

Knowledge



is power



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In PSHEE you will think about personal budgets and how you can manage your finances. There is a worrying trend of people getting into financial difficulties because they have not learned to budget well. This puts enormous pressure upon families. It is imperative that everyone understands how basic financial products work. We will also be completing our choices work with students opting for their preferences for Key Stage 4.

1 Formal Elements of Art

LINE	the path left by a moving point, e.g. a pencil or a brush dipped in paint. It can take many forms. e.g. horizontal, diagonal or curved.
tone	means the lightness or darkness of something. This could be a <u>shade</u> or how <u>dark</u> or <u>light</u> a <u>colour</u> appears
TEXTURE	the surface quality of something, the way something feels or looks like it feels. There are two types : <u>Actual</u> and <u>Visual</u>
SHAPE	an area enclosed by a <u>line</u> . It could be just an outline or it could be <u>shaded</u> in.
PATTERN	a design that is created by repeating <u>lines</u> , <u>shapes</u> , <u>tones</u> or <u>colours</u> . can be <u>manmade</u> , like a <u>design</u> on fabric, or <u>natural</u> , such as the markings on animal fur.
COLOUR	There are 2 types including Primary and Secondary . By mixing any two <u>Primary</u> together we get a <u>Secondary</u>

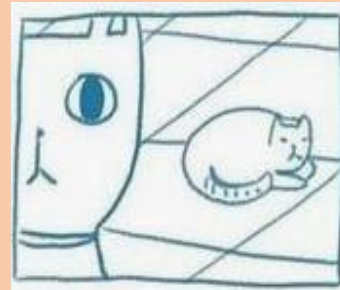
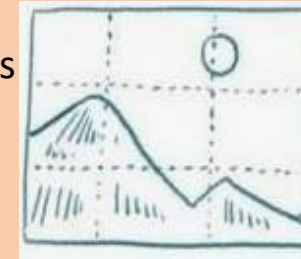
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A Rough	A Visual/ Maquette	Final Piece
A basic sketch of a final idea	A small image or model created in selected materials	An image or sculpture pulling all preparatory work together

2

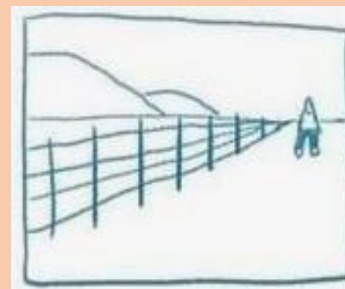
Composition Layouts

Rule of thirds– Place focal objects at 1/3 or 2/3 of the image horizontally or vertically. Not in the middle



Balance elements. If there is an emphasis on one side balance it out with smaller objects on the other

Simplify and fill. Enlarge or crop the image to fill the space









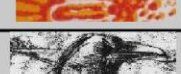
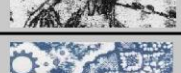





Use lines. Lines will draw the viewer in, they don't have to be straight, consider S or C

1

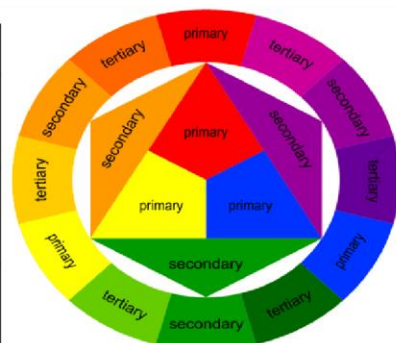
Media	The substance that an artist use to make art
Materials	The same as media but can also refer to the basis of the art work eg, canvas, paper, clay
Techniques	The method used to complete the art work, can be generic such as painting or more focus such as blending
Processes	The method used to create artwork that usually follows a range of steps rather than just one skill

2

Pencil		The basic tool for drawing, can be used for linear work or for shading
Biro		Drawings can be completed in biro and shaded using hatching or cross hatching
Pastel (chalk/oil)		Oil and chalk pastels can be used to blend colours smoothly, chalk pastels give a lighter effect
Coloured pencil		Coloured pencil can be layered to blend colours, some are water soluble
Acrylic paint		A thick heavy paint that can be used smoothly or to create texture
Watercolour		A solid or liquid paint that is to be used watered down and layered
Gouache		A pure pigment paint that can be used like watercolours or more thickly for an opaque effect
Pressprint		A polystyrene sheet that can be drawn into to print white lines – can be used as more than 1 layer
Monoprint		Where ink is transferred onto paper by drawing over a prepared surface
Collograph		A printing plate constructed of collaged materials
Card construction		Sculptures created by building up layers of card or fitting together
Wire		Thick or thin wire manipulated to create 2d or 3d forms
Clay		A soft substance used for sculpting, when fired can be glazed to create shiny colourful surfaces
Batik		A fabric technique using hot wax to resist coloured inks
Silk painting		Fabric inks painted onto silk, Gutta can be used as an outliner to prevent colours mixing

3

Colour Theory	
Primary= RED, YELLOW, BLUE	Complimentary; Colours opposite on the colour wheel
Secondary= Primary+Primary	Harmonious; Colours next to each other on the wheel
Tertiary= Secondary+Primary	Monochromatic; shades, tones & tints of one colour
Shades – add black	Hue – the pigment
Tint – add white	Warm; RED, ORANGE, YELLOW. Cold; BLUE, GREEN, PURPLE



1. “Day of the Dead” – the students learn about the Mexican festival “Day of the Dead” and how it exists in the modern world and its contrast with Halloween here in Britain. They create their decorative skull mask designs in response.
2. “Self – Portrait” – The students learn about the concept of visual identity and how artists have depicted themselves in different eras. They then produce their own stylised self-portrait using the skills of effective composition and backgrounds.

1

Methods of Recording

Observational drawing	Drawing from looking at images or objects
First hand observation	Drawing directly from looking at objects in front of you
Second hand observation	Drawing from looking at images of objects
Photographs	Using a camera or smartphone to record images will class as first hand observation
Sketches	Basic sketches and doodles can act as a starting point for development

Stages of Drawing

Basic shapes

Accurate shapes

Detail

Shade

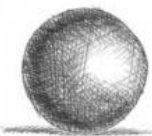
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Tonal shade

Produce a range of tones by varying the pressure and layering – consider using softer pencils for darker shades

Alternative shade techniques



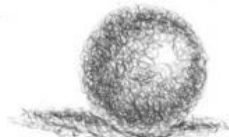
Cross hatching



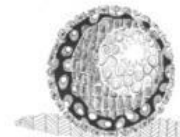
Hatching

CONTOUR LINES
Contour lines

Stippling



Scribble

PATTERNS
Pattern

3

Annotation

Describes writing notes, using images and explaining your thoughts to show the development of your work.

Step 1 - Describe

What is this an image of?
What have you done here?
What was this stage of the project for?

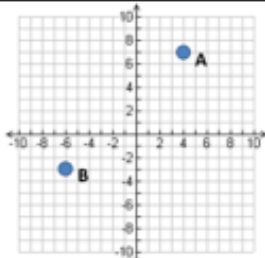
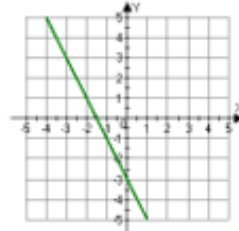
Step 2 - Explain


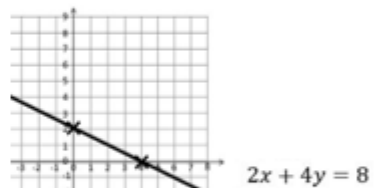

How was this work made?
How did you produce particular effects? How did you decide on the composition?

Step 3 - Reflect

Why did you use these specific methods? Why do particular parts work better than others? Why might you do things differently next time?

Topic: Coordinates and Linear Graphs

Topic/Skill	Definition/Tips	Example																
1. Coordinates	Written in pairs . The first term is the x-coordinate (movement across). The second term is the y-coordinate (movement up or down)	 <p>A: (4,7) B: (-6,-3)</p>																
2. Midpoint of a Line	Method 1: add the x coordinates and divide by 2, add the y coordinates and divide by 2 Method 2: Sketch the line and find the values half way between the two x and two y values.	Find the midpoint between (2,1) and (6,9) $\frac{2+6}{2} = 4$ and $\frac{1+9}{2} = 5$ So, the midpoint is (4,5)																
3. Linear Graph	Straight line graph. The general equation of a linear graph is $y = mx + c$ where m is the gradient and c is the y-intercept . The equation of a linear graph can contain an x-term , a y-term and a number .	Example:  <p>Other examples: $x = y$ $y = 4$ $x = -2$ $y = 2x - 7$ $y + x = 10$ $2y - 4x = 12$</p>																
4. Plotting Linear Graphs	Method 1: Table of Values Construct a table of values to calculate coordinates.	<table><tr><td>x</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y = x + 3</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr></table>	x	-3	-2	-1	0	1	2	3	y = x + 3	0	1	2	3	4	5	6
x	-3	-2	-1	0	1	2	3											
y = x + 3	0	1	2	3	4	5	6											

<p>Method 2: Gradient-Intercept Method (use when the equation is in the form $y = mx + c$)</p> <ol style="list-style-type: none"> 1. Plots the y-intercept 2. Using the gradient, plot a second point. 3. Draw a line through the two points plotted. 	
<p>Method 3: Cover-Up Method (use when the equation is in the form $ax + by = c$)</p> <ol style="list-style-type: none"> 1. Cover the x term and solve the resulting equation. Plot this on the x - axis. 2. Cover the y term and solve the resulting equation. Plot this on the y - axis. 3. Draw a line through the two points plotted. 	
<p>5. Gradient</p> <p>The gradient of a line is how steep it is.</p> <p>Gradient = $\frac{\text{Change in } y}{\text{Change in } x} = \frac{\text{Rise}}{\text{Run}}$</p> <p>The gradient can be positive (sloping upwards) or negative (sloping downwards)</p>	

Coordinates

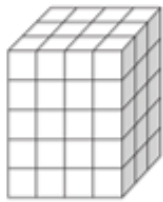
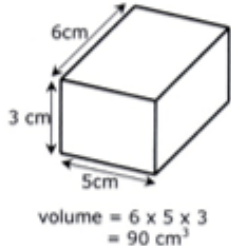
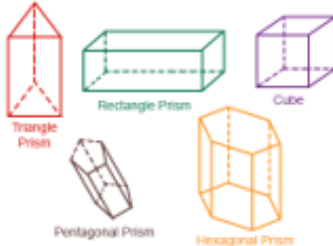
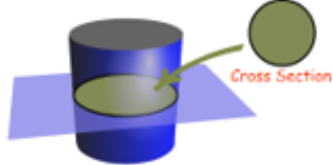


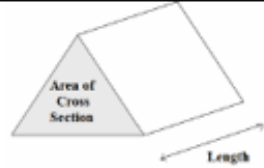

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Topic: Volume

Topic/Skill	Definition/Tips	Example
1. Volume	Volume is a measure of the amount of space inside a solid shape. Units: mm^3 , cm^3 , m^3 etc.	
2. Volume of a Cube/Cuboid	$V = \text{Length} \times \text{Width} \times \text{Height}$ $V = L \times W \times H$ You can also use the Volume of a Prism formula for a cube/cuboid.	
3. Prism	A prism is a 3D shape whose cross section is the same throughout.	
4. Cross Section	The cross section is the shape that continues all the way through the prism.	

