Year 9

Booklet 2 Knowledge Organiser 2022/2023

Independent Study

Name & LF:

Hans Price Academy

Cabot Learning Federation

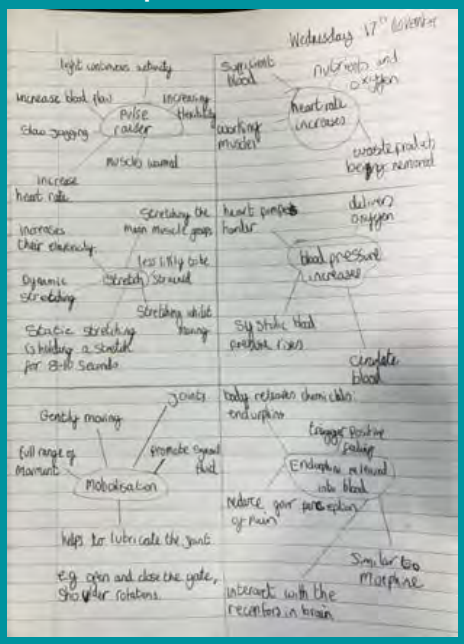
How to do your independent study

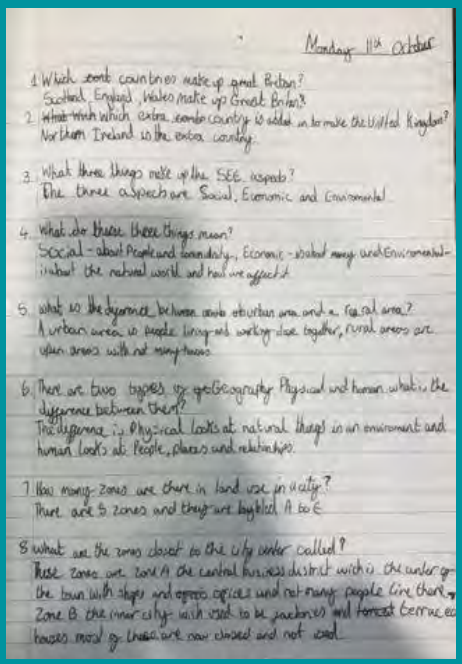
For all subjects except Maths, Knowledge Organisers are used for IS tasks. You will have five pieces of I.S due every week, which will be checked by your teacher of the subject due. You can attend IS club at 3pm in the Art Barn to get your IS done or complete it at home.

1. Check the IS schedule for the week so that you can see which Knowledge Organisers you need to be learning and what the deadline date is.
2. Carefully study the sections of the Knowledge Organiser that you are learning.
3. Write between 10 and 20 self-quizzing questions, a detailed mind-map or flash card style notes using the whole page.
4. Write your IS in your IS book. Put the deadline date at the top of the page, so that you can clearly see when the work will be checked.
5. On the next page there's some guidance on how to revise using your Knowledge Organisers.

Contents:

Examples of Good IS:



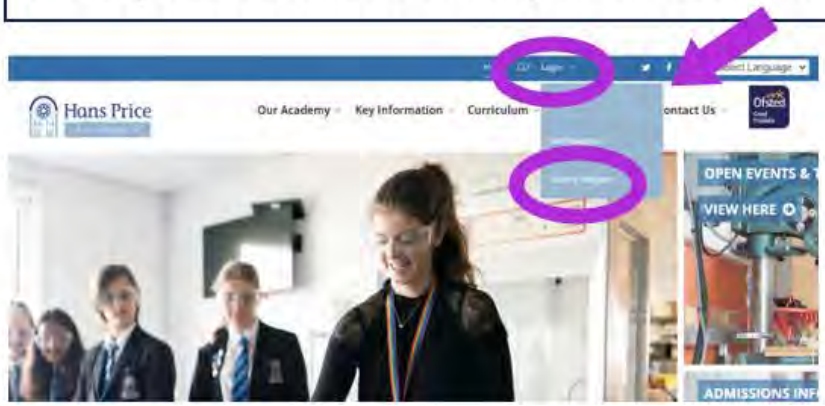


Using SIMS

Each week, further instructions to help you complete your IS will be set in SIMS.

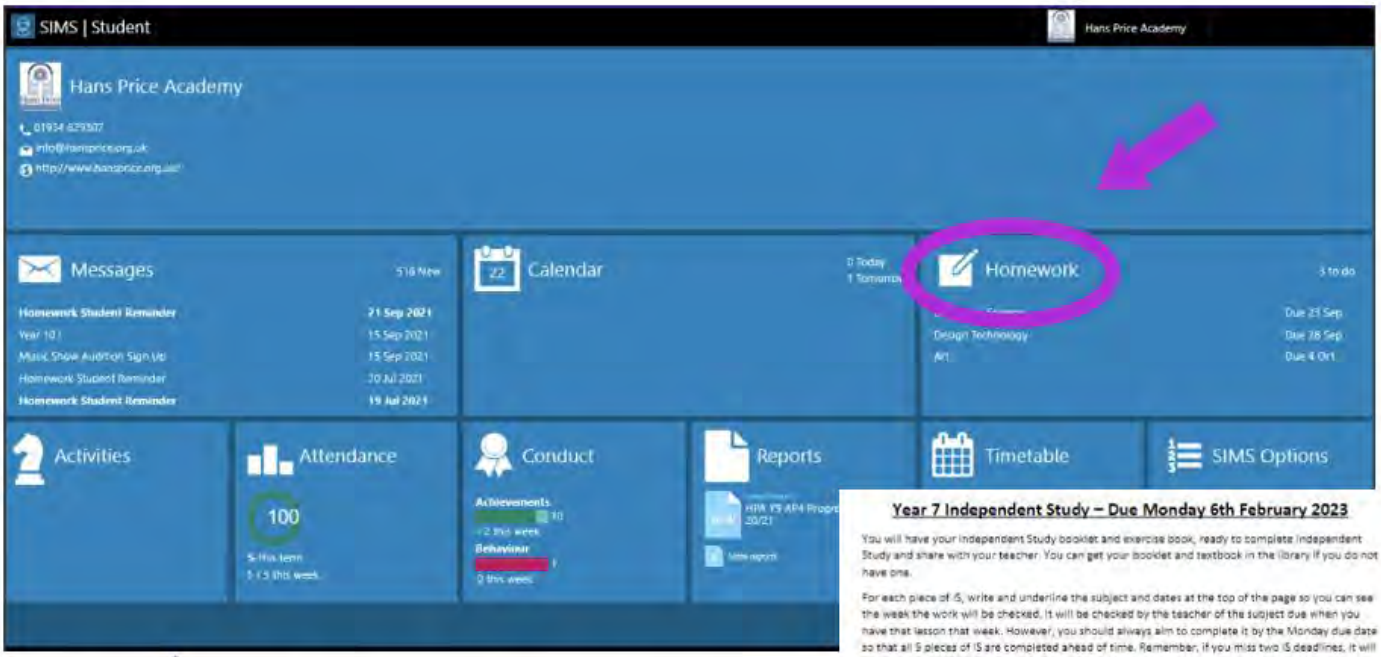
All five pieces of IS for the following week are summarised on one pdf. Further instructions from your subject teachers may be added separately.

You can log into SIMS by downloading the app to your phone or through the tiles on the CLF Navigator in school or at home.



Top Tip:

Always click on the Microsoft icon to log into SIMS.



If you cannot access SIMS for any reason you can still find the IS in your school emails.

Top Tip:

For support using SIMS check the guides on the HPA website or email simsstudentapp@hpa.clf.uk

Year 7 Independent Study – Due Monday 6th February 2023

You will have your Independent Study booklet and exercise book, ready to complete Independent Study and share with your teacher. You can get your booklet and textbook in the library if you do not have one.

For each piece of IS, write and underline the subject and dates at the top of the page so you can see the week the work will be checked. It will be checked by the teacher of the subject due when you have that lesson that week. However, you should always aim to complete it by the Monday due date so that all 5 pieces of IS are completed ahead of time. Remember, if you miss two IS deadlines, it will result in catch up at 3pm on the following Monday.

Please see the 5 pieces of IS which you need to complete in the table below:

Subject	Independent Study to be completed
Maths	This will be set on SIMS by your class teacher, to be completed on SPARKS.
English	Week 15 Vocabulary You will be set 5 words in lesson at the beginning of the week which you will learn based on vocabulary you have covered this term or vocabulary you will be covering next term.
Science	Produce 8 self-quizzing questions and answers. From boxes 5-8 from the Reproduction knowledge organiser. Three of these questions should be state questions, 3 describe questions, 3 explain questions. Please answer these in your IS books and bring them to all your lessons this week. If your teacher has told you to do different boxes, please use these instead. Extra help State: Recall one or more pieces of information. e.g. State the temperature water boils at. Describe: Use words to express what a picture, graph or concept is showing. e.g. Describe how the particles move when a solid melts into a liquid. Explain: Provide the reasons why something happens. Use the word because in the answer. e.g. Explain why a solid has a fixed shape.
SPACE	1. Write 3 things you have learnt about during your Dreams and Goals topic this term. 2. Complete the Quizizz about Dreams and Goals using the code. Write
Geography	Complete the crossword puzzle using the clues and your knowledge organisers to help you. You should have your crossword stuck in your IS books from your last lesson. If not email your teacher.

