4 = x5 translation sentences into French |
| Higher | | | Q1 = 90 words (present, past + future tense)<br>Q2 = 120 words (present, past + future tense)<br>Q3 = translation paragraph into French |

## HOMEWORK

Every week you will be set an assignment on sentence builders.
My homework day is:

_____

The website is:

www.sentencebuilders.com

You should have your log-in details stuck in your planner. If you forget these, you must email your teacher or ask in lesson time for these details.

Your knowledge organiser has every answer that you will need to complete your homework. Have it open when you do your homework!

SentenceBuilders