5. Volume of a Prism	$V = \text{Area of Cross Section} \times \text{Length}$ $V = A \times L$	
6. Volume of a Cylinder	$V = \pi r^2 h$	

Volume



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Year 9 Drama: Shakespeare – The Tempest

Drama/ Rehearsal Techniques

- Choral Voice
- Choral Movement
- Emotional Memory
- Freeze Frame/ Still Image
- Guided fantasy
- Hot Seating
- Moral Dilemma
- Slow Motion
- Soundscape
- Swing Debate
- Tableaux
- Thought Tracking



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Skills

- Body Language
- Characterisation
- Facial Expression
- Gestures
- Mannerisms
- Movement
- Posture
- Stance
- Vocal Skills (articulation, volume, tone, pitch, pace)



Key Features

Clearly defined genres

- Comedy
- Tragedy
- History
- Problem Plays

Character Types

- Tragic Hero: flawed
- Strong female
- Comedy relief
- Nobles
- Servants

Features of Writing

- 5 act structure
- Use of blank verse
- Rhyming couplets
- Extensive use of symbolism and imagery



Key Terms Used in this Unit

Accent
Articulation
Blank Verse
Characterisation
Choral
Comedy
Emotional Memory
Imagery
Mannerisms
Rhyming Couplets
Symbolism
Tableaux
Tragedy
Tragic Hero

Shakespeare: Information

William Shakespeare (baptised 2th April 1564 – 23rd April 1616) was an English poet, playwright and actor, widely regarded as the greatest writer in the English language and the world's greatest dramatist. He is often called England's national poet. Shakespeare was born and raised in Stratford – Upon – Avon, Warwickshire. At the age of 18, he married Anne Hathaway, with whom he had three children: Susanna and twins Hamnet and Judith. Some time between 1585 and 1592, he began a successful career in London as an actor, writer and part-owner of a Company of Players called the Lord Chamberlain's men.



Vocabulary to learn

Afghanistan
Province
Shellshock
Battalions
Battle
Trench warfare
Bayonet
Declaration
Frontline
Military
Segregation
Hysteria
Suffrage

Structure analysis checklist:

- Zoom in/out
- Repetition of an image/idea
- Links and connections between paragraphs
- Shifts:
 - inside to outside (and vice versa)
 - focus
 - time
 - topic
 - setting/place
 - mood/atmosphere
 - description to dialogue (and vice versa)

Language analysis checklist:

- Link to task
- Relevant quote
- Meaning of quote
- Method named
- Effects explained
- Word zoomed in on
- Meaning of word
- Implied meanings
- Aim higher: layers of meaning

Evaluate

- The impressions you have of the text in relation to a statement
- The methods the writer has used to create these impressions
- How the particular **methods** create these impressions

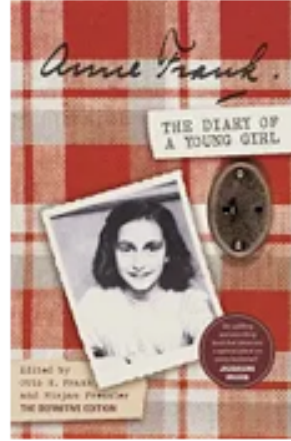
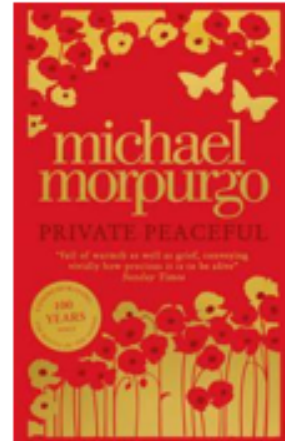
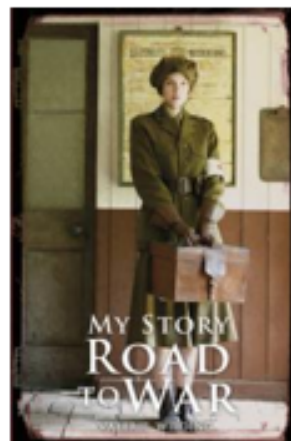
Methods

- **Linguistic devices** – *simile, metaphor, personification, repetition, rhetorical question etc.*
- **Word choices** – *nouns, adjectives, verbs, adverbs etc.*
- **Sentence forms** – *fragment, simple, compound, complex*

Example GCSE question:

Compare the ways poets present ideas about power in and in one other poem from 'Power and conflict' (anthology given in KS4).

Reading suggestions



Literary devices and word class

- Metaphor – a literal comparison – *she was a monster*
- Personification – human qualities – *the grass danced in the wind*
- Simile – as/like/as if – *he was like a man possessed*
- Onomatopoeia – the sound words – *bang, pop, sizzle*
- Alliteration – same starting sounds – *really rather raucous*
- Lists – to emphasise many reasons
- Verbs – doing words
- Adjectives – describing words
- Nouns – objects or abstract things e.g. love
- Adverbs – describe doing words e.g. wrote **neatly**
- connotations of words – associations – night-time = mystery

Key words	
National Socialism	A political system in which a strong government rules a country and protects the interest of one racial group.
Adolf Hitler	An Austrian politician who became leader of the Nazi Party in 1921 and led them to power by 1933. Hitler shot himself in 1945.
The SA	Abbreviation of 'Sturmabteilung' or 'Storm Division'. Known as the brown shirts, they were an armed wing of the Nazi Party in its early years
The SS	Abbreviation of 'Schutzstaffel' or 'Protection Squadron'. Known as the black shirts, they took over from the SA as the Nazis' most loyal and committed soldiers. Oversaw much of the Holocaust.
Hitler Youth	A series of youth organisations in Nazi Germany, where young boys would learn practical and military skills and girls would learn how to be 'good' mothers and wives
Anti-Semitism	Hatred of discrimination of Jews. This had existed for centuries but was particularly important in Nazi Germany.
The Holocaust	General term given to the treatment of Jews and other 'undesirables' by the Nazis between about 1938 and 1945.
Eugenics	The belief that it is possible and desirable to improve the human race by selective breeding and by eradicating undesirable elements or 'genetic' traits.

The Carrot:

For those who did as they were told and matched the Nazi ideal, there were many benefits for living in Nazi Germany. Propaganda also promised people happiness if they supported the Nazi regime.



The stick:

The Nazis made it very clear that anyone who disobeyed their rules would be punished. This meant prison and execution for many. They also set up 'work and education' camps in Germany.

The Nazis controlled society through the 'carrot and stick method'

Why did people support the Nazis?

Although the Nazi Party never won an election in Germany, they did have a lot of support in some sections of society. Some historians say that the Nazis won support through 'negative cohesion', which means that their supporters did not always agree with each other, but supported the Nazis because shared a fear of hatred of something/someone else. Some reasons for supporting the Nazis are as follows:

- **The Great Depression of 1929** – led to a lot of unemployment and poverty in Germany. The Nazis promised to end unemployment and also provided aid to many who could not afford food.
- **Fear/hatred of Communism** – Many middle and upper class people saw that if the communists took power they would lose their wealth. The Nazis were one of the most active and vocal groups against communism.
- **Appeal to traditional values** – The Nazis promised a return to 'traditional' German values which many people thought had been forgotten in the 1920s.
- **Propaganda and anti-Semitism** – The Nazis put the blame for many of Germany's problems on the Jews. For desperate people looking for someone to blame this idea could easily become attractive.

The Nazis promised the German people that they would create a 'Third Reich' and bring all true Germans to glory. Although there were some advantages for certain people, they ultimately failed to meet most of their promises and when WWII began they ended many of their policies aimed at helping the German people. On the right are some examples of people who did and did not benefit from Nazi rule.

The Holocaust

Although there is historical debate around when the Holocaust started, the word is usually used to describe the mistreatment and murder of over 6 million Jews and millions of others by the Nazis, either because of their race, religion, sexuality, ability or lifestyle.

The Holocaust did not begin suddenly but was a process that arguably began in 1933 and continued until the Nazis were defeated in 1945.

The most well-known feature of the Holocaust is the concentration and death camp, where prisoners were systematically murdered, overseen by the SS.

Social group	Advantages	Disadvantages
Women	Women were rewarded for marrying and having children through loans and medals. They were also praised in Nazi propaganda.	Women lost many of the freedoms they had enjoyed in the 1920s. They were now pressured into becoming housewives and mothers, and many lost their jobs under the Nazis.
Workers	Unemployment dropped dramatically under the Nazis and workers were usually able to find work. They were also given benefits such as cheaper holidays, cars and activities.	Wages did not rise as much as promised, and the employment figures covered up the fact that many were working in conscripted (compulsory) work for very little money. As the war began many of the previous benefits for workers ended.
Young people	Hitler Youth organisations were set up for boys and girls. These were mostly fun and offered opportunities for adventure.	Young people were targeted for propaganda, particularly through school where they learnt national socialist ideas. Any young people who had fun in the 'wrong' way were punished, often being put in camps.
'Undesirables'	There were virtually no advantages to fitting into this category.	Referred to as the 'untermenschen', Jews, eastern Europeans, homosexuals, people with disabilities, Roma/Sinti people, criminals and Jehovah's Witnesses were put in camps and often killed or worked to death.

1933 – The Nazis call for Jewish businesses to be boycotted, Jewish books are banned and Jews are banned from some jobs

1935 – Homosexuals can now be arrested, and the Nuremberg Laws make Jewish people non-citizens.

1938 – In an event known as 'Kristallnacht' thousands of Jewish businesses, homes and synagogues are looted. 91 Jews are killed.

1940 – Auschwitz, the largest concentration camp, is built in Poland.

1941 – Mass killing of Jewish and Eastern European people begins

1942–45 – Jews from all over Europe are taken to death camps and systematically murdered

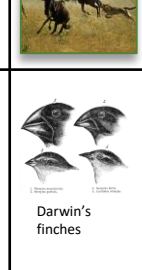
Over time this results in the formation of new species.

The theory of evolution by natural selection.

Species of all living things have evolved from simple life forms that first developed 3 billion years ago.

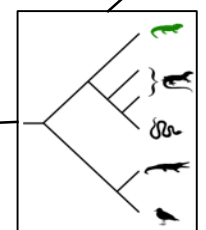
Through natural selection of variants (genotypes) that give rise to phenotypes best suited to their environment or environmental change e.g. stronger, faster. This allows for variants to pass on their genotype to the next generation.

If two populations of one species become so different in phenotype that they can no longer interbreed to produce fertile offspring they have formed two new species.



Classification of living organisms

Use current classification data for living organisms and fossil data for extinct organisms

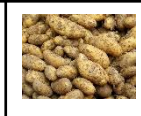


Evolutionary trees are a method used by scientists to show how organisms are related

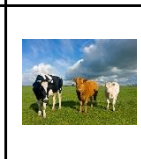
Choosing characteristics

Desired characteristics are chosen for usefulness or appearance

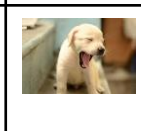
Disease resistance in food crops.



Animals which produce more meat or milk.



Domestic dogs with a gentle nature.



Large or unusual flowers.



Selective breeding can lead to 'inbreeding' where some breeds are particularly prone to disease or inherited defects e.g. British Bulldogs have breathing difficulties.



Concern: effect of GMO on wild populations of flowers and insects.

Selective breeding

Choosing parents with the desired characteristics from a mixed population

Chosen parents are bred together.

From the offspring those with desired characteristics are bred together.

Repeat over several generations until all the offspring show the desired characteristics.

Concern: effect of GMO on human health not fully explored

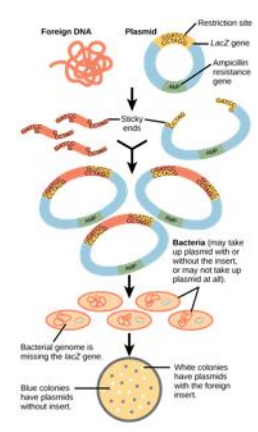
Genetic engineering process (HT only)

1. Enzymes are used to isolate the required gene.
2. Gene is inserted into a vector – bacterial plasmid or virus.
3. Vector inserts genes into the required cells.
4. Genes are transferred to plants/animals/microbes at an early stage of development so they develop the required characteristics.