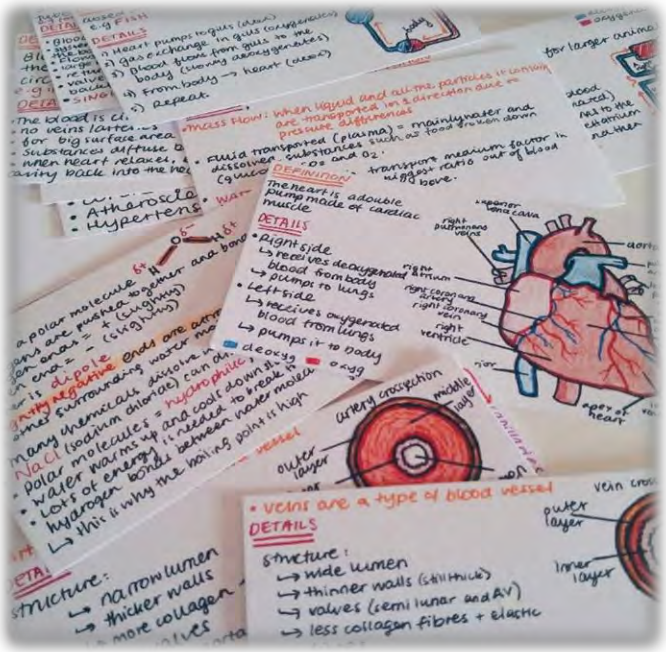
Revision Techniques

Flash Cards

Great for revising key terms and remembering definitions, dates, facts etc.

Split the page of your I.S textbook into four using a ruler or use flash cards which you can collect from the LRC and keep in your I.S folder.

Make brief notes on the information in the knowledge organiser, use colour coding and diagrams where you can to highlight key information.

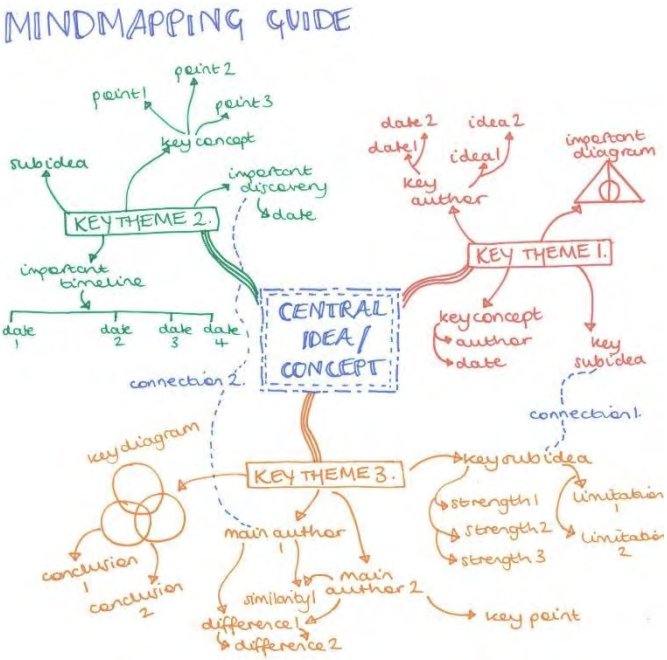


Mind Map

Great for revising if you are a visual learner, allowing you to select and link key information.

Use a full page to add as much detail as you can to your mind map, starting with a key concept or topic at the centre. Use the knowledge organisers and your own ideas.

You can use colour coding, diagrams and connections to support your learning.



Self-quizzing Questions

Here is a section of a Science Knowledge Organiser. You could test your grasp of this knowledge by asking yourself,

"What ions are found in acids? Acids contain hydrogen ions."

"What does corrosive mean? A corrosive acid can destroy skin cells and cause burns."

These are examples of self-quizzing questions. Write 10-20 self-quizzing questions and answers based on the subject knowledge organiser and focusing on the areas where you need to strengthen your knowledge.

2. Acids (pH 1-6)

- **Acids** are a family of chemicals, examples are lemon juice, vinegar and Coca Cola. There is also acid in our stomach.
- Acids contain Hydrogen (H^+) ions.
- **Strong acids** like hydrochloric acid are very corrosive this means they destroy skin cells and cause burns.
- **Weak acids** like vinegar are safe to eat but are still irritant to sensitive parts of the body.

How else can I use my Knowledge Organiser?

The Knowledge Organisers in this booklet will help you learn a wide range of knowledge to prepare you for your lessons as well as the multiple-choice tests at the end of this block of learning.
To get the most out of your Knowledge Organisers, you should be learning sections and then testing yourself. There will be set tasks each week based on the Knowledge Organisers, and there are some optional ideas below that you could try in addition to this if you wish.

Key vocabulary:

- Highlight key terms for a subject and look up the definitions
- Write a sentence using the key terms you have highlighted
- Practice spellings – cover, write and check to learn the correct spellings of key terms

Quizzes/questions:

- Write some self-quizzing questions based on the information read
- Test your friends and family on their knowledge of a subject
- Get your parents/carers to ask you some questions
- Create exam style questions and then swap with a friend

Reflection:

- Before a topic – rank order your confidence and then revisit at the end of the topic, rank again and consider where you have improved
- Add more detail to the Knowledge Organiser after you have been taught that topic
- Traffic light (red, amber, green) each box based on how confident you are

"Education is the passport to the future, for tomorrow belongs to those who prepare for it today. "

Malcolm X

"Success is no accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do. "

Pele

Revision:

- Create 2-3 flashcards each week based on each box
- Create a mind map showing the key information from the Knowledge Organiser
- Read ahead to develop skills, knowledge and understanding so you feel more confident before lessons

General use:

- 50 words, 30 words, 10 words – summarise the information on the Knowledge Organiser from 50 words to 30 words to 10 words
- Pictionary – learn the definitions then draw it for your friends/family to guess
- Elevator pitch – summarise the information in a box/whole Knowledge Organiser for a 30 second presentation
- Generation game – like the famous conveyor belt – look at the Knowledge Organiser and then try to remember as many items as possible
- Key term stories – write a short story using 6 key words that are found on the Knowledge Organiser
- Scavenger hunt – read through the Knowledge Organiser with a friend/family member and see who can find specific information/facts first
- Read, cover, check – read the box, write out what you can remember, check what you have missed (then add in purple pen)

"Sticking to good habits can be hard work, and mistakes are part of the process. Don't declare failure simply because you messed up or because you're having trouble reaching your goals. Instead, use your mistakes as opportunities to grow stronger and become better."

Amy Morin

Hans Price Maths Department

All Independent Study in the Maths department is set using the following online platforms

SPARX MATHS

You need to log in to your SPARX account, where there are 3 types of homework:

- **Compulsory**
- **XP Boost**
- **Target**

Every student needs to get **100%** of their compulsory homework completed every week. Students need to write out the bookwork codes of each of the questions in their homework book and complete the bookwork checks online.

XP boost and Target sections are additional resources that the students can complete if they wish. They will support the students to make greater progress in Maths, but do not form part of the compulsory Independent Study.

If students get stuck on any question, they should watch the associated video to help them complete the task.

We also subscribe to Times Tables Rock Stars. We encourage students to engage with this program to ensure their foundation of knowledge is solid. We will run College competitions and award prizes to those students with the most coins.

These homework platforms are designed to consolidate your knowledge, and students at KS3 can expect this to take up to 1 hour per week.

Hans Price

KS3 English I.S

Your task each week is to prove you understand the meaning of the 5 words. It is important that when you read a text in front of you, you are able to pick up the language when reading through the text.

Each week you can complete your I.S in two different ways:

<u>Option 1:</u>
Create two different sentences showing your understanding of the word. E.G.: hierarchy:

1. **Hierarchy is shown in A View From the Bridge through the character of Eddie.**
2. **In Romeo and Juliet, women were lower than men in hierarchy.**

N.B.: You can change the tense of your word to suit your sentences - you just need to make sure you are spelling it correctly and using the correct context. For example: absolve - absolving - absolved.

<u>Option 2:</u>
Create flashcards which display the words and their definitions written in your own words.

Due Date	Word	Definition
Week 1	Detract	Diminish the worth or value of (a quality or achievement).
	Exacerbate	Make (a problem, bad situation, or negative feeling) worse.
	Impartial	Treating all rivals or disputants equally.
	Isolate	Cause (a person or place) to be or remain alone or apart from others.
	Pacify	Quell the anger, agitation, or excitement of.
Week 2	Reconcile	Restore friendly relations between. settle (a quarrel).
	Tangible	Perceptible by touch. clear and definite; real.
	Appropriate	Suitable or proper in the circumstances.
	Devastate	Destroy or ruin. cause (someone) severe and overwhelming shock or grief.
	Explicit	Stated clearly and in detail, leaving no room for confusion or doubt.
Week 3	Implication	The conclusion that can be drawn from something although it is not explicitly stated.
	Lucrative	Producing a great deal of profit.
	Perspective	The art of representing three-dimensional objects on a two-dimensional surface so as to give the right impression of their height, width, depth, and position in relation to each other.
	Respective	Belonging or relating separately to each of two or more people or things.
	Traumatic	Deeply disturbing or distressing.
Week 4	Succumb	Fail to resist pressure, temptation, or some other negative force.
	attribute	Regard something as being caused by. ascribe a work or remark to (a particular author, artist, or speaker).
	Digress	Leave the main subject temporarily in speech or writing.
	falter	Lose strength or momentum. speak hesitantly. move unsteadily or hesitantly.
	Incoherent	(Of spoken or written language) expressed in an incomprehensible or confusing way; unclear.