Genes from the chromosomes of humans or other organisms can be 'cut out' and transferred to the cells of other organisms.

Genetically modified crops (GMO)	Crops that have genes from other organisms	To become more resistant to insect attack or herbicides.
		To increase the yield of the crop.

Modern medical is exploring the possibility of GM to over come inherited disorders e.g. cystic fibrosis



The process by which humans breed plants/animals for particular genetic characteristics

Selective breeding

Genetic engineering

INHERITANCE VARIATION AND EVOLUTION PART 3

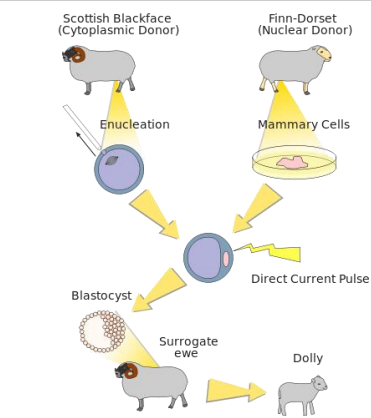
Cloning (Biology only)

Cloning techniques in plants/animals

Tissue culture	Small groups of cells to grow new plants. Important for preservation of rare plants and commercially in nurseries.
Cuttings	Part of a plant is cut off and grown into full plant.
Embryo transplants	Splitting apart cells from animals embryo before they become specialised. New clone embryos are inserted into womb of adult female.

Concern: some people have ethical objections to adult cell cloning e.g. welfare of the animals.

A change in the inherited characteristics of a population over time through the process of natural selection.



Adult cell cloning

1. Nucleus is removed from an unfertilised egg.
2. Nucleus from body cell is inserted into egg cell.
3. An electric shock stimulates the egg to divide into an embryo
4. Embryo cells are genetically identical to adult cells.
5. When embryo has developed into ball of cells it is inserted into host womb.

Periodic table diagram with labels:

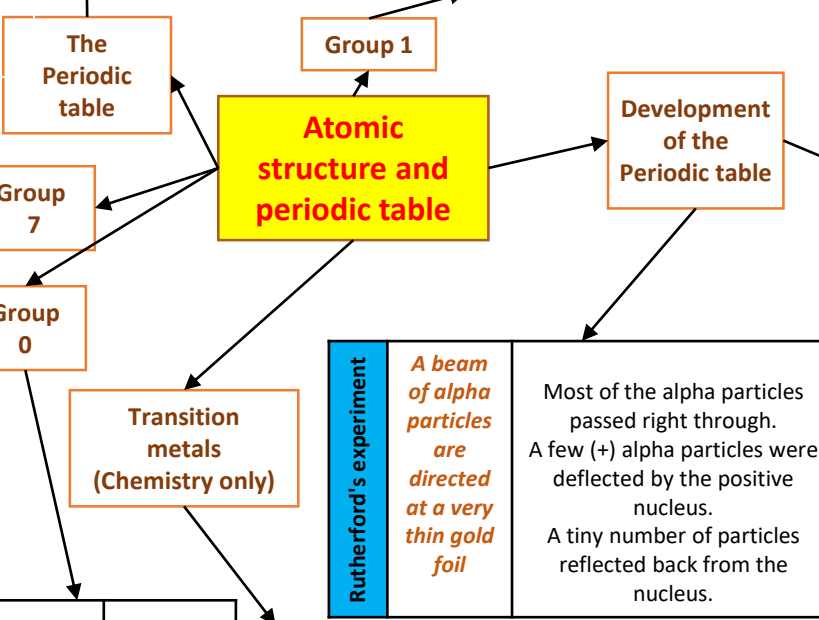
- Alkali metals (Group 1)
- Transition metals (Groups 3-10)
- Halogens (Group 17)
- Noble gases (Group 18)

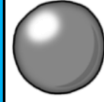
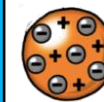
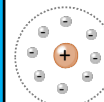
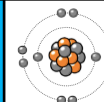
1	2											3	4	5	6	7	0
H												He					
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	?	?	?						

Elements arranged in order of atomic number	Elements with similar properties are in columns called groups	Elements in the same group have the same number of outer shell electrons and elements in the same period (row) have the same number of electron shells.
Alkali metals	Very reactive with oxygen, water and chlorine	Only have one electron in their outer shell. Form +1 ions.
	Reactivity increases down the group	Negative outer electron is further away from the positive nucleus so is more easily lost.

With oxygen	Forms a metal oxide	Metal + oxygen → metal oxide	e.g. $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$
With water	Forms a metal hydroxide and hydrogen	Metal + water → metal hydroxide + hydrogen	e.g. $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$
With chlorine	Forms a metal chloride	Metal + chlorine → metal chloride	e.g. $2\text{Na} + \text{Cl}_2 \rightarrow 2\text{NaCl}$

Halogens	Consist of molecules made of a pair of atoms	Have seven electrons in their outer shell. Form -1 ions.
	Melting and boiling points increase down the group (gas → liquid → solid)	Increasing atomic mass number.
	Reactivity decreases down the group	Increasing proton number means an electron is more easily gained



Pre 1900		Tiny solid spheres that could not be divided	Before the discovery of the electron, John Dalton said the solid sphere made up the different elements.
1897 'plum pudding'		A ball of positive charge with negative electrons embedded in it	JJ Thompson's experiments showed that an atom must contain small negative charges (discovery of electrons).
1909 nuclear model		Positively charged nucleus at the centre surrounded by negative electrons	Ernest Rutherford's alpha particle scattering experiment showed that the mass was concentrated at the centre of the atom.
1913 Bohr model		Electrons orbit the nucleus at specific distances	Niels Bohr proposed that electrons orbited in fixed shells; this was supported by experimental observations.

With metals	Forms a metal halide	Metal + halogen → metal halide e.g. Sodium + chlorine → sodium chloride	e.g. NaCl metal atom loses outer shell electrons and halogen gains an outer shell electron
With hydrogen	Forms a hydrogen halide	Hydrogen + halogen → hydrogen halide e.g. Hydrogen + bromine → hydrogen bromide	e.g. $\text{Cl}_2 + \text{H}_2 \rightarrow 2\text{HCl}$
With aqueous solution of a halide salt	A more reactive halogen will displace the less reactive halogen from the salt	Chlorine + potassium bromide → potassium chloride + bromine	e.g. $\text{Cl}_2 + 2\text{KBr} \rightarrow 2\text{KCl} + \text{Br}_2$

Noble gases	Unreactive, do not form molecules	This is due to having full outer shells of electrons.
	Boiling points increase down the group	Increasing atomic number.

Compared to group 1	<ul style="list-style-type: none">Less reactiveHarderDenserHigher melting points	<ul style="list-style-type: none">Cu^{2+} is blueNi^{2+} is pale green, used in the manufacture of margarine
Typical properties	<ul style="list-style-type: none">Many have different ion possibilities with different chargesUsed as catalystsForm coloured compounds	<ul style="list-style-type: none">Fe^{2+} is green, used in the Haber processFe^{3+} is reddish-brownMn^{2+} is pale pink

Before discovery of protons, neutrons and electrons	Elements arranged in order of atomic weight	Early periodic tables were incomplete, some elements were placed in inappropriate groups if the strict order of atomic weights was followed.
Mendeleev	Left gaps for elements that hadn't been discovered yet	Elements with properties predicted by Mendeleev were discovered and filled in the gaps. Knowledge of isotopes explained why order based on atomic weights was not always correct.

La ciudad**En la ciudad**

¿Qué hay en Barcelona?
Barcelona?

En Barcelona hay muchas cosas:

el acuario, el cine IMAX

¿Adónde vas?

Voy...

al acuario

al Camp Nou

football stadium

al cine IMAX

al monumento a Colón

al museo Picasso

al Tibidabo

a la playa de la Barceloneta

y el mar

a la plaza de Cataluña

a la Sagrada Familia

a la torre Agbar

a la Villa Olímpica

a las Ramblas

In the city

What is there in

In Barcelona there are
many things:

the aquarium, the IMAX
cinema...

Where are you going to?

I'm going...

to the aquarium

to the Camp Nou

to the IMAX cinema

to the Columbus

Monument

to the Picasso

Museum

to the Tibidabo funfair

to Barceloneta beach

and the sea

to the Plaza Cataluña

to the Sagrada Familia

church

to the Agbar Tower

to the Olympic Village

to the Ramblas

Me gusta Barcelona porque...

me encanta...

me gusta mucho...

ir de compras

mirar pinturas

montar en las atracciones del

parque

sacar fotos

tomar el sol

ver partidos de fútbol

ver películas

ver tiburones

Le gusta mucho....

Le encanta....

I like Barcelona
because...

I love...

I really like...

going shopping

looking at paintings

going on the rides at the
funfair

taking photos

sunbathing

watching football

matches

watching films

watching sharks

He/She really likes...

He/She loves...

De compras

¿Dónde se puede comprar...?

carne

comida

pan

ropa

un café

un regalo

Shopping

Where can you buy....?

meat

food

bread

clothes

a coffee

a present

La ciudad

¿Dónde se pueden comprar...? buy...?	Where can you buy...?
pasteles	<i>cakes</i>
joyas	<i>jewellery</i>
zapatos	<i>shoes</i>
libros	<i>books</i>
Se puede/pueden comprar... en...	<i>You can buy... in...</i>
un supermercado	<i>a supermarket</i>
una cafetería	<i>a café</i>
una carnicería	<i>a butcher's</i>
una joyería	<i>a jeweller's</i>
una librería	<i>a bookshop</i>
una panadería	<i>a baker's/bread shop</i>
una pastelería	<i>a cake shop</i>
una tienda de música	<i>a music shop</i>
una tienda de ropa	<i>a clothes shop</i>
una zapatería	<i>a shoe shop</i>

Las direcciones	Directions
Perdón...	<i>Excuse me...</i>
¿Dónde está el museo Picasso?	<i>Where is the Picasso museum?</i>
¿Dónde están las Ramblas?	<i>Where are the Ramblas?</i>
A ver...	<i>Let's see...</i>
Bueno...	<i>Well...</i>
Pues...	<i>Well...</i>
luego	<i>then</i>
Sigue todo recto.	<i>Go straight on.</i>
Dobla a la derecha.	<i>Turn right.</i>
Dobla a la izquierda.	<i>Turn left.</i>
Cruza la plaza.	<i>Cross the square.</i>
Toma la segunda calle a la derecha.	<i>Take the second on the right.</i>
Toma la segunda calle a la izquierda.	<i>Take the second street on the left.</i>
Está al final de la calle.	<i>It's at the end of the street.</i>
Está a la derecha.	<i>It's on the right.</i>
Está a la izquierda.	<i>It's on the left.</i>
Está aquí.	<i>It's here.</i>

La ciudad**Soy turista...**

Hoy...
 Estoy en Barcelona.
 Es genial.
 Anteayer...

Ayer por la tarde...
 fui a la playa
 comí paella y bebí limonada
 lemonade

descansé un poco
 Lo pasé fenomenal.
 Me gustó.
 No me gustó.
 Mañana...
 Pasado mañana...

voy a ir al Tibidabo

voy a ir de compras

voy a comprar unas camisetas

I'm a tourist...

Today...
 I'm in Barcelona.
 It's great.
 The day before
 yesterday...

Yesterday evening...
 I went to the beach
 I ate paella and drank

I had a little rest
 I had a wonderful time.
 I liked it.

I didn't like it
 Tomorrow...

The day after
 tomorrow...

I'm going to go to the
 Tibidabo

I'm going to go
 shopping

I'm going to buy some
 T-shirts

Palabras muy útiles

a, al
 hay
 ¿dónde?
 ¿adónde?
 en
 hoy
 ayer
 anteayer

mañana

Very useful words

to, to the
 there is/there are
 where?
 where?, to where?
 in, at
 today
 yesterday
 the day before
 yesterday
 tomorrow

World Map **Mapa del mundo**

22 Spanish speaking countries (shown in red)



Summary

Programming is writing computer code to create a program, in order to solve a problem. Programs consist of a series of instructions to tell a computer exactly what to do and how to do it.

An algorithm is a set of instructions that describes how to get something done. It is crucial that the steps in an algorithm are sequenced and performed in the right order - otherwise the algorithm will not work correctly. Algorithms can be designed using pseudocode and flow charts. They are written using statements and expressions. There are three basic building blocks (constructs) to use when designing algorithms: sequencing, selection and iteration. We create programs to implement algorithms. Algorithms consist of steps, where programs consist of statements.

In programming, iteration is often referred to as 'looping', because when a program iterates it 'loops' to an earlier step. It is implemented using FOR and WHILE statements. Selection is implemented in programming

Small Basic Language & Syntax

Variable

Computer programs use variables to store information.

Variables could be used to store the score in a game, the number of cars in a car park or the cost of items on a till. They work in a similar way to algebra, where a letter in your code can stand for a number.

```
TextWindow.Write("Enter your Name: ")
name = TextWindow.Read()
TextWindow.Write("Hello " + name + ". ")
TextWindow.WriteLine("How are you doing " + name + "?")
```

Sequencing

Sequencing is the specific order in which instructions are performed in an algorithm. Algorithms consist of instructions that are carried out

```
GraphicsWindow.Width = 200
GraphicsWindow.Height = 200
GraphicsWindow.PenColor = "Green"
GraphicsWindow.DrawLine(10, 10, 100, 100)
GraphicsWindow.PenColor = "Gold"
GraphicsWindow.DrawLine(10, 100, 100, 10)
```

Selection

Selection is a decision or question.

At some point, a program may need to ask a question because it has reached a step where one or more options are available. Depending on the answer given, the program will follow a certain step and ignore the others.

```
If (Clock.Hour < 12) Then
    TextWindow.WriteLine("Good Morning World")
EndIf
If (Clock.Hour >= 12) Then
    TextWindow.WriteLine("Good Evening World")
EndIf
```

Iteration

Iteration is the process of repeating steps.

Iteration allows us to simplify our algorithm by stating that we will repeat certain steps until told otherwise. This makes designing algorithms quicker and simpler because they don't have to include lots of unnecessary steps.

```
For i = 1 To 24
    TextWindow.WriteLine(i)
EndFor
```



Key Vocabulary

Assignment	Setting the value of a variable in a computer program.
Constant	A value in computer programming that does not change.
Data Type	In computer programming, data is divided up and organised according to type, e.g. numbers, characters and Boolean.
Debug	The process of finding and correcting programming errors.
Execute	To run a computer program.
High-level language	A computer programming language used to write programs. They need to be translated into machine code through a compiler, interpreter or assembler.
Machine code	Also called object-code, this is low-level code that represents how computer hardware and CPUs understand instructions. It is represented by binary numbers.
Runtime	The period when a computer program is executing or running.
Syntax	Rules governing how to write statements in a programming language.

Algorithms

Pseudocode

```
WHILE NotSolved
    .. Instructions here ..
    FOR i ← 1 TO 5
        .. Instructions here ..
    ENDFOR
    .. Instructions here ..
ENDWHILE
```

Flowchart



<http://bit.ly/33WS6NC>



Key words	
Capital Punishment	The death penalty.
Sanctity of Life	The belief that life is God-given. It is holy and precious.
Quality of life	The idea that life must have some benefits for it to be worth living
Justice	Doing the right thing- rewarding the good and punishing the bad.
Victim	Someone who has been affected by a bad thing.
Malicious	Having or showing a desire to cause harm to someone
Perpetrator	A person who commits a crime
Pacifism	Not believing in violence.
Patriotism	A love for your country

Timothy John Evans

Timothy John Evans was one of the last people to be executed in the UK. He was convicted of murdering his daughter. During the trial Evans claimed that he was innocent and that his next door neighbour John Christie was the one who had murdered his daughter. Timothy Evans was executed by hanging in 1950.

Later on, John Christie was found to be a serial killer. Before his own execution in 1966, John Christie admitted to murdering Timothy Evans' daughter. Evans had been wrongly executed. People argue that the death sentence is too permanent a punishment and if you sentence the wrong person, there is no chance to apologise or rehabilitate the person.

The Death Penalty.

Capital Punishment: The death penalty (or capital punishment), is the execution of a criminal by the government. In most countries this happens by lethal injection.

According to Amnesty international, in 2008, 1591 people were executed in 25 countries around the world.

Should the following people be given the death penalty?

Anders Breivik

In 2011 Anders Breivik detonated bombs in Oslo and attacked a political youth camp with an assault rifle. In total, Breivik killed 77 people. He was working by himself.

He was found guilty by a Norwegian high court judge and was sentenced to 20 years in prison (The maximum sentence in Norway.) Many of the families whose relatives were killed by Breivik believe that 20 years in prison is not good enough. Breivik himself said in court 'You either have to kill me or let me go, the law in Norway is a joke!'

Ian Huntley

On 4 August 2004, Ian Huntley persuaded two ten year old girls to come into his house where he murdered them. Huntley's girlfriend lied to the police about where he was.

Huntley was the caretaker at the girl's school. He abused the trust of the girls to persuade them to come into his home. Many people in the UK were disgusted with Huntley's sentence saying that his crime deserved more than a prison sentence. Ian Huntley is now 38 and 7 years into his prison sentence. He has tried to commit suicide twice.

Muslim beliefs on the Death Penalty

Muslims follow Shari'ah law.

Everyone is subject to the law,

It is best to forgive a wrong and be charitable if it does not lose your honour. First reason

with wrongdoer.

Justice will always be carried out in public so that justice is seen to be done.

Islam accepts capital punishment, but the victim's family have the right to pardon the offender. Forgiveness is a strong theme in the Qur'an.

Sometimes monetary compensation is authorised instead of death.

Christian Beliefs on the Death Penalty

Teachings of Jesus based on forgiveness and compassion

Many Christians feel that this is the ideal, not the reality.

They focus on reforming the criminal

Many Christian reformers have focussed on ensuring prisoners are treated fairly.

These vary widely, from the pacifist view of the Quakers to the acceptance of capital punishment as allowed by law.

Roman Catholic Church considers it 'lawful slaying'

Anglican Church is opposed to it.

Arguments FOR and Against the Death Penalty

It permanently removes the worst criminals, protecting society and making it a safer place.

Only God is in control of life and death. The Bible says that all human lives are valuable.

There are alternatives to the death penalty that offer the opportunity for reformation.

The death penalty lowers the value of life in society.

Innocent people could be executed by mistake. What if it was manslaughter rather than murder?

If someone murders someone, it is just to do the same to them – they have given up their human rights.

Genesis 9:6: 'Whoever sheds a man's blood, by man shall his blood be shed.' – After the flood, God said that capital punishment should be used for murderers.

Fear of the death penalty is the best deterrent. In Singapore, where capital punishment is legal there is far less serious crime.

It is cheaper than imprisoning someone for the rest of their lives.

It gives the families of murder victim's true retribution.

Capital punishment is awful for the families of murderers to have to endure.

It is uncivilized and barbaric.



Pewter

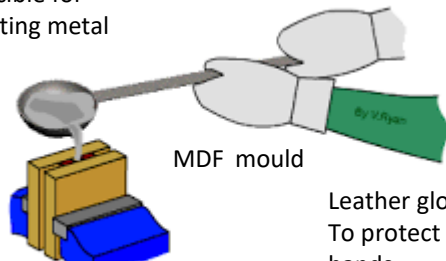
Pewter is a grey metal which is made by mixing tin and lead. Pewter was often used in former times to make ornaments or containers for eating and drinking. It's melting point is about 240°C.

Pewter casting



Recognise what safety equipment is needed and when it is necessary

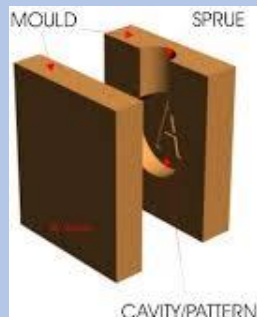
Crucible for Melting metal



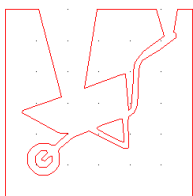
MDF mould

Vice for holding The mould

Leather gloves
To protect your hands



CAD mould
60mm x 60mm
Runner – where you pour in the pewter
Riser – allows the pewter to fill a complicated mould by forcing the metal up the riser



1 Cut off the sprue with a junior hacksaw



2 File sharp edges with a file



3 Use a pillar drill to make a hole for your keyring



4 Use wet and dry sandpaper to smooth the pewter



5 Use a polisher to shine your metal keyring



Hardwoods



Beech
Oak
Ash
Teak

Comes from deciduous trees
This is a broad-leaved tree which loses its leaves in the winter.

Softwoods



Pine
Spruce
Cedar
Fir

Comes from coniferous trees
This tree is an evergreen (green all year), needle-leaved, cone-bearing tree.

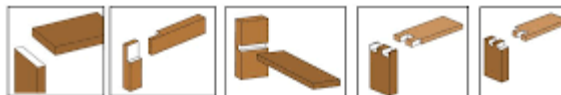
Butt

Lap

Housing

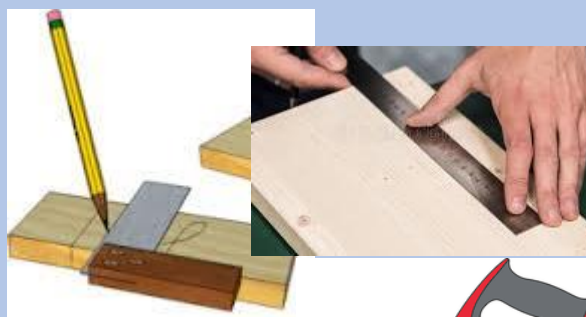
Dovetail

Comb

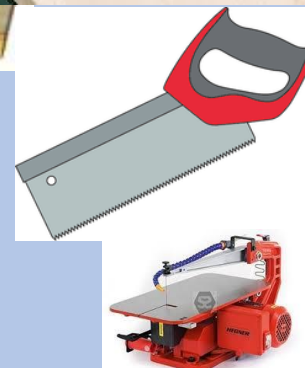


Choose a wood joint, determined by what you are making and how it will be used.

Measuring, marking out and cutting pine to make a box



Use a ruler to measure accurately, use a set square to mark accurate angles and use a tenon saw or fret saw to cut wood.



Pine and MDF

Wood comes in 3 categories: soft wood, hard wood and manufactured wood. They have different properties and are used for many things.

Manufactured boards

Making boards and sheets from wood or wood products

- Veneers
- Sawdust
- Wood fibres
- Wood strips
- Wood flakes



Life Cycle Assessment

Is a technique to assess environmental impacts associated with all the stages of a product's life from raw material extraction through materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling. LCA is also used in new product research and development, when environmental footprint is important to the future marketing or cost structure of a product.