Week 5	Ponder	Think about (something) carefully, especially before making a decision or reaching a conclusion.
	Sabotage	Deliberately destroy, damage, or obstruct (something), especially for political or military advantage.
	Valid	(Of an argument or point) having a sound basis in logic or fact; reasonable or cogent. legally binding due to having been executed in compliance with the law.
	Technique	A way of carrying out a particular task, especially the execution or performance of an artistic work or a scientific procedure.
	Feign	Pretend to be affected by (a feeling, state, or injury).
Week 6	Infamous	Well known for some bad quality or deed.
	Proponent	A person who advocates a theory, proposal, or course of action.
	Similar	Having a resemblance in appearance, character, or quantity, without being identical.
	Viable	Capable of working successfully; feasible.
	Mediate	Intervene in a dispute in order to bring about an agreement or reconciliation.
Week 7	Obscure	Not discovered or known about; uncertain. not important or well known. not clearly expressed or easily understood.
	Squander	Waste (something, especially money or time) in a reckless and foolish manner.
	Absolute	Not qualified or diminished in any way; total.
	Benevolence	The quality of being well meaning; kindness.
	Catastrophe	An event causing great and usually sudden damage or suffering; a disaster.
Week 8	Accessible	(Of a place) able to be reached or entered. able to be easily obtained or used.
	Ambidextrous	Able to use the right and left hands equally well.
	Circumstantial	Pointing indirectly towards someone's guilt but not conclusively proving it.
	Camaraderie	Mutual trust and friendship among people who spend a lot of time together.
	Deficient	Not having enough of a specified quality or ingredient.
Week 9	Acquaintance	Knowledge or experience of something. slight knowledge of or friendship with someone.
	Consequence	A result or effect, typically one that is unwelcome or unpleasant.
	Dysfunctional	Not operating normally or properly.
	Etiquette	The customary code of polite behaviour in society or among members of a particular profession or group.
	Espionage	The practice of spying or of using spies, typically by governments to obtain political and military information.

Week 10	Fatigue	Extreme tiredness resulting from mental or physical exertion or illness.
	Fluorescent	Vividly colourful.
	Irreconcilable	(of ideas or statements) so different from each other that they Cannot be made compatible.
	Mischievous	Causing or showing a fondness for causing trouble in a playful way.
	Nonsensical	Having no meaning; making no sense.
Week 11	Nostalgia	A sentimental longing or wistful affection for a period in the past.
	Omniscient	Knowing everything.
	Philosophical	Relating or devoted to the study of the fundamental nature of knowledge, reality, and existence.
	Resemblance	The state of resembling or being alike.
	Sequential	Forming or following in a logical order or sequence.
Week 12	Irresistible	Too attractive and tempting to be resisted.
	Nuisance	A person or thing causing inconvenience or annoyance.
	Nauseous	Affected with nausea; feeling inclined to vomit.
	Opaque	Not able to be seen through; not transparent.
	Phenomenon	A fact or situation that is observed to exist or happen, especially one whose cause or explanation is in question.
Week 13	Transformation	A marked change in form, nature, or appearance.
	Theoretical	Concerned with or involving the theory of a subject or area of study rather than its practical application.
	Unanimous	(Of two or more people) fully in agreement.
	Unique	Being the only one of its kind; unlike anything else.
	Zealot	A person who is fanatical and uncompromising in pursuit of their religious, political, or other ideals.

Week 14	Hamartia	A flaw which leads to the downfall of a hero/heroine.
	Fatal	Causing death.
	Permeate	Spread throughout something.
	Insidious	Proceeding in a subtle way but with harmful effects.
	Plethora	A lot of something

Week 15	1. 2. 3. 4. 5.	
Week 16	1. 2. 3. 4. 5.	
Week 17	1. 2. 3. 4. 5.	
Week 18	1. 2. 3. 4. 5.	
Week 19	1. 2. 3. 4. 5.	

CB2 Cells and Control

1. Growth in Animals

Growth is an increase in the number or size of cells. It can be measured by an increase in mass and an increase in length.

At first, cells divide before differentiating to become specialised. Specific structures help specialised (differentiated) cells carry out a particular function.

2. Growth in Plants

Groups of cells at the end of each shoot and root allow a plant to continue to grow. These groups of cells are called meristems. These cells divide by mitosis before increasing in length (elongating) and finally differentiating into specialised plant cells.

Palisade cells are located in the leaf of a plant. They contain a lot of chloroplasts for photosynthesis.

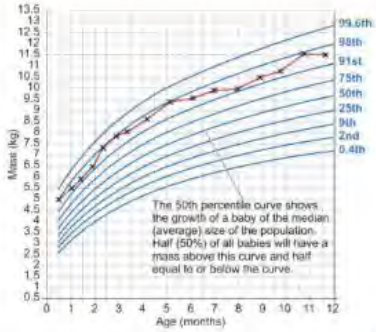
Root hair cells do not contain any chloroplasts. Instead, they have a large surface area to increase the uptake of water and nutrients from the soil.

3. Percentile Charts

Percentile charts can be used to monitor growth.

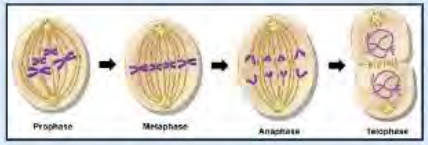
The 50th percentile is the average growth of the population at that age.

The red line shows how the mass of one baby changes with age (in months old).



4. Mitosis

Mitosis is part of the cell cycle and has 5 stages: prophase, metaphase, anaphase, telophase and cytokinesis. Interphase occurs before mitosis as part of the cell cycle.



Interphase – DNA replication makes copies of chromosomes
Prophase – nucleus breaks down and spindle fibres form
Metaphase – chromosomes line up at the equator (middle) of the spindle fibres
Anaphase – chromosome copies are pulled apart to opposite poles (ends) of the cell
Telophase – a new nuclear membrane forms around each set of chromosomes
Cytokinesis – cell membrane forms to separate the cells

Some organisms can reproduce using one parent. This is known as asexual reproduction where the offspring are clones (genetically identical) of the parent. Asexual reproduction is faster but does not result in variation.

Uncontrolled cell division and growth results in the formation of tumours. This is how cancer develops.

5. Stem Cells

Stem cells divide repeatedly before differentiating.
Embryonic stem cells – differentiate into any specialised cell
Adult stem cells – produce cells similar to those around them

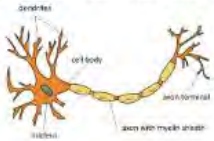
Stem cells are being used to treat a wide range of disease. However, when injected they are often 'rejected' or divide and cause cancer.

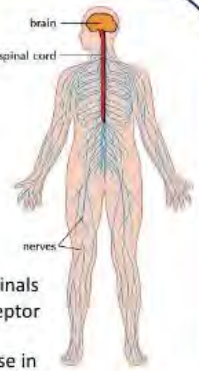
6. Asexual Reproduction

Some organisms can reproduce using one parent. This is known as asexual reproduction where the offspring are clones (genetically identical) of the parent. Asexual reproduction is faster but does not result in variation.

7. Nerves and Nervous System

The Central Nervous System (CNS) is made up of the brain and spinal cord.

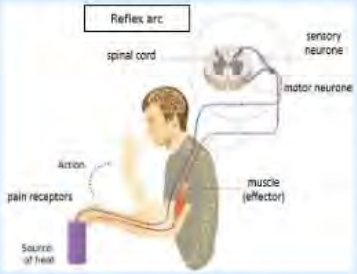


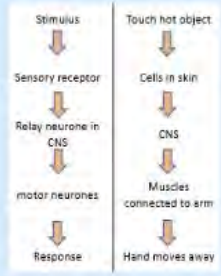


Axon – carries electrical impulse to axon terminals
Dendron – carries electrical impulse from receptor cells in sensory neurones
Myelin sheath – insulates the electrical impulse in the neutrons

8. Reflex Arc

Reflexes are automatic and rapid. They do not involve the conscious part of the brain and can protect humans from harm.





9. Synapses

The gap between two neurones (nerve cells) is called a synapse.

When an impulse (electrical signal) reaches the end of a neurone, a chemical neurotransmitter is released.

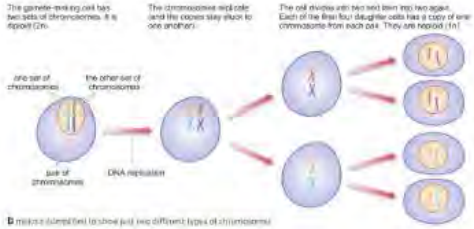
It diffuses across the gap (synapse) and is detected by the next neurone which then triggers another impulse.

Synapses slow down neurotransmission but do ensure impulses only flow in one direction.

CB3 Genetics

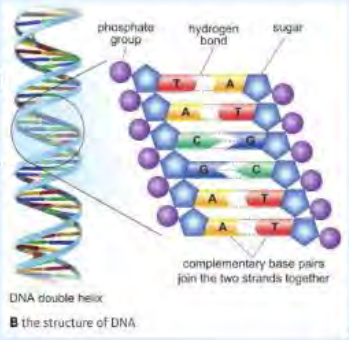
1. Meiosis

There are two types of cell division called mitosis and meiosis . Mitosis produces **2** genetically identical, diploid body cells for growth and repair. **Meiosis produces 4 haploid, genetically unidentical sex cells (gametes)**. These fuse to form a diploid zygote after fertilisation.



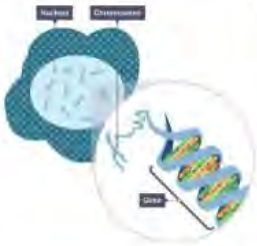
2. Structure of DNA Double helix

There are four bases in DNA: Adenine (A), Thymine (T), Cytosine (C) and Guanine (G).
The image shows how the complementary base pairings (A with T and G with C). Each base pair is held together with weak hydrogen bonds.



B the structure of DNA

3. DNA code



Chromosomes
The cell's **nucleus** contains **chromosomes**. These are long threads of DNA, which are made up of many **genes**.

Genes
A gene is a small section of DNA. Each gene codes for a particular sequence of amino acids which produces a specific protein. Genes are inherited down different generations.

4. Extracting DNA

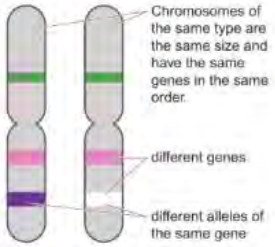
Aim: Describe how to extract DNA from a fruit.
Method
1.Peel the skin from half a kiwi fruit and mash it up.
2.Mix a teaspoon of salt and small volume of washing up liquid and pineapple juice into the fruit.
3.Gently heat this mixture at about 60°C for five minutes.
4.Filter the mixture and retain only the filtrate (the filtered liquid).
5.Cool using an ice bath and gently pour chilled ethanol onto the top of the filtrate.