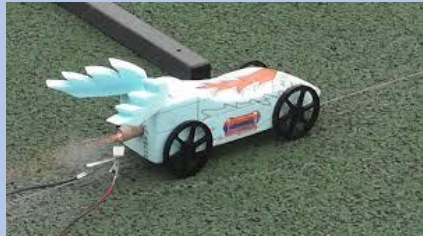
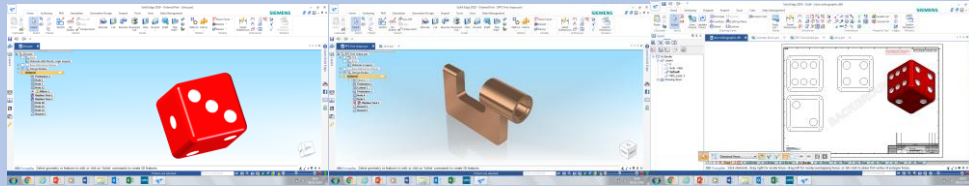
FSC

The FSC system allows businesses and consumers to identify, purchase and use wood, paper and other forest products made with materials from well-managed forests and/or recycled sources. FSC helps take care of forests and the people and wildlife who call them home. So you can keep your life full of forest products while keeping our forests full of life. Forests are good for us. They provide a great environment for hiking and other outdoor pursuits and are even proven to have therapeutic properties.

3D CAD

At Open Academy we use Solid Edge 3D CAD programme.

CAD (computer-aided design) software is used by architects, engineers, drafters, artists, and others to create precision drawings or technical illustrations.



Rocket cars

Aerodynamics is the study of how gases interact with moving bodies. Because the gas that we encounter most is air, aerodynamics is primarily concerned with the forces of drag and lift, which are caused by air passing over and around solid bodies.

Automotive aerodynamics is the study of the aerodynamics of road vehicles. Its main goals are reducing drag and wind noise, minimizing noise emission, and preventing undesired lift forces and other causes of aerodynamic instability at high speeds.

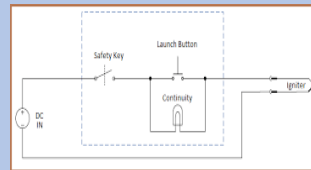
The most aerodynamic shape is typically known as the teardrop - it's the shape water forms when it runs down a window because it's been pushed into that position by the air flowing over it on the way down.

Rocket motor

The rocket motor is the device in the model that creates the thrust force that propels the car along the wire. It creates the fire, smoke, and noise that make rocketry so exciting to watch.

Simple rocket launch detonator

The safety key is activated and causes a buzzer to sound. This alerts the user that the launch button is ready. The launch button is pressed which heats the wire and ignites the rocket.



Modelling/Prototyping

It is always a good idea to make models of your ideas, before deciding on the final design. Models can be computer generated or manufactured by hand, to a scale. This will help you determine whether your idea is going to work or needs modifying. A model allows you to test your solution quickly and cheaply. You could ask your client / customer if the design is what they are looking for?

Advanced modelling

What is modelling?

Modelling is a very important area of product design. It is the point where you have an idea and need to realise it in 3D – this can be done at any stage of the design process. Some designers prefer to produce models or prototypes at earlier stages than others.

You can model using practical materials such as modelling card, foam etc

The alternative to solid modelling is to use 3D CAD.



Modelling materials and equipment

3D prototyping

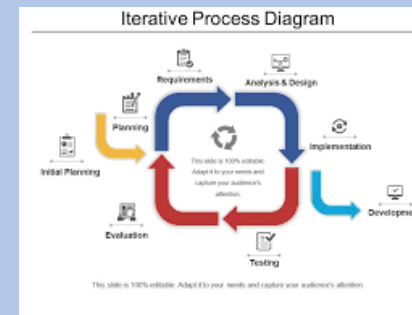
Rapid prototyping is a group of techniques used to quickly fabricate a scale model of a physical part or assembly using three-dimensional computer aided design (CAD) data. Construction of the part or assembly is usually done using 3D printing or "additive layer manufacturing" technology



3D Printer

Iterative Design Process

Iterative design is a design methodology based on a cyclic process of prototyping, testing, analysing, and refining a product or process. Based on the results of testing the most recent iteration of a design, changes and refinements are made



Micro-organisms

Micro-organisms are tiny forms of life. They can only be seen under a microscope and are sometimes called microbes.

They spoil food and make it unsafe to eat because they contaminate it with their waste products, their physical presence and the toxins they produce.

What micro-organisms can spoil food and make it unsafe to eat?

There are three groups of micro-organisms that you need to know about that spoil food and cause food poisoning. These are..

- Bacteria
- Moulds
- Yeasts

Micro organisms need 5 conditions to grow and multiply:

1. A warm temperature
2. Plenty of moisture (water)
3. Plenty of food
4. The right PH level (not too acidic or alkaline)
5. Enough time (bacteria split every 10-20 minutes)

High risk foods

- High risk food have ideal conditions for bacteria
- High risk foods are ready to eat foods that could grow harmful bacteria
- They are moist and high in protein which is food for bacteria.
- High risk foods have a short shelf life - you can't keep them for long or the bacteria might multiply to dangerous levels.

Examples of high risk foods:

Cooked meat, fish and poultry, dairy products (eggs, cheese etc.), gravies, stocks and sauces, shellfish, cooked rice

Example exam questions:

What five conditions to bacteria need to grow and multiply? (5 marks)

What is a high risk food? (5 marks)

Storing food safely

Cooking (75°C)	The danger zone (5°C-63°C)
<ul style="list-style-type: none">• Cooking food above 75°C kills bacteria• Re-heat food properly, only once. Reheat food so 75°C for at least 3 minutes• Check the food is 75°C with a temperature probe	<ul style="list-style-type: none">• Bacteria can grow and multiply quickly between 5°C to 63°C.• This is called the danger zone• The optimum temperature for bacterial growth is 37°C
Chilling (0°C - 5°C)	Freezing (-18°C)
<ul style="list-style-type: none">• Keeping food between 0°C and 5°C slows down the growth of bacteria• This extends the shelf life of food• Chilling food doesn't change the properties much - food looks and tastes the same	<ul style="list-style-type: none">• Freezing food below -18°C stops bacteria growing - they become dormant• Freezing generally extends shelf life and the nutrients aren't lost• It doesn't kill the bacteria though. They become active again once the food defrosts.

Preparing self for cooking

- Tie hair back to prevent hair and dandruff falling in food
- Take off coats and blazers
- Wear an apron to prevent bacteria transferring from our clothes to our food
- Wash hands with hot soapy water to kill bacteria

Preparing the room for cooking

- Sanitise all work surfaces
- Check equipment is clean and dry
- Tuck all stools in as they can be a trip hazard
- Put all high risk foods in the fridge to slow bacteria growth

Wash your hands after:

- Coughing
- Sneezing
- Tying shoe laces
- Going to the toilet
- Touching hair or face

Nutrients

Macro nutrients - needed in large quantities in the diet. The three macro nutrients are: PROTEIN, CARBOHYDRATES, FAT

Micro nutrients - needed in small quantities in the diet. The two micro nutrients are: VITAMINS, MINERALS

Protein

Proteins are made up of amino acids, often referred to as the 'building blocks' of the body. Non-essential amino acids can be made by the body, however, essential amino acids can't be made by the body and we must get from the food we eat.

High biological Value (HBV) proteins contain all the essential amino acids we need and generally come from animal sources. Low biological value (LBV) proteins are missing one or more essential amino acids and generally come from plant sources.

Food sources

HBV - beef, pork, lamb, poultry (chicken, turkey, duck), fish, cheese, butter milk

LBV - beans, chickpeas, lentils, peas, nuts, seeds, found in smaller amounts in some vegetables such as spinach and broccoli.

Function

Needed for growth from childhood to adulthood and the growth of nails, hair and muscle mass, repair of muscles, tissues and organs after illness or injury and to make enzymes for digestion and antibodies to stop us getting ill.

Types: High biological Value (HBV) and Low biological Value (LBV)

Carbohydrates

There are two types of carbohydrates, complex and simple. They are also known as starchy (complex) and sugary (simple).

Food sources

Starchy - bread, rice, pasta, potatoes, bagels, oats, flour, cereal and some vegetables.

Simple - fruit, some vegetables, chocolate, sweets, biscuits, cakes

Function

Starchy/complex carbohydrates are digested slowly meaning blood sugar levels gradually increase providing a slow, steady release of energy. (long term energy).

Sugary/simple carbohydrates are digested slowly and provide short term energy

Types: Starchy, sugary and fibrous

Example exam questions:

What are the two types of fat? (2 marks)

Explain the difference between a HBV and LBV protein (6 marks)

What percentage of our daily energy should come from fats? (1 mark)

What are the main differences between saturated and unsaturated fats? (6 marks)

How can one make healthy choices when choosing complex carbohydrates? (2 marks)

Fat

There are two types of fat, saturated and non saturated. Saturated fats are classed as 'unhealthy fats', they are solid at room temperature and are generally animal based.

Unsaturated fats are classed as 'healthier fats' and are liquid or soft at room temperature and come from plant based sources.

Food sources

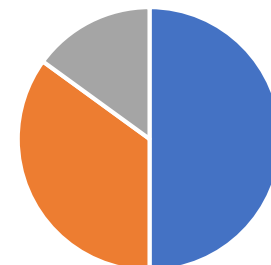
Animal -beef, chicken skin, processed meat (sausages, salami, pepperoni), bacon, butter, cheese, full fat milk

Plant - vegetable oils (sunflower, olive, rapeseed), avocado, nuts, seeds

Function

Keeps us warm (provides insulation), secondary source of energy, protects vital organs and bones.

Energy



■ Carbohydrates ■ Fat ■ Protein ■

Energy intake

50% - carbohydrates

35% - Fat

15% - Protein

Dietary related health problems

Diabetes

What is it?

Diabetes lets your blood glucose levels run out of control. Insulin is a hormone that allows glucose to be absorbed by the body. If there is too much glucose in the blood, the pancreas produces insulin to reduce the blood glucose level. Type 2 diabetes is a disorder where blood glucose levels stay too high - the pancreas either can't produce enough insulin or the body resists it.

Causes

- Being over weight or obese
- Excessive sugar in the diet can leave to obesity, increasing the risk of type 2 diabetes - this is affecting more young people.

Health problems

- Poor eye sight, limb numbness, kidney failure and CHD.
- Tired and thirsty
- The body passes out glucose by passing urine more often

Obesity

What is it?

It is very common, it affects roughly 1 in 4 adults in the UK. Body Mass Index (BMI) is often used to check if someone is overweight or obese.

Causes

- An incorrect balance of energy - a person consumes more calories than they burn off.
- Eating lots of foods high in fat and sugar
- Having a sedentary lifestyle (little or no physical activity)

Health problems

- Increases your blood pressure and raises cholesterol levels - this puts you at higher risk of coronary heart disease
- Greater risk of developing type 2 diabetes
- Breathing difficulties, tiredness and low self-esteem are all common

Anaemia - can be caused by an Iron Deficiency

What is it?

Iron is needed to make red blood cells - these cells carry oxygen from the lungs and travel in your blood around your body. People with anaemia have a reduced amount of blood cells.

Causes

- Not eating enough iron-rich foods
- Women lose iron during their periods
- Pregnant women lose iron to their baby during pregnancy

Health problems

Tiredness, pale complexion, heart palpitations, headaches, abnormal fingernails

Coronary Heart Disease (CHD)

What is it?

Your cardiovascular system consists of your heart and blood vessels. CHD is when coronary arteries (which supply the heart with blood full of oxygen) are narrowed because they are filled with fatty deposits.

Causes

- Eating lots of saturated fats
- Being physically inactive - exercise keeps the heart and cardiovascular system healthy
- Smoking - this damages the lining of arteries
- High blood pressure

Health problems

- Chest pains (angina)
- Blood clots can form which suddenly block flow to the heart, the heart doesn't get enough oxygen which can cause a heart attack (which can be fatal)

Dietary related health problems

Too much sugar can cause:

1. Weight gain (which can lead to obesity)
2. Tooth decay
3. Diabetes (your body cannot produce enough/any insulin to regulate your blood sugar levels)

Too much salt can cause:

1. High blood pressure (this can increase your risk of heart disease and a stroke).

Too much saturated fat can cause:

1. Weight gain (which can lead to obesity)
2. Raise cholesterol (this narrows arteries making it harder for the blood to travel around, putting you at risk of heart disease).

Example exam questions:

Explain three causes of obesity (6 marks)

What is the function of sugary and starchy carbohydrates (2 marks)

Why is protein especially important for children? (2 marks)

What are the functions of fat? (3 marks)

List 5 food sources of plant based protein (5 marks)

How does starch thicken a sauce (2 marks)

Give an example of fruit that turns brown due to enzyme browning (1 mark)

Which is the best type of flour to use when bread making and why. (3 marks)

Skeletal issues

Rickets - Soft and weak bones, this occurs in children with a calcium or vitamin D deficiency. Can cause pain in the bones.

Osteoporosis - It is a bone disease that weakens bones and makes them brittle, increasing the chance of them breaking from simply falls.

Tooth decay - Plaque is a sticky substance that contains lots of bacteria. It builds up on your teeth over time. Bacteria feeds on sugars and create acids that can destroy tooth enamel and cause tooth decay.

Food Science

Starch gelatinisation

The starch particles absorb the liquid and swell when heated. The starch granules burst open and release their starch into the liquid. This causes the liquid to thicken. The more starch, the thicker the liquid.

Enzyme Browning

Enzymes in fruit cause them to ripen. When you slice fruits, the oxygen in the air turns the fruit brown. Enzymes in the fruit speed up this process. E.g. apples and pears.

Shortening

Shortening gives foods a crumbly texture. When you rub butter into flour you cover the flour particles with fat, this gives the flour a waterproof coating. This prevents the long gluten molecules from forming when the liquid is added to the flour. This means the dough cannot become stretchy and baked goods like shortbread keep a 'short' (firm and crumbly) hence the name shortening.

Bread making

<u>Ingredient</u>	<u>Function</u>
Strong white bread flour	High in gluten to give the bread structure. Bulking ingredient of the dough.
Salt	Gives flavour.
Sugar	Food for the yeast so it can multiply quickly.
Yeast	When given food (sugar) and warmth and moisture (water) it ferments producing co2 and alcohol which helps the dough rise and become light and fluffy.
Warm water	This activates the yeast so it can start to ferment. 25

The Eatwell guide



The Eatwell guide

The Eatwell guide is a government guide designed to show you the proportions of different foods groups you should eat over a day or more.

Tips on making healthy choices from the eatwell guide:

Fruit and vegetables: eat 5 portions of fruit and vegetables a day, this should make up 1/3 of your plate a day, fresh, frozen, canned, dried and fruit juice/smoothies all count, don't exceed 150ml of fruit juice/smoothie a day as it can cause tooth decay, try snacking on fruit over high sugar and fat foods,

Potatoes, bread, rice, pasta and other starchy carbohydrates: choose non-sugary cereals, leave the skin on potatoes, choose wholemeal options of foods such as bread, rice and pasta.

Oils and spreads: choose unsaturated fats such as vegetable oils and margarine over butter, use in small amounts.

Dairy and alternatives: choose lower fat options such as skimmed milk and low fat and salt cheese, choose low sugar yogurts and add fruit as a natural sweetener.

Beans, pulses, fish, eggs, meat and other proteins: eat more beans and pulses as they are high in fibre and fill you up for longer, cut the visible fat off meat, choose lower fat meat options, eat 2 portions of fish a week.

Water: drink 2-3 litres of water a day, choose lower sugar option drinks.

8 Guidelines for Healthy Eating

1. Base your meals on starchy carbohydrates	<ul style="list-style-type: none"> This should make up 1/3 of your diet Chose high fibre, whole grain options e.g. pasta, rice Try to include one starchy food with each meal 	5. Eat less salt - no more than 6g a day for adults	<ul style="list-style-type: none"> Eating too much salt can raise blood pressure, this puts you at high risk of heart disease or a stroke Most of the salt you eat is already in food, check the labels to help you choose low salt options
2. Eat lots of fruit and vegetables	<ul style="list-style-type: none"> Try adding a banana to cereal or swap crisps for fruit Always serve main meals with two vegetables Beans and pulses can count as 1 of your 5 portions 	6. Get active and be a healthy weight	<ul style="list-style-type: none"> Regular exercise can reduce your risk of getting serious health conditions Aim for 150 minutes of exercise a week
3. Eat more fish - including one portion of oily fish	<ul style="list-style-type: none"> Fish is a source of protein and vitamins and minerals It contains omega 3 (good for eyes, skin, brain heart) Oily fish includes: salmon, herring, mackerel, sardines 	7. Don't get thirsty	<ul style="list-style-type: none"> 6-8 cups a day, 2-3 litres Avoid sugary and fizzy drinks as they're bad for teeth Remember fruit juice and smoothies is also high in sugar
4. Cut down on saturated fat and sugar	<ul style="list-style-type: none"> All types of fat are high in energy and should be eaten in small amounts Excess sugar can cause weight gain and tooth decay 	8. Don't skip breakfast	<ul style="list-style-type: none"> Kick starts you for the day choose healthy low fat, sugar and salt and high fibre Choose low sugar cereals and granola

Food Packaging

Food packaging

Food is packaged to protect the product during transport and whilst sitting on shelves.

Why is food labelling important?

Symbols on packaging show important information to customers.

Example exam questions:

Seasonal produce and air miles

What are the advantage of buying locally produced, seasonal produce? (6 marks)

Explain the disadvantages of buying imported foods. (10 marks)

Explain the term 'air miles' (3 marks)











Explain the term 'seasonal produce' (3 marks)

How might a restaurant use the fact they only use

Food packaging

Compare the two dishes and explain which dish is a healthier choice. Use the traffic light system to help you with your answer (6 marks).

Why is it important to include a vegetarian symbol on food packaging of vegetarian products? (2 marks)

				
Giving farmers a fair price for their products.	Forest Stewardship Council - helping effectively manage forests.	Suitable for home freezing.	Eggs have been produced to the highest standards of food safety.	Vegetarian approved - free from animal products.
				
This product can be recycled.	A British organisation that promotes and regulates food quality.	Tidy man - do not litter.	Food which abides by the Islamic law. The Islamic way of slaughtering is cutting the throat and draining the blood.	An ethical food label - helping farm animals have a good life.

Reference intake

You'll see reference intakes referred to on food labels. They show you the maximum amount of calories and nutrients you should eat in a day. Most packaging has a colour coded label on the front to help you make healthy choices.

Reference in take amounts:

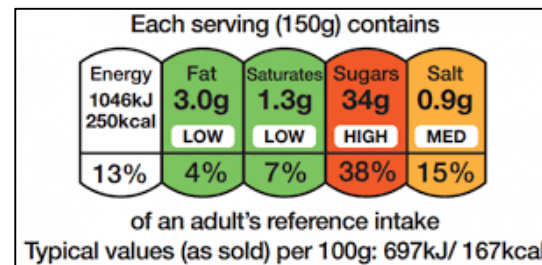
Kcal (calories) - 2000

Total Fat -70g

Saturated fat - 20g

Sugar - 90g

Salt - less that 6g



Red means HIGH in that nutrient
Amber means MEDIUM in that nutrient
Green means LOW in that nutrient

Reference intakes are not meant to be targets. They just give you a rough idea of how much energy you should be eating each day, and how much fat, sugar, salt and so on.

The percentages represent how much of your reference intake is in the product, e.g. the product has 3.0g of FAT in it, that is 4% of 70g of fat.



Year 9 Knowledge organiser: Explore India



Topics covered

- ✓ India facts/what we know
- ✓ India physical geography
- ✓ India human geography
- ✓ Climate and Monsoon
- ✓ Tourism in India
- ✓ India's changing population
- ✓ Development within India
- ✓ Welcome to Dharavi
- ✓ India and its environment
- ✓ Future India
- ✓ India Report

Key Ideas:

1. I can describe the location of India and its unique character.
2. I can describe the physical landscape variety of India
3. I describe how cities of India have grown and their impacts
4. I can explain how development is changing India and its environment

Skills

- To research amazing facts using ICT
- To use mapping to investigate features
- To understand different cultures and ways of living
- To draw/label line graphs
- To write an extended written account
- To use ICT to research information

Places and Environments

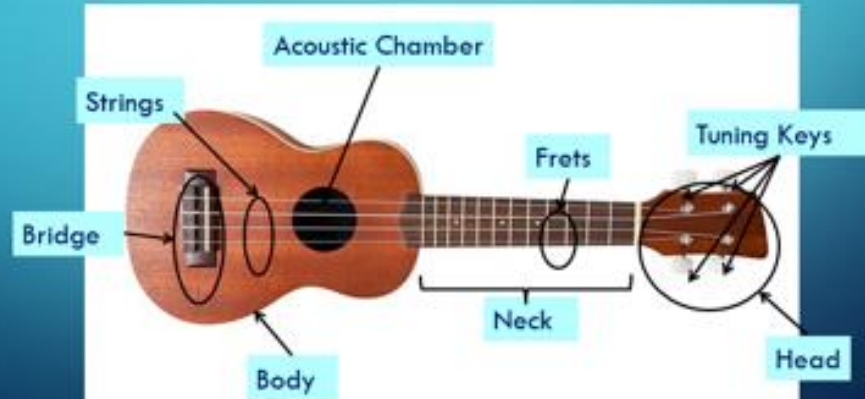
- ❖ Ganges River
- ❖ Kashmir
- ❖ New Delhi
- ❖ Mumbai
- ❖ Goa
- ❖ Ghats
- ❖ Brahmaputra
- ❖ Kerala
- ❖ Thar Desert

Key Terms Used in this Unit

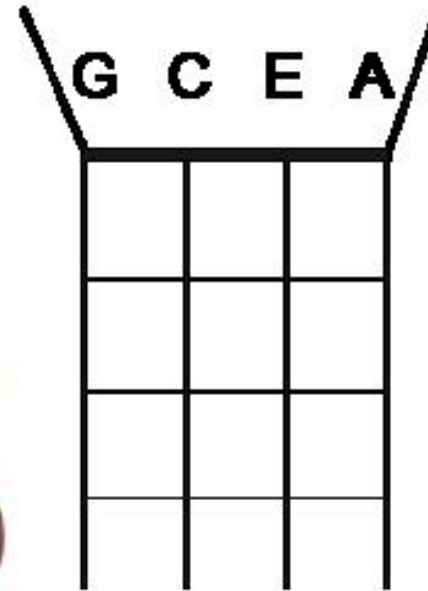
- States
- Colonialism
- Monsoon
- Hinduism
- Independence
- Bollywood
- Population
- Investment
- Aid
- Slums
- Disputes
- Resources
- Poverty
- Pollution
- Economic growth
- Standard of Living
- Exports
- Technology
- Space Race