Why use...
Salt: Breaks the cell wall
washing up liquid Remove cell/nuclear membrane
Pineapple juice Enzymes to break apart proteins
Chilled ethanol To precipitate the DNA so we can see it

5. Alleles

We have two copies of each chromosome. Each gene on each chromosome is called an allele. A certain allele can be the same (**homozygous**) or different (**heterozygous**).

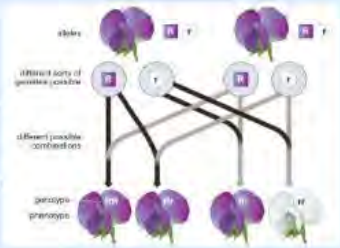
Each allele can also be dominant (this one will always be used) represented by a capital letter or recessive (will only be used if the other allele is also recessive) represented as a lower case letter.



B Each gene can exist in a number of different forms called alleles.

6. Haploid and diploid cells

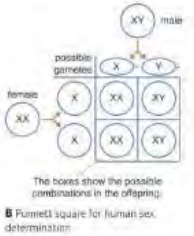
Gametes are **haploid**, only carrying one set of the chromosome. When the **gametes** are made in meiosis, only one of the alleles is used. When the sperm and the egg come together in fertilisation, a **diploid zygote** is produced (now with both alleles - one from the father and one from the mother).



7. Inheritance (sex determination)

A Punnett square shows the possible outcomes for the sex of a baby.

Male (body) cells have an XY chromosome (an X allele and a Y allele). Female (body) cells have an XX chromosome (two X alleles).



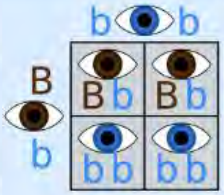
The boxes show the possible combinations in the offspring.

B Punnett square for human sex determination

The sperm then either has an X chromosome or a Y chromosome
The egg cell can only have an X chromosome.
The completed punnett square shows that there are 2 possible outcomes: XX (girl) or XY (boy). So 50% chance of a baby being male or female.

8. Inheritance (characteristics)

A Punnett square can also be used to look at characteristics of a baby.



In this example the father has blue eyes
Phenotype (what it looks like: Blue)
Genotype (the alleles that code for it: bb)
The mother has brown eyes
Phenotype (brown) **genotype** (Bb).
As the mother's genotype is Bb we call this **heterozygous**. The fathers genotype bb is **homozygous recessive**.
If the dominant (B) allele is used, then the baby will have brown eyes
If both recessive (b) allele is used, then the baby will have blue eyes.

9. Variation

Some of the variation between individuals of the same species is the result of variation in their genes. **Genetic variation** is caused by the different alleles inherited during sexual reproduction. Different alleles are produced by mutations, some of which cause changes in the phenotype. However, many characteristics also show **environmental variation**, because they are affected by their surroundings. For example, how well a plant grows is affected by how much light, water and nutrients it gets.

CC5-6 Ionic and covalent Bonding

Hans Price

Hans Price

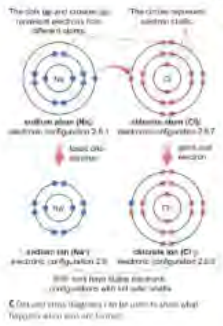
1. Ionic bonds

Atoms are more stable if they have an outer electron shell that is full. This can happen by atoms losing or gaining electron(s). When this happens the atoms form an ion.

Metal atoms **lose electrons, forming positive ions**.

Non metal atoms **gain electrons, forming negative ions**.

There are forces of attraction between positive and negative objects. These are called electrostatic forces and these are what hold ionic substances together.



2. Ionic lattices

These strong ionic bonds allow 'billions' of ions to be packed together in a regular repeating arrangement called a lattice structure.

3. Forming ionic compounds

Ionic compounds are electrically neutral. The formula of an ionic compound contains the same number of positive and negative charges. To work out the ionic formulae we need to balance the positive ions and the negative ions.

Positive ion	Ion formula	Negative ion	Ion formula
sodium	Na^+	fluoride	F^-
lithium	Li^+	chloride	Cl^-
potassium	K^+	bromide	Br^-
magnesium	Mg^{2+}	oxide	O^{2-}
calcium	Ca^{2+}	sulfide	S^{2-}
aluminium	Al^{3+}	phosphide	P^{3-}

Polyatomic ion name	Ion formula
ammonium	NH_4^+
nitrate	NO_3^-
hydroxide	OH^-
carbonate	CO_3^{2-}
sulfate	SO_4^{2-}
sulfite	SO_3^{2-}

Magnesium oxide contain Mg^{2+} and O^{2-} ions.
As there is the same number of positive charges to negative charges then they are balanced. Therefore, the formula is MgO.

Sodium sulfide contain Na^+ and S^{2-}.
Therefore two Na^+ ions are needed to balance the S^{2-}.
The formula is Na_2S

4. Properties of ionic compounds

High melting and boiling points

Most ionic substances are solid at room temperature. The electrostatic forces of attraction create strong bonds which need lots of energy to break.

Conducting electricity

Ionic substances do not conduct electricity when they are a solid. When they are a liquid (molten) or when they dissolve in water they do conduct electricity.

This is due to the delocalised electrons being free to carry a charge.

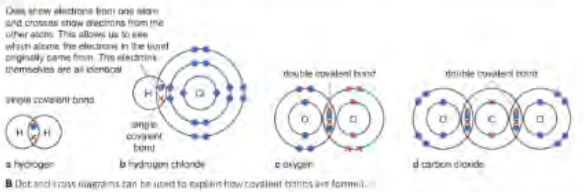
Ionic compound	Melting point (°C)	Boiling point (°C)
sodium bromide, NaBr	747	1390
sodium chloride, NaCl	801	1413
magnesium oxide, MgO	2852	3600

5. Covalent bonds

Molecular substances contain groups of atoms that are held together by strong bonds called **covalent bonds**. The number of atoms of each element bonded together in a simple **molecule** is shown by its **molecular formula.**

Covalent bonds are usually formed between non-metal atoms and are produced by sharing pairs of electrons. By forming the bond the atoms become more stable, because they can use the shared electrons to complete their **outer electron shells**. The reason why noble gases are so stable is because they have full outer electron shells.

The **dot and cross diagrams** in diagram B show how covalent bonds are formed. Counting the shared electrons, each atom now has a complete outer shell of electrons. Sometimes atoms share more than one pair of electrons to fill their outer shells. In oxygen and carbon dioxide the atoms share two pairs of electrons, to form **double bonds**.



B Dot and cross diagrams can be used to explain how covalent bonds are formed.

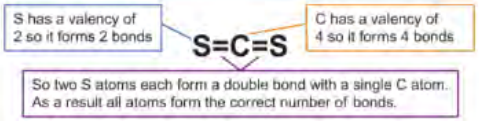
6. Working out molecular (covalent) formulae

Working out molecular formulae

The numbers of covalent bonds formed by atoms of different elements are shown in table D. This is called the **valency** of the element. It is the same as the number of electrons needed to obtain a complete outer shell.

Group number	Examples	Outer electrons	Bonds formed	Valency
4	C and Si	4	4	4
5	N and P	5	3	3
6	O and S	6	2	2
7	F and Cl	7	1	1

D valencies of some elements



E working out the formula of carbon sulfide

7. Properties of covalent compounds

Low melting and boiling points

Water is an example of a covalent compound. There are strong forces of attraction between the atoms. However, the intermolecular forces between the molecules are weak. These require little energy to break.

Do not conduct electricity

As there are no charged particles there is nothing to carry the electric current.

The electrons are shared between the atoms so are not delocalised (free to move) and cannot carry a charge.

CC7 Bonding models

1. Different models of a molecular substance

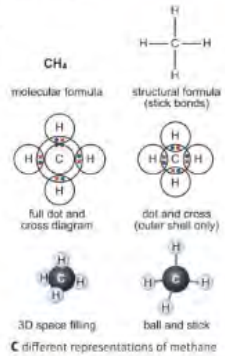
Molecular formula
Shows the number of each element. Dose not show the bonds

Structural formula
Shows how many bonds between each atom. Does not show electron sharing

Dot and cross diagram
Shows electron sharing

3D space filling
Shows relative size of each atom, does not show bonds

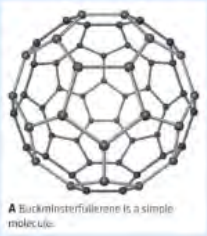
Ball and stick
Shows relative size of each atom and bonds



C different representations of methane

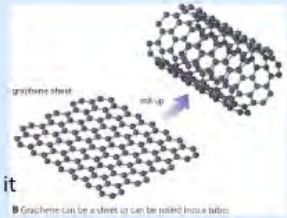
2. Allotropes of carbon

The element carbon can form a number of different molecules. Different forms of the same element are called allotropes. The structure and bonding will influence the properties and uses.

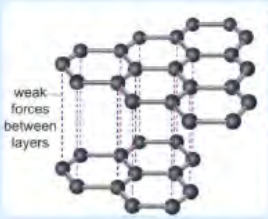

A Buckminsterfullerene is a simple molecule.

Fullerenes
- A simple molecule
- 3 bonds between each carbon
- Either as a tube (nanotubes) or buckminsterfullerene (C_{60}) bucky ball
- Low melting point

Graphene
- A giant covalent molecule
- 3 bonds between each carbon
- A sheet is one atom thick therefore the lightest known material.
- As it only has 3 covalent bonds it conducts electricity

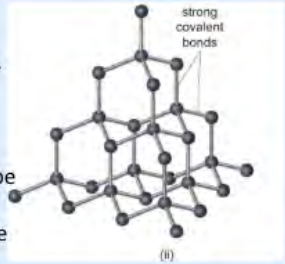


B Graphene can be a sheet or can be rolled into a tube.