Year 9 Music Knowledge Organiser

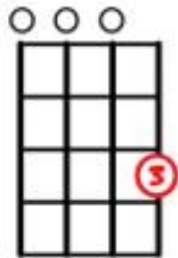
THE UKULELE



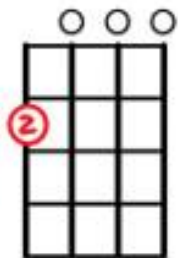
Ukulele Tuning



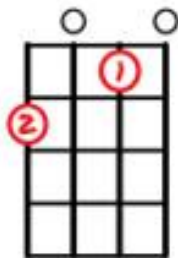
C



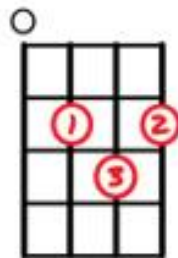
Am

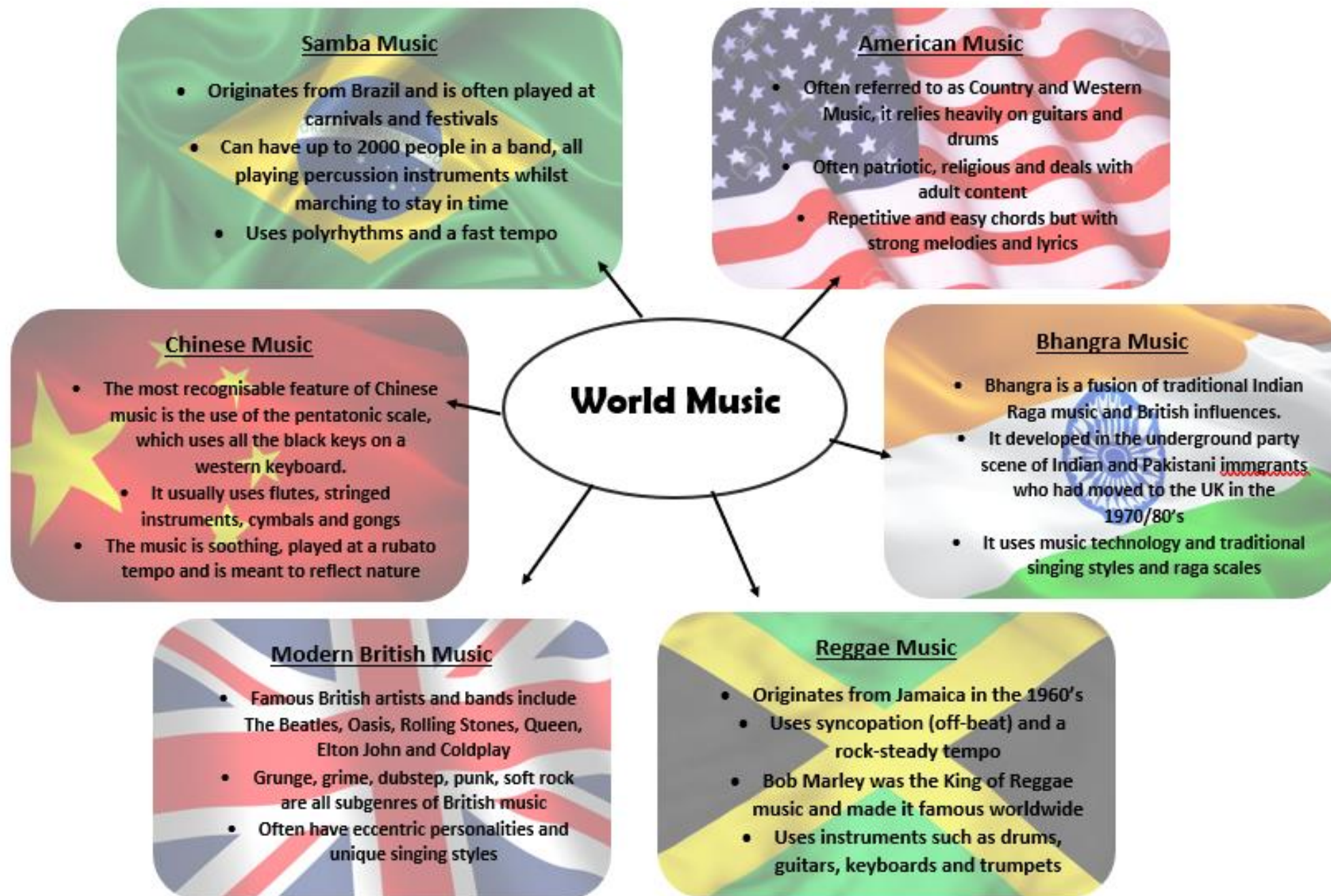


F



G





Songwriting

- 1) Decide on the structure on your song using introductions, verses, choruses and bridges
- 2) Choose your chord progression for each section
- 3) Add a single melody line to each section using improvisation before settling on a repeating pattern that can be altered slightly in pitch or reversed to add contrast and interest
- 4) Add harmony using appropriate intervals
- 5) Add lyrics
- 6) Finally, choose which instruments to use in your arrangement

Common Chord Progressions

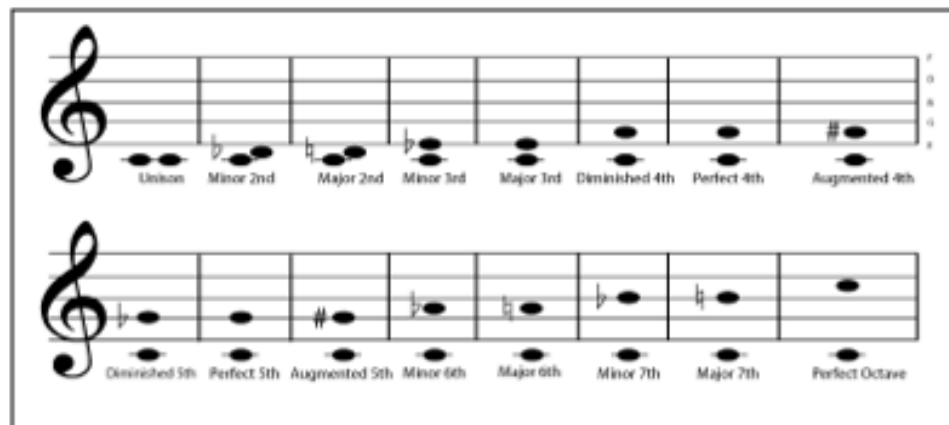
Major Keys: C, D, F, G & A

I IV V	I vi IV V	ii V I
C F G	C Am F G	Dm7 G7 Cmaj7
D G A	D Bm G A	Em7 A7 Dmaj7
F Bb C	F Dm Bb C	Gm7 C7 Fmaj7
G C D	G Em C D	Am7 D7 Gmaj7
A D E	A F#m D E	Bm7 E7 Amaj7

I vi ii V	I V vi IV	I IV vi V
C Am Dm G	C G Am F	C F Am G
D Bm Em A	D A Bm G	D G Bm A
F Dm Gm C	F C Dm Bb	F Bb Dm C
G Em Am D	G D Em C	G C Em D
A F#m Bm E	A E F#m D	A D F#m E

I iii IV V	I IV I V	I IV ii V
C Em F G	C F C G	C F Dm G
D F#m G A	D G D A	D G Em A
F Am Bb C	F Bb F C	F Bb Gm C
G Bm C D	G C G D	G C Am D
A C#m D E	A D A E	A D Bm E

www.piano-keyboard-guide.com



Components of Physical Fitness

Aerobic Endurance – The ability of the cardiorespiratory system to work efficiently, supplying nutrients and oxygen to working muscles during sustained physical activity.

Muscular Endurance – The ability of the muscular system to work efficiently, where a muscle can continue contracting continuously against a light to moderate fixed resistance load.

Speed – The ability to cover a distance quickly. There are 3 types of speed (Accelerative speed, Pure speed and Speed Endurance. This is calculated by Distance travelled divided by the time taken.

Muscular Strength – The maximum force, measured in kilograms (Kg) or Newtons (N) that can be generated by a muscle or group of muscles.

Flexibility – The adequate range of motion in all joints of the body and the ability to move a joint fluidly through its complete range of movement.

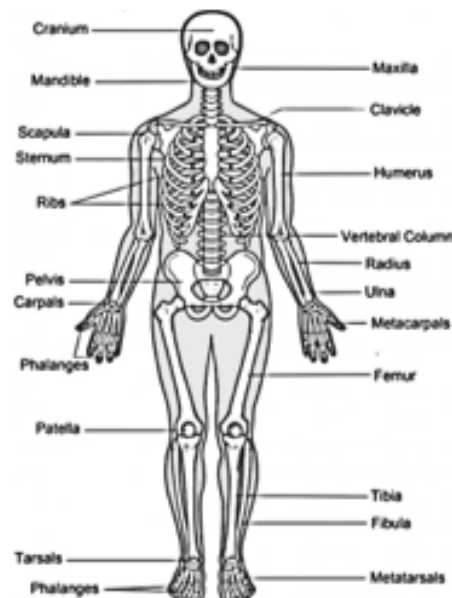
Body Composition – The ratio of fat to fat-free muscle mass. Sporting success is a combination of body composition and athletic ability.

<https://www.youtube.com/watch?v=KycE8YJeaEI>

Structure of the Muscular system



Structure of the Skeletal system



Components of Skill-related Fitness

Agility – The ability of a sports performer to quickly and precisely move or change direction without losing balance or time

Balance – The ability to maintain your centre of mass over a base of support. There are two forms of balance (static which is maintaining balance in a stationary position and Dynamic which is maintaining balance while in motion)

Co-ordination – The ability of the body to work together to move smoothly and accurately

Power – The ability to use strength and speed. It is the work done in a unit of time and is calculated in the following way $\text{Power} = \frac{\text{Force (Kg)} \times \text{Distance (m)}}{\text{time (mins or seconds)}}$

Reaction time – The time taken for a sports performer to respond to a stimulus, for example, the time taken for a sprinter to react to the starter gun.

<https://www.youtube.com/watch?v=nJleyUBesi8>

DID YOU KNOW...?

The recommended safe heart rate for an individual during exercise is called your **Maximum Heart Rate (HR max)**. To estimate your HR max you need the following formula: **MAXIMUM HEART RATE = 220 – Your AGE**. For example, if you are 20 Years old your HR max would be $220 - 20 = 200$ beats per minute (bpm)

It is important to understand that different sports and sports performers require different aspects of fitness. Many sports need the same types of physical and skill related fitness, however some a unique and require specific components.



Dina Asher-Smith is a British and World Champion sprinter. She needs to have **speed, power and reaction time** to cover as much distance as possible, respond to the starter's pistol and move powerfully out of the blocks to get a good start. It is also important for sprinters to have excellent **muscular strength and**

muscular endurance

Harry Kane will require similar components of fitness in order to be successful. **Speed and agility** will be essential to move quickly into position avoid defenders when he has possession of the ball. He will also need a very high-level of **aerobic endurance and muscular endurance**.



Can you think of other sports performers who would require different components of fitness?