Graphite
- A giant covalent molecule
- Layers of graphene stacked on to of each other.
- Weak forces between layers means it can be used as a carbon based lubricant 3 bonds between each carbon
- Like graphene it can conduct electricity

Dimond
- A giant covalent molecule
- Each carbon atom has 4 bonds. Means it has no free charged particles therefore cannot conduct electricity.
- The tetrahedral (pyramid) shape means it can be shaped to be very sharp and strong so can be used in cutting tools).



3. Summary of different types of bonds

Ionic
Where found: in most compounds containing metal and non-metal atoms.
Bonding: ionic bonds formed by the loss and gain of electrons to produce oppositely charged ions that attract one another.
Structure: billions of ions held together in a lattice structure.
Properties:
- high melting/boiling points
- many are soluble in water
- conduct electricity when liquid or in solution but do not when solid.

Simple molecular (covalent)
Where found: in most non-metal elements and compounds.
Bonding: covalent bonds formed when atoms share pairs of electrons.
Structure: small, distinct groups of atoms.
Properties:
- low melting/boiling points
- a few are soluble in water
- most do not conduct electricity.

Giant covalent
Where found: in a few non-metal elements and some compounds of non-metals.
Bonding: covalent bonds formed when atoms share pairs of electrons.
Structure: billions of atoms held together in a lattice structure.
Properties:
- high melting/boiling points
- insoluble in water
- most do not conduct electricity (except in carbon as graphite).

Metallic
Where found: in all metals.
Bonding: metallic bonds are the electrostatic attraction between positive metal ions and negative delocalised electrons.
Structure: billions of ions held together in a giant lattice structure of positive ions in a 'sea' of negative delocalised electrons.
Properties:
- high melting/boiling points
- insoluble in water
- conduct electricity when solid or liquid.

4. Properties of metals

Metallic structure and bonding
The atoms in a metallic element are all the same size and are packed closely together.

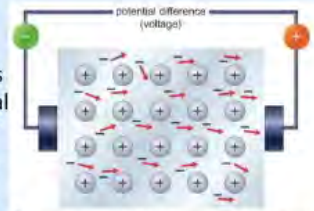
Metal atoms have 1,2,3, electrons on the outer shell. These outer shell electrons are lost from each atom and become free to move randomly throughout the metal. This gives a sea of delocalised electrons which move in random directions


B Metals consist of stacked layers of ions in a 'sea' of delocalised ('free') electrons.

C When hit or bent, the layers of ions in a metal can slide over each other

Metals are malleable
They can be hammered or rolled into shape without shattering. Layers slide over each other. The sea of electrons hold the ions together.

Metals are good conductors of electricity
They when a charge is passed though a metal this causes the sea of delocalised electrons to carry the electrical flow through the metal.



E When a voltage is applied to a piece of metal, an electrical current flows.

The electrical conductivity of the metals increase as the number of delocalised electrons increase. Each sodium ion has one positive charge. And contributes 1 electron to the 'sea' of delocalised electrons. As Magnesium loses two electrons it has a higher electrical conductivity than sodium.

CP3 CONSERVATION OF ENERGY

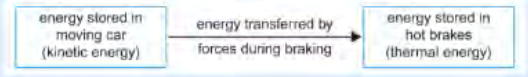
1. Energy stores

Energy is needed to make things happen or change. It is scalar quantity measured in Joules (J).

1. **Chemical (**food, fuel and batteries)
2. **Kinetic** (moving objects)
3. **Thermal** (hot objects)
4. **Elastic potential** (stretched, squashed or twisted objects)
5. **Gravitational potential** (objects in high positions)
6. **Nuclear** (inside atoms)

2. Energy efficiency

The law of conservation of energy states that energy cannot be created or destroyed. Sometimes energy is transferred to less useful stores such as the thermal energy. This energy is **dissipated.**



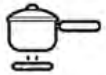
Sankey diagrams show the transfer of energy. This Sankey diagram shows the energy transfer in a kettle.

Efficiency = $\frac{\text{useful energy}}{\text{total energy}}$

3. Conduction

Energy can be transferred by conduction.

Conduction involves the transfer of energy in solids between neighbouring particles.



Metals are good thermal conductors and are said to have high thermal conductivity.

Wood and plastic are poor thermal conductors. These are examples of thermal insulators which have a low thermal conductivity.

4. Convection

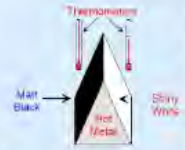
Energy can be transferred by convection.

As particles in the liquid or gas state gain energy, they become less dense and start to rise. This generates convection currents and explains why an entire room heats up despite only having one radiator on one wall.

5. Radiation

Energy can be transferred by radiation.

Infrared and ultraviolet radiation from the Sun travel through a vacuum (an area with no particles) before reaching Earth's atmosphere.



Infrared radiation can travel through gases and some solid materials. Infrared radiation is absorbed and emitted easily by dull, dark surfaces but absorbed and emitted poorly by light, shiny surfaces.

6. Stored Energies

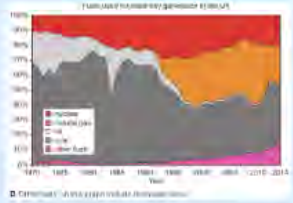
Objects stored at a height have the potential to fall. This is known as gravitational potential energy (GPE). This potential energy is then transferred to kinetic energy if the object falls towards Earth due to the force of gravity. If no energy is wasted GPE=KE.

Change in gravitational energy (J)	=	Mass (kg)	x	Gravitational field strength (N/kg)	x	Change in vertical height (m)
Kinetic energy (J)	=	1/2	x	Mass (kg)	x	(velocity)^2

7. Non-renewable Energy Sources

Non-renewable resources are those that generate electrical energy which are finite. This means they will run out one day. They include fossil fuels (coal, oil and natural gas) as well as nuclear fuel (uranium).

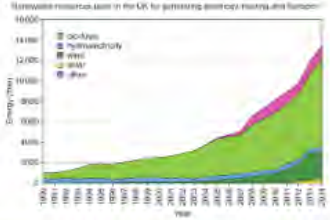
Fossil fuels release carbon dioxide and other greenhouse gases which contribute to climate change. As coal is the most damaging its use has been reduced in recent years.



8. Renewable Energy Sources

Renewable resources are those that generate electrical energy that will not run out. They are generally better for the environment as they produce less greenhouse gases. However, renewable sources can have an environmental cost to install them.

They include biofuels, hydroelectricity, wind and solar. The use of these have increased in recent years.



1. Waves

Waves transfer energy from one place to another. They do not transfer particles or matter.

Wave **frequency** is the number of waves passing a point each second. It is measured in **hertz** (**Hz**). A frequency of 1 hertz means 1 wave passing per second. For sound, the wave frequency determines the pitch (how high or low it sounds) and for light the frequency determines the colour.

The **period** is the length of time it takes one wave to pass a given point.

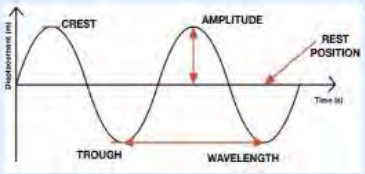
The **wavelength** of a wave is the distance from a point on one wave to a point in the same position on the next wave, measured in metres.

The **amplitude** of a wave is the maximum distance of a point on the wave away from its rest position, measured in metres. The greater the amplitude of a sound wave, the louder the sound.

The **velocity** of a wave is the speed of the wave in the direction it is travelling. Waves travel at different speeds in different materials.

2. Transverse waves

In **transverse waves**, the vibrations are at right angles to the direction of energy transfer.



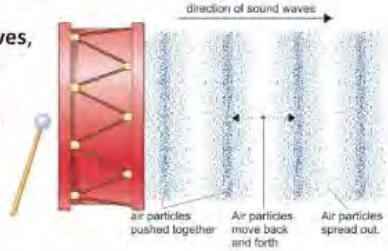
Examples of transverse waves include:

- ripples on the surface of water
- vibrations in a guitar string
- electromagnetic waves - eg light waves, microwaves, radio waves
- seismic (Earthquake) S-waves

3. Longitudinal waves

Sound waves also transfer energy. Sound waves are **longitudinal** waves. Particles in the material through which the wave is travelling move backwards and forwards as the wave passes.

In **longitudinal waves**, the vibrations are parallel to the direction of energy transfer.



4. Calculating wave speed

Worked example W1

A surfer travels 52 m on the front of a wave in 8 s. Calculate the wave speed.

$$\text{wave speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{wave speed} = \frac{52\text{ m}}{8\text{ s}} = 6.5\text{ m/s}$$

The speed of a wave can be calculated from the distance it travels in a certain time. This is the same equation we use for calculating the speed of moving objects.

$$\text{speed (m/s)} = \frac{\text{distance (m)}}{\text{time (s)}}$$

CP3 Waves

Hans Price Academy

5. Calculating wave speed (again)

The wave speed is linked to the wave frequency and wavelength by this equation.

wave speed (m/s) = frequency (Hz) × wavelength (m)

Worked example W2

Some waves have a wavelength of 13 m and a frequency of 0.5 Hz. Calculate their speed.

$v = f \times \lambda$

$= 0.5\text{ Hz} \times 13\text{ m}$

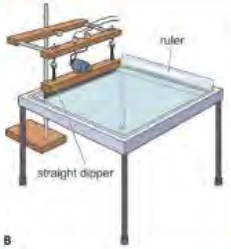
$= 6.5\text{ m/s}$

6. Measuring the speed of waves

You can find the speed of sound by measuring the time it takes for a sound to travel a certain distance. For example, if you stand in front of a large wall you can measure the time it takes for an echo of a loud sound to reach you. The speed can be calculated using the speed, time, distance equation.

One way of measuring the speed of waves on water is to measure the time it takes for a wave to travel between two fixed points such as buoys. The speed can be calculated from the time and the distance between the points.

7. Investigating waves



Method

Measuring waves on water

A Set up a ripple tank with a straight dipper near one side of the tank. Fasten a ruler to one of the adjacent sides so you can see its markings above the water level.

B Vary the current to the motor until you get waves with a wavelength about half as long as the ripple tank (so you can always see two waves).

C Count how many waves are formed in 10 seconds and write it down.

D Look at the waves against the ruler. Use the markings on the ruler to estimate the wavelength of the waves. Use the wavelength and frequency to calculate the speed of the waves.

E Mark two points on the same edge of the ripple tank as the ruler. Measure the distance between your points. Use the stopwatch to find out how long it takes a wave to go from one mark to the other. Use this information to calculate the speed of the waves.

Measuring waves in solids

F Suspend a metal rod horizontally using clamp stands and rubber bands.

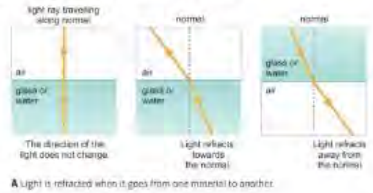
G Hit one end of the rod with a hammer. Hold a smartphone with a frequency app near the rod and note down the peak frequency.

H Measure the length of the rod and write it down. The wavelength will be twice the length of the rod.

I Use the frequency and wavelength to calculate the speed of sound in the rod.

8. Refraction

Most waves travel in straight lines. However, waves can change direction when they move into a different medium. The change in direction is called refraction. When a wave goes through a more dense material the wave slows down and therefore changes direction



A Light is refracted when it goes from one material to another.

9.3 - Computer Systems: Knowledge Organiser
@HPAComputing #ReadyToCode

Keywords

E-safety
Cloud Computing

What is the internet?

The **internet** has revolutionised the way we work and play. It allows us to **communicate**, to **share data** and to seek **information** in a matter of seconds. All this is possible through the use of **computers** and **networks**.

The internet is a **global network** of computers. All computer **devices** (including PCs, laptops, games consoles and smartphones) that are connected to the **internet form part of this network**. Added together, there are billions of computers connected to the internet, all able to communicate with each other.

Cloud Computing Advantages	Cloud Computing Disadvantages
Backing up - data backed up in the cloud with a reliable provider can be more reliable than storing your information on a hard drive or USB flash memory stick.	**Connection** – the user can only access their information if they have a network connection.
Compatibility - documents and files are designed to be compatible across different machines and browsers.	**Copyright** – the user sometimes loses legal rights to their original material if they store it online.
Cost – the user doesn't need to buy the latest software as it might be freely accessible through web apps.	**Security** - data stored online is vulnerable to security attacks.
Independence – the user can work with their files on different computers.	**Software** - web apps do not usually have as many detailed functions as a full software package.
Reliable software - web software and browsers are updated online. The user doesn't have to download the latest updates.	**Storage** - it is not always possible to store more than a few gigabytes online with one provider, whereas it is possible to purchase a few terabytes of physical storage to save information at home.

LANs

1. Stands for **Local Area Network**
2. A LAN is when devices are connected over a **small geographical area**
   - Examples: School, home
3. You can connect to a LAN using **WiFi** or **Ethernet**

WANs

1. Stands for **Wide Area Network**
2. A WAN is when networks are connected over a **large geographical area**
   - Example: The internet
3. You can connect to a WAN through your telephone connection, mobile data (GPRS) or cable/satellite.
4. WANs connect using a **modem**. Nowadays these are built into the **router**.

WPANs

1. Stands for **Wireless Personal Area Network**
2. A WPAN allows us to **pair** devices together over a short range.
   - Examples
     - A speaker connected to a phone
     - A smartwatch connected to a smartphone
3. You can connect to a WPAN using bluetooth.

Typical hardware used to create a LAN.

Ethernet cable

Router

Switch

Wifi extender

Peripherals

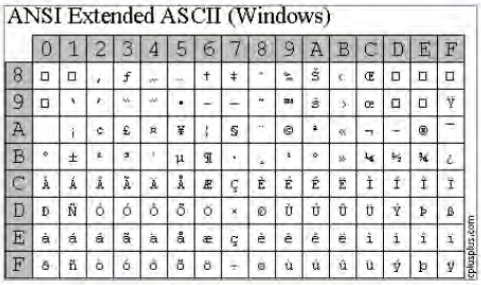
Network interface card

Advantages and disadvantages of different connection types.

	Advantages	Disadvantages
Wifi	Good for connecting **portable** devices to a LAN.	Slower **data transfer speed** compared to Ethernet. Limited **range** (unless you use a wifi extended) Can be **hacked** by **unauthorised users**
Ethernet	Faster **data transfer speed** compared to wifi. Has a **range** of 100 metres.	Cables are more **expensive** than using a wifi connection.
GPRS	Can be used on the move. Good for mobile devices such as smartphones.	Mobile data can be **expensive** - requires a SIM card. Limited/slow connection speed in some locations.
Bluetooth	Up to 7 bluetooth devices can be **paired** at once.	Can be hacked by **unauthorised users** The **range** is quite short.

Representing Characters

Each character is represented as a unique binary number. To achieve this, the first system, ASCII, used 7 bit binary numbers to represent characters. An extra **binary digit** was added to ASCII so that we could represent more characters - we called this **Extended ASCII**. Now 8 bits



To be able to represent many languages and emojis etc, we started using **Unicode** which is at least **16 binary digits**

Representing Images

An image is made up of **pixels.** Each **pixel** will have a colour and the **higher the number of colours** that you want to use, the **higher the number of bits** you will need to represent each colour.

The number of bits needed to represent an image is called the **colour depth.** The greater the colour depth, the greater the number of colours and the better the image quality...

But the **more bits** we use for each pixel, the **larger the image file size** will be because each bit takes up space in the file

The **resolution** of the image is the number of **pixels per inch** that we use to display an image. The higher the resolution the better the picture quality but the larger the file size

Binary Digit Values

Each **binary digit** has a **denary value** depending on which column it is in. So it can be converted to a number in our (denary) number system.

128	64	32	16	8	4	2	1
0	0	0	0	1	0	1	0

We just add the numbers together of all columns with a **1** in. So, this number has a **denary value** of **8 + 2 = 10**

Adding Binary Numbers

When two numbers that are less than 10 are added together in denary, sometimes we need two columns, two numbers to write the answer.

For example 7 + 5

```
  7
+ 5
---
 12
```

The same is true in binary...

...but in binary, there are four rules that need to be followed. Here are the rules...

0 + 0 = 0

1 + 0 = 1

1 + 1 = 0 (carry the one)

1 + 1 + 1 = 1 (carry the one)

Converting Hex Digits to Denary

Method

a) Split the hex value

F | 8

b) Work out the nibble for each hex value. If it is a letter, then you will need to know the denary value.

F			
8	4	2	1
1	1	1	1

8			
8	4	2	1
1	0	0	0

c) Join the 2 nibbles and add them to 8 bits in a table

128	64	32	16	8	4	2	1
1	1	1	1	1	0	0	0

d)Add the denary number values of the table

128	+	64	+	32	+	16	+	8	=	248

Denary (Base 10)	Hexadecimal (Base 16)
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F

Converting Denary Numbers to Hex

Method

248

a)Convert the denary number to binary

128	64	32	16	8	4	2	1
1	1	1	1	1	0	0	0

b) Split the binary number into two nibbles and work out the hex value of each nibble

F			
8	4	2	1
1	1	1	1

8			
8	4	2	1
1	0	0	0

c)Join the hex digits together

F8

Denary (Base 10)	Hexadecimal (Base 16)
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F

Converting Binary to Hex

Method

a) Split into nibbles!

0011 | 1011

b) Work out each nibble as a hex value.

8	4	2	1
0	0	1	1

2+1=3

8	4	2	1
1	0	1	1

8+2+1=11

11 is B in hexadecimal

c) Join the 2 hex values together to get your answer!

3B

Denary (Base 10)	Hexadecimal (Base 16)
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F

Answers on next slide
Don't cheat!

Converting Hex Digits to Binary

Method

a) Split the hex value

F | 8

b) Work out the nibble for each hex value. If it is a letter, then you will need to know the denary value.

F			
8	4	2	1
1	1	1	1

8			
8	4	2	1
1	0	0	0

F is 15 in denary

c) Join the 2 nibbles to get your answer!

11111000

Denary (Base 10)	Hexadecimal (Base 16)
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F

Knowledge Organiser: System Security Threats

System Security

System security is concerned with the protection of computer systems, computer networks and data. Its purpose is to:

- to protect computers and networks from cyberattacks
- to prevent unauthorised access to computers
- to protect computers against damage caused by malicious software
- to prevent data from being stolen
- to protect against the disruption of services running on the computer

Forms of Attack

Passive Attack – data is monitored e.g. wiretap

Active Attack - data is modified e.g. malware

Inside Attack– by someone within the organisation

Outside Attack – by an illegitimate, external user

System Security Threats

Brute-force Attack – when all possible password combinations are systematically tried, with the hope of getting it right.

Denial-of-Service Attack (DoS) - when a network resource becomes deliberately overloaded ('flooded') with unnecessary requests, preventing it from responding normally.

Distributed-Denial-of-Service Attack (DDoS) – when the requests come from many sources so you cannot just block a single IP address.

Structure Query Language (SQL) Injection – when a website is linked to a database and allows a user to enter information, it makes it possible for malicious code to be entered into a website form, in order to modify the SQL statement being executed. This will result in unauthorised access to the SQL database and the hacker will able to modify, delete or add data.

Malware is software that has been purposely developed to damage, disrupt or take control of computer systems.

Social engineering techniques manipulate people into giving away confidential and personal information.

Types of Malware

Computer viruses – insert themselves in normal programs. Viruses can replicate themselves and transfer from one computer to another. They are activated by a user often as email attachments and attachment to other files and programs.

Trojan gains access to a computer by pretending to be legitimate software. The trojan allows unauthorised backdoor access to a computer without the user being aware.

Spyware records the activity on your computer such as your keystrokes, thereby logging your passwords for instance and then sending the data back over the network to the attack instigator. Spyware can also be used to control your webcam and microphone.