Warming up and cooling down

Components of a warm up:

- Pulse raiser
- Stretches
- Skill related

5 reasons why we must warm-up

- 1.) Increases the temperature of the muscles, tendons and ligaments, which reduces the chances of injury.
- 2.) Increases heart rate and body temperature safely, which reduces chances of injury.
- 3.) Increases flexibility, which aids flexibility.
- 4.) Mentally prepares you for exercise, which can help improve performance.
- 5.) Increases oxygen delivery to the working muscles, which supports performance

6 reasons why we must cool down

- 1.) Gradually returns body temperature, breathing and heart rate back to their resting rate.
- 2.) To mentally unwind.
- 3.) To remove lactic acid, helping to prevent DOMS (Delayed Onset Muscle Soreness)
- 4.) To remove carbon dioxide and waste products.
- 5.) Improves flexibility.
- 6.) Avoids blood from gathering in muscles (pooling), which can cause dizziness

<https://www.nhs.uk/live-well/exercise/how-to-warm-up-before-exercising/>

<https://www.nhs.uk/live-well/exercise/how-to-stretch-after-exercising/>

Some key terminologies to learn and remember

Aerobic Endurance	Muscular Endurance	Muscular Strength	Speed	Flexibility	Body Composition
Pulse Raiser	Stretches	Skill related	Gastrocnemius	Hamstring	Quadriceps
Gluteus Maximus	Pectorals	Biceps	Triceps	Pectorals	Oblique
Tibia	Fibula	Humerus	Femur	Radius	Ulna
Scapula	Clavicle	Vertebral Column	Cranium	Ribs	Sternum
Agility	Power	Balance	Co-ordination	Reaction Time	Maximum Heart Rate

<div><div>Principles of training</div><div><div><div>F</div><div>Frequency – How often you train</div></div><div><div>I</div><div>Intensity – How hard you train</div></div><div><div>T</div><div>Time – How long you train</div></div><div><div>T</div><div>Type – How specific your training should be</div></div></div><div><div>Think back to a sport you have played and consider the training you would need to complete in order to perform to your best. The FITT principle ensures you are working at a level that will challenge you. If you are not working hard enough, your body will not adapt and your fitness will not improve.</div></div></div>	<div><div>An example of the FITT principle in action....</div><div><div>Katarina Johnson-Thompson is a Team GB athlete and competes in the Heptathlon. Katarina has begun circuit training to improve her fitness to be able to compete in her seven different events. After 2 weeks, she feels her sessions should last longer. Which principle is this focusing on?</div><div>After one month, Katarina increases the number of sessions she takes part in. The amount of sessions over a period of time is known as what?</div><div>Katarina is now benefiting from her circuit training but is now looking to add more variation to her sessions. Which principle would she be using if she wanted to change the training programme?</div><div>One year before the next Olympic games, Katarina needs to step up her training programme. Name the component of the FITT principle she would use to increase the difficulty of the training.</div></div></div>	<div><div>Exercise intensity: The Borg scale (RPE – Rating of Perceived Exertion)</div><div><table><tr><th>RPE</th><th>Intensity</th></tr><tr><td>6</td><td>No exertion</td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td></td></tr><tr><td>9</td><td></td></tr><tr><td>10</td><td></td></tr><tr><td>11</td><td>Light exertion</td></tr><tr><td>12</td><td></td></tr><tr><td>13</td><td>Somewhat hard</td></tr><tr><td>14</td><td></td></tr><tr><td>15</td><td>Hard (Heavy)</td></tr><tr><td>16</td><td></td></tr><tr><td>17</td><td>Very Hard</td></tr><tr><td>18</td><td></td></tr><tr><td>19</td><td></td></tr><tr><td>20</td><td>Maximal Exertion</td></tr></table></div><div><div>This scale measures how hard performers think they are working. It can also be used to measure Heart Rate and training zones.</div><div><div>(RPE x 10 = Heart Rate)</div></div></div></div>	RPE	Intensity	6	No exertion	7		8		9		10		11	Light exertion	12		13	Somewhat hard	14		15	Hard (Heavy)	16		17	Very Hard	18		19		20	Maximal Exertion
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<p>Additional Principles of training</p> <div> <div>S</div> Specificity </div> <div> <div>P</div> Progressive Overload </div> <div> <div>A</div> Adaptability </div> <div> <div>R</div> Reversibility </div> <div> <div>V</div> Variation </div> <div> <div>I</div> Individual Needs </div> <div> <div>R&R</div> Rest and Recovery </div>
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<p>Methods of training</p> <p>Circuit training – This involves a number of different activities that can be sport-specific or tailored to help improve certain levels of fitness.</p> <p>Continuous training – This is training at a steady pace, moderate intensity to develop aerobic endurance. At least 30 minutes of steady running is an example of continuous training.</p> <p>Fartlek training – This is a form of continuous training but the intensity is changed by running at different speeds over different terrains.</p> <p>Interval training – This method requires periods of exercise followed by rest and recovery periods.</p> <p>Plyometric training – This training develops sport-specific explosive power and strength.</p> <p>Flexibility training – The method to develop flexibility at a joint. This is conducted using stretching. The three stretching categories are Static, Ballistic and Proprioceptive Neuromuscular Facilitation (PNF)</p> <p>Speed training – Speed training can take many forms and can be sport specific. The three types of sprints are Acceleration, Interval and Hollow sprints.</p> <p>Weight training – Weight training is a form of interval training and involves using reps and sets of reps.</p>	<p>Things to consider</p> <p>Think about the methods of training and consider which sporting activities would require each method. Consider, football, badminton, rugby, netball, gymnastics and athletics. When would you require each method of training?</p> <p>Now consider the principles of training. Can you explain how one of the methods of training could use the FITT or additional principles of training?</p>
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Your turn

Attempt to answer the following questions to help you understand.

- 1. Why is variation important in training for a sporting activity?
- 2. Give three examples of the circuit training sessions you could include to improve your muscular endurance
- 3. Which type of Olympic athlete is most likely to use continuous training?
- 4. Why would a 100m sprinter feel like they are at maximal exertion on the RPE scale?
- 5. Can you name 2 advantages and disadvantages of interval training?
- 6. What method of training would be best suited to a footballer and why?
- 7. Give an example of how a weight lifter could increase the intensity of their training.
- 8. How long would you need to exercise for to be taking part in continuous training?
- 9. Can you find at least one difference between hollow and acceleration sprints?
- 10. You are planning to train for a 10k fun run. Plan a training programme which includes methods of training and the FITT principle.

BEGINNER PUSH-UP CHALLENGE

Day 1: 5	Day 16: 20
Day 2: 5	Day 17: 20
Day 3: 6	Day 18: 20
Day 4: 6	Day 19: 25
Day 5: 7	Day 20: 25
Day 6: 7	Day 21: 30
Day 7: 10	Day 22: Rest
Day 8: 10	Day 23: 30
Day 9: 10	Day 24: 35
Day 10: 15	Day 25: 35
Day 11: 15	Day 26: 40
Day 12: 15	Day 27: 40
Day 13: Rest	Day 28: 45
Day 14: 18	Day 29: 45
Day 15: 18	Day 30: 50



Can you challenge yourself to complete the beginner’s push-up challenge?

Simply complete the number of push-ups for each day, until you complete the challenge.

What did you feel when completing the challenge?

How has your muscular strength improved?

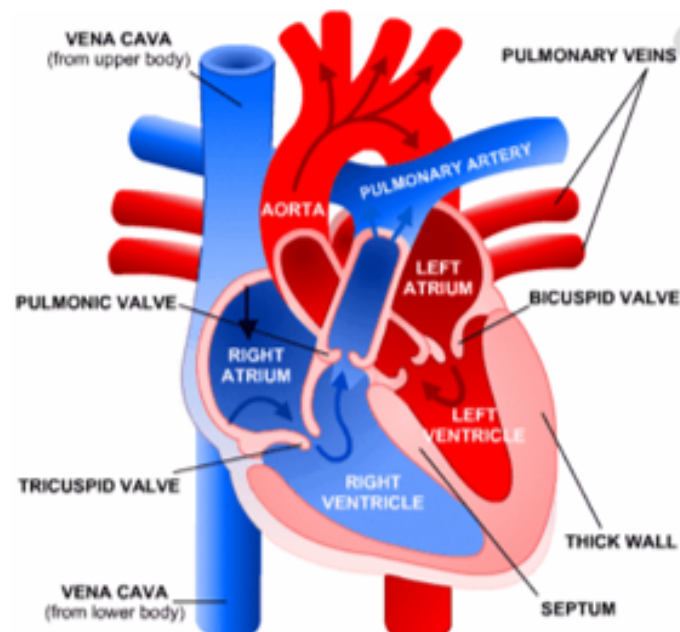
Some key terminologies to learn and remember

Frequency	Intensity	Time	Type	Continuous training	Interval training
Speed training	Fartlek training	Weight training	Circuit training	Plyometric training	Specificity
Progressive Overload	Adaptation	Individual needs	Rest and Recovery	Reversibility	Variation

Extension activities

- Consider joining a club or team with in the Open Academy.
- Join a club or team outside of the Open Academy and tell your teacher of your experiences.
- Watch online clips of sporting skills and games for the sports you take part in at the Open Academy.
- Create posters or informational material to promote your favourite sport and fitness activities.

The Cardiovascular System



Functions of the Cardiovascular System

There are 4 main functions of this system. Circulation and transport, protection, clotting and temperature regulation. Complete the paragraph below and add the missing terminology.

Circulates Transports Oxygen Protecting Platelets 37°C Infections

The blood and carbon dioxide away from the vital organs and muscles. Red blood cells transport to the vital organs and muscles. The blood helps to maintain the body's temperature to a constant

White blood cells are essential in the body and keeping it healthy. White blood cells helps fight by producing antibodies that destroy harmful microorganisms in the body.

Finally, the cardiovascular system can help prevent the body from losing blood during an injury. Specialised blood cells, called form a clot and seal the damaged area.

The blood is made up of Red Blood Cells, White Blood Cells, Platelets and Plasma

<https://www.nhsinform.scot/illnesses-and-conditions/heart-and-blood-vessels/about-the-heart/understanding-how-your-heart-functions>

<https://www.bbc.co.uk/bitesize/guides/z9n6sg8/revision/1>

30-DAY PLANK CHALLENGE

Day 1: 20 sec	Day 16: 2 min
Day 2: 20 sec	Day 17: 2 min
Day 3: 30 sec	Day 18: 2.5 min
Day 4: 30 sec	Day 19: Rest
Day 5: 40 sec	Day 20: 2.5 min
Day 6: Rest	Day 21: 2.5 min
Day 7: 45 sec	Day 22: 3 min
Day 8: 45 sec	Day 23: 3 min
Day 9: 1 min	Day 24: 3.5 min
Day 10: 1 min	Day 25: 3.5 min
Day 11: 1 min	Day 26: Rest
Day 12: 1.5 min	Day 27: 4 min
Day 13: Rest	Day 28: 4 min
Day 14: 1.5 min	Day 29: 4.5 min
Day 15: 1.5 min	Day 30: 5 min



30-DAY CRUNCH CHALLENGE

Day 1: 25	Day 16: Rest
Day 2: 30	Day 17: 100
Day 3: 35	Day 18: 105
Day 4: Rest	Day 19: 110
Day 5: 40	Day 20: Rest
Day 6: 45	Day 21: 115
Day 7: 50	Day 22: 120
Day 8: Rest	Day 23: 125
Day 9: 60	Day 24: Rest
Day 10: 65	Day 25: 130
Day 11: 70	Day 26: 135
Day 12: Rest	Day 27: 140
Day 13: 80	Day 28: Rest
Day 14: 90	Day 29: 145
Day 15: 95	Day 30: 150



Extension activities

Find a diagram of the cardiovascular system which shows how blood is moved around the body.

Complete the two 30 day challenges

When playing sport for either an Open Academy team or a team outside of the academy, record your performance and provide a summary of your strengths and areas for development.

Research the BTEC Sport First Award as a potential option to take in Year 10. Please speak to a member of the PE department if you require any advice or information.

Aim to exercise for at least 30 minutes per day to ensure you help keep your body healthy. This should be in the form of moderate exercise (cycling, walking, jogging or swimming for example)