Adware includes banners and popups that are automatically installed onto a computer. Whilst this does not cause any damage, adware is undesirable and can slow down the performance of a computer.

Worms spread like viruses but do not require human intervention. They attach themselves to network tools to spread automatically around a network very quickly.

Types of Social Engineering

Blagging (Pretexting) Fraudsters make up a scenario to con victims into revealing something they would not ordinarily do. They may have found out some personal information about you from social media sites, to pretend they already know you.

Phishing Normally an email or text messaging scam where victims are conned into believing that they are being contacted by an authentic organisation (e.g. by their bank) and can give sensitive personal details (such as bank account passwords).

Pharming Users are redirected to a fraudulent website that they believe to be genuine because it looks like the real site. For instance, you could be directed to a site that pretends to be an online store which asks you for your credit card information.

Shoulder surfing Fraudsters look over the shoulder of users to see what passwords or PIN numbers are being typed into the device. This can easily occur at computer terminals and at ATMs that are out in the street.

Knowledge Organiser: Detection and Prevention of System Security Threats

Brute Force Attack

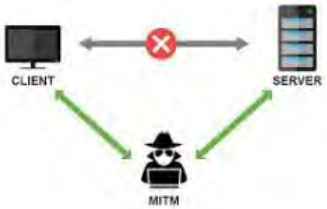
Brute-force Attack can be prevented by:

- ✔ Using strong passwords
- ✔ Locking accounts after a certain number of login attempts
- ✔ Using 2 step verification (e.g. a code sent to mobile phone to confirm identity)

Passive Attacks (Data Interception)

Passive attacks can be detected and prevented by:

- ✔ Using **encryption**
- ✔ Using **network forensics**
- ✔ Using **penetration testing**



Malware

Malware can be detected and prevented by:

- ✔ Running **anti-malware software** regularly
- ✔ NOT downloading software from unknown sources
- ✔ NOT clicking on unknown links
- ✔ Scanning downloaded files before opening them
- ✔ NOT using removable media (e.g. a USB drive) as they may contain malware
- ✔ Using **automatic software updates**: up-to-date software will include patches for known vulnerabilities and up-to-date anti-malware uses the most current database of threats

Denial-of-Service Attack (DoS & DDoS)

Denial-of-Service Attack (DoS) and **Distributed Denial-of-Service Attack (DDoS)** - can be prevented by:

- ✔ Using a **firewall** to control which programs can send and receive data packets, so that only authorised users & trusted programs can access the network.

Social Engineering Threats

Social engineering threats can be detected and prevented by:

- ✔ Creating **user access levels**
- ✔ Using an effective **network policy**
- ✔ Ensuring users have **strong passwords**
- ✔ Using **biometric identification measures**
- ✔ Installing **physical security** (e.g. locked rooms)
- ✔ Ensuring user privacy settings on any social media are set to maximum so that attackers cannot find information about users (e.g. date of birth, address)
- ✔ Ensuring **user awareness** of unsolicited texts, emails and phone calls. Users should not give personal, confidential information away
- ✔ Applying **email filtering** to prevent suspect emails getting through.
- ✔ Ensuring that users check the URL in the website address.
- ✔ Using a **website filter**
- ✔ Ensuring users are aware of who is around them when they are typing in their password.

Structured Query Language (SQL) Injection

Structure Query Language (SQL) Injection - can be detected and prevented by:

- ✔ Using **penetration testing** to check for vulnerabilities in the SQL code and report back
- ✔ **Validating** user input so that the website form will not accept SQL statements or characters
- ✔ **Escaping input strings** so that any SQL characters are ignored when processing the input from a website form
- ✔ Using only **prepared statements** to restrict the SQL that can be executed. The input data from a website form can only be used by previously prepared SQL statements, which are processed separately to the input data

Key Terms Explained

What is Network Forensics?

Network forensics is the capturing, recording and analysis of **network traffic** to discover attacks. This can be done using **packet sniffing software** and **web server logs** which show when data was accessed.

What is Penetration Testing?

Penetration testing is used to identify possible weaknesses in a network's security by trying to exploit them. The results are then reported back and any weaknesses are fixed.

A **white box** penetration test is used to simulate an **inside attack** where the attacker may have some knowledge of the system and basic credentials.

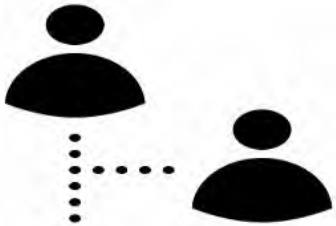
A **black box** penetration test is used to simulate an **outside attack** (i.e. hacker)

What is Encryption?

Encryption scrambles the data packets being sent and received across the network or outside the network so that unauthorised users cannot access personal information without the **encryption key**.

What is a Network Policy?

A network policy is a set of rules and procedures that an organisation will follow to ensure their network is protected against attacks. An effective network policy will **encrypt** sensitive data, have an **acceptable use policy**, install **ant-malware** and install a **firewall.** The policy will also enforce the use of **strong passwords** that are changed regularly and will enforce the regular testing of the network for weaknesses.



What are User Access Levels?

User access levels control which part of the network users can access. User access levels are used to limit the number of people with access to important data, helping to prevent **inside attacks** on the network.

Key Words

1	Playwright	The person who writes the play.
2	Performer	An actor who performs the scene.
3	Understudy	An actor who learns the lines for certain or all parts in case they need to step in during the rehearsals or the performance.
4	Director	The person in charge of what happens in the play. They make all the decisions and are in charge of all aspects of the performance including the technical and design elements as well as what the actors say and do.
5	Stage Manager	This person is responsible for running the rehearsal schedule, ensuring that all props, set, costume and technical elements are ready for the performance.
6	Theatre Manager	This is the person responsible for the theatre staff e.g. box office staff, ushers and refreshment stalls.
7	Sound Designer	This person is responsible for designing the sound and music for the performance.
8	Set Designer	This person is responsible is for designing the set for the performance.
9	Costume Designer	This person is responsible for designing the costumes for the performance.
10	Puppet Designer	This person is responsible for designing the puppets for the performance.
11	Technician	This person is responsible for operating the sound and lighting for the performance

	Key Words	Definition
12	Scene	A section of a play/act
13	Dialogue	Speech
14	Duologue	Two people speaking
15	Performance	A showcase
16	Improvise	Creating a piece of unscripted work
17	Script	Written dialogue
18	Audience	Spectators
19	Character	A person who you play in role
20	Rehearsal	Practicing a scene/performance

REFLECTION PLENARY

I know if I need further support or help I could speak to…. or contact…

Before I could/would say and do … but now I feel I am able to say

Before I only knew … now I also know …

I supported others by…

One thing I didn't realise was… now I know that…

The key words for this lesson are…

I always knew … but now I can see how it connects to…

The most important thing I have learnt today is…

I'm really proud of the way I have…

I used to feel … but I now feel ..

I would like to learn…

Today I have tried to…

A question I would like to ask is…

Before I thought that … but now I realise..

One assumption of mine that was challenged was…

Next lesson I would like to..

Before I would have done… Now I will …

Before I would have said … but now I will say…

A problem I overcame today was…

Year 9 Inanimate Object Challenge

TASK 1:

An inanimate object is something that is not living e.g a table, bed, chair tin of beans etc.

Create a character profile for your chosen inanimate object in the table below. Write this in as much detail as you can as it will give you ideas as to what you could include in your monologue! You will not have to perform it if you do not want to.

1.) Who am I?	*I am…*
2.) Where am I?	*I am…*
3.) What time is it?	*It is…*
4.) What do I want?	*I want…*
5.) Why do I want it?	*Because…*
6.) How will I get it?	*If I…*
7.) What do I need to overcome?	*I need to overcome…*

TASK 2:

Draft your monologue on this page. Your monologue needs to be between 1 and 2 minutes long.

Struggling to start? Use one of these sentence starters:

- I can't believe…
- Hello, I'm…
- I suppose your wondering what it's like to be a… Well let me tell you…

Year 9: The Future

The Future is major area that artists sometimes focus on in their studies. Throughout history many artists have attempted, failed or predicted (within certain parameters!) the future. Our Project for the final 2 terms of the year focuses on this subject area within Art and Design.

One of the first Artists we will look at in this project is that of Jean-Marc Cote. He was French Artist born in France in the late 1800's. His series of 87 future predicting postcards were produced from 1899 to 1910. They featured as inserts on the inside of cigarette cartons, and later as pictoral postcards, however they never saw circulation.

Jean-Marc was a part of the key movement called Retrofuturism. It is a movement showing the influence of depictions of the future produced in an earlier era. If futurism is anticipating what will come, retrofuturism is the remembering of that anticipation. Characterised by a blend of old-fashioned "retro styles" with futuristic technology, retrofuturism explores the themes of tension between past and future, and between the alienating and empowering effects of technology.

Could the world end up in a Dystopian Future like here in the film *Mad Max Fury Road*?

What do you think will happen in the future?

Utopia

A Utopian Future is one that highlights the pinnacle of human innovation. In simple terms it is a perfect world. Buildings and society work in perfect harmony with nature and feature a slick and purposeful design.

In this future technology is so advanced that humans don't age, everyone is healthy and we live without crime or fear. Sounds like a perfect place to live doesn't it? A Utopia represents the best of what humans can do. Can you find any films/games/books or other media that depict a true Utopia?

Dystopia

The direct ooposite of a Utopia is a Dystopia. A dystopia is a world that has been ruined by a world ending disaster, nuclear war, global warming, disease etc.

Many films, games and books cover Dystopia as a very realistic future, you could probably easily think of a few off of the top of your head right now! They are often dreary in colour and represent the worst of humanity and what we could become. What media/games/films can you think of that depict a Dystopia?

Cyberpunk

The third future that we look at in this project is that of a Cyberpunk future. You may know the term Cyberpunk from the recent game, but it is in fact a whole genre in itself! Cyberpunk future represents the expansion of the technology intergrating itself into us as humans. This is often paired with the bright neon that we see in karge cities of today such as Tokyo, Seoul and Las Vegas.

We can see the beginnings of this future already with various pieces of technology already merging with us, amazing inventions such as bionic arms, exo-skeletons and cochlear implants.

In the future what would you modify into your body if you had the chance? Telescopic Eyes? An extra set of arms?

The Art AO's:

AO1: Develop ideas through investigations, demonstrating critical understanding of sources.

AO2: Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

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

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

Year 9 Art: The Present

Banksy

Banksy is a Bristol based Artist who is well known for his graffiti styled artworks. These spray-paintings are often attached to the sides of random buildings and worth a lot of money!

Back in 2015 Banksy created a installtion Art Show called Dismaland in our own hometown of Weston-super-Mare. This show was a take on the 'perfect' Disneyland and was it's shadowy and dark reflection. The show involved many different artists and varied works all commenting on the 'dismal' world of today. You can see an image from this attached here.

Banksy continues to this today to comment on the world and the issues that are ongoing and present. He is often seen as a controversial figure who runs the very fine line of criminal behaviour (graffiti on someone elses property) and groundbreaking artist.

Questions

1. What do you think of Banksys artworks? Have a look online and write your reflections.

2. What did you think of Banksys Dismaland installation?

3. Is Banksy a criminal, and artist, or both?

4. If you had to pick a modern issue to create an artwork on, what would it be?

5. Do more artists need to address the issues of the modern world to enact change and raise awareness of various issues? Why?

Damien Hirst

Damien Hirst was a member of the 'Young British Artists'. He is well known as one of Britains most successful contemporary artists. He has created many controversial and famous artworks, including the Diamond Skull, and the Dissected Shark. It is often said that anything Hirst makes is art and will sell for a lot of money.
This raises a lot of questions about modern art.

1. What is more valuable, the artwork or the name of the artist attached?

2. Is art actually worth the price people pay?

3. With the right marketing, could anybody make millions with their art?

Key Terms

AO1: Develop ideas through investigations, demonstrating critical understanding of sources.

AO2: Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

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

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

Artist Research: The act of actively looking at an Artists work. Exploring how they produce their work through written and practical research.

Materials/Mediums: The things an Artist uses to create Art, for example Paints, Pens, Pencils, Clay etc.

Personal Response: The final piece of a project, where a student of GCSE Art puts their research and ideas into a final outcome.

Idea Development: Moving on from research to develping your own idea. Sketching out and changing your own ideas in reaction to feedback and analysis.

Annotation: Writing down your own thoughts, reflections and research about your own and other artists work.

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Music For Film

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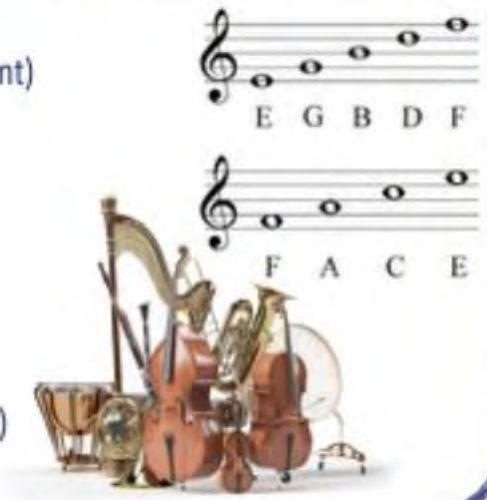
Keywords

- **Film Score** - original music written to accompany a film.
- **Ostinato** - a repeating pattern.
- **Chromaticism** - moving up or down in semitones (every note).
- **Scale** - an organise sequence of notes, stepwise.
- **Chord** - two or more notes played together.
- **Sequence** - repeating a motif, moving up/down in pitch.
- **Foley** - adding in sound to the film clip.
- **Disjunct Melody** - a melody which leaps between notes not beside one another.
- **Conjunct Melody** - a melody which moves in step to notes next to each other.
- **Consonant Chords** - simple, triadic chords.
- **Cluster Chords** - A chord built of notes next to each other to sound scary or shocking.

The Elements of Music

- **Tempo** (Speed)
- **Timbre** (Sound of the Instrument)
- **Pitch** (High or Low Notes)
- **Dynamics** (Loud or Soft
- **Texture** (Layers of Music)
- **Duration** (Length of Notes)
- **Silence** (No Sound)
- **Structure** (Order of Sections)
- **Rhythm** (Long and Short Notes)



How music is used in film

- **Motif** (leitmotif) - short piece of music to represent a character in film.
- **Underscoring** - background music.
- **Diegetic music** - music contained within the action and can be heard by the characters within the film.
- **Synchronisation** - where the music and film are in time with each other.

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Glastonbury Festival

The Elements of Music

- **Tempo** (Speed)
- **Timbre** (Sound of the Instrument)
- **Pitch** (High or Low Notes)
- **Dynamics** (Loud or Soft
- **Texture** (Layers of Music)
- **Duration** (Length of Notes)
- **Silence** (No Sound)
- **Structure** (Order of Sections)
- **Rhythm** (Long and Short Notes)

About the Festival

- Glastonbury Festival was originally known as Pilton Pop, Folk & Blues Festival.
- It began in 1970, founded by Michael Eavis.
- In 1980, Michael Eavis built the famous stage known as the Pyramid Stage.
- The aim of Glastonbury Festival is to encourage youth culture through music, drama, theatre, poetry, art and design and more.
- It's estimated that the festival has donated over £100 million to local charities and the communities.

Music at Glastonbury Festival

- As one of the most famous music festivals in the world, the genres performed are very diverse.
- Headliners have included, Stormzy, Foo Fighters, Florence and the Machine, David Bowie, Adele, Robert Plant, U2, Paul McCartney, Billie Eilish and Beyonce.
- Different types of performers have included soloists, bands and orchestras.

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Instrumental Skills

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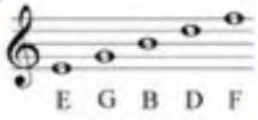
The Elements of Music

- **Tempo** (Speed)
- **Timbre** (Sound of the Instrument)
- **Pitch** (High or Low Notes)
- **Dynamics** (Loud or Soft
- **Texture** (Layers of Music)
- **Duration** (Length of Notes)
- **Silence** (No Sound)
- **Structure** (Order of Sections)
- **Rhythm** (Long and Short Notes)



Drums

- Played with drum sticks
- Keeps the rhythm and timing for an ensemble

Performing skill keywords: Fluency, Timing, Confidence, Solo, and Ensemble.

Bass Guitar

- Often has 4 strings
- Low in pitch
- Often read TAB to learn music
- It has pickups and needs an amplifier for volume.

Guitar

- Often has 6 strings
- Often read TAB to learn music
- But it can be acoustic or electric. Electric has pickups and needs an amplifier for

Vocals

- Good posture and breathing are important when singing.
- It is important to project your voice.

Diet is the term for the food and drink that we consume daily. A diet needs to be both healthy and sustainable.
A healthy diet is a **balanced diet**. It provides the necessary **nutrients** needed for healthy body functions and normal physical activity.
To keep a balanced diet is to eat a variety of foods to give the body the range of nutrients it needs to stay in top condition.
Eating a balanced diet promotes good health and contributes to a healthy lifestyle.

The Eatwell Guide

is designed to help eveyone over the age of two to eat a healthy, balanced diet. It shows how much of each food group should be eaten. The four food groups are:

- potatoes, bread, rice, pasta and other starchy carbohydrates
- fruit and vegetables
- dairy and alternatives
- beans, pulses, fish, eggs, meat and other proteins

Nutrients

are chemicals found in food which give the body nourishment and are needed for the maintenance of life. The body needs nutrients to perform its daily **functions** properly. Health problems might occur if any one of these nutrients is lacking in a person's diet.
There are two types of nutrients:

Macronutrients:

Carbohydrates - the main energy source for the body.
Protein - needed for growth, repair and maintenance of the body.
Fat - used for energy and essential vitamins and fatty acids.
The body needs these in large amounts and are measured in grams.

Micronutrients

Vitamins
Minerals
Trace elements
The body needs these in small amounts and are measured in milligrams or micrograms. In order for the body to function properly it needs a range of vitamins and minerals

The body also needs **dietary fibre** and **water**

Design Technology

Materials:Food

Hans Price Academy

CAD

stands for **Computer Aided Design**
It is the use of computer software to produce designs for products. The designs can be 2D drawings or 3D models.

At HPA we use Creo Parametric (3D) and Corel Draw (2D).

Advantages of CAD

- CAD is extremely accurate, more accurate than drawing by hand.
- It is easy to modify or revise a design.
- Storage space is reduced.
- Files can be shared around the world very quickly, or imported into presentations.
- 3D models can be rotated and viewed from different angles.
- Designs can be simulated to see how well they will function. This allows potential problems to be spotted early.
- Designs can be exported to CAM equipment for manufacture.

Disadvantages of CAD

- Some CAD packages are expensive to buy.
- There needs to be access to appropriate ICT hardware to run the software. This usually needs to be a high powered computer which adds to the cost.
- Some designers may not be familiar with how to use CAD software, so time and money must be spent training them. They must regularly update their skills.
- Files can be corrupted or hacked.

CNC stands for **Computer Numeric Control**

CAM

stands for **Computer Aided Manufacture**
It is the use of computer software to control machine tools or manufacture products.
Examples of CAM equipment include laser cutters, vinyl cutters, CNC Routers and 3D printers.
At HPA we use:

Versalaser Laser Cutter

3D Cube 3D printer

Roland Camm1 vinyl cutter

Denford Compact 1000 CNC Router

Advantages of CAM

- Complex shapes can be produced much more easily than when manufacturing by hand.
- There is consistency of manufacture as every product produced is exactly the same.
- It enables very high levels of manufacturing precision and accuracy.
- There is greater efficiency as machines can run 24 hours a day, 7 days a week.
- It can increase the speed of manufacture, especially when producing large numbers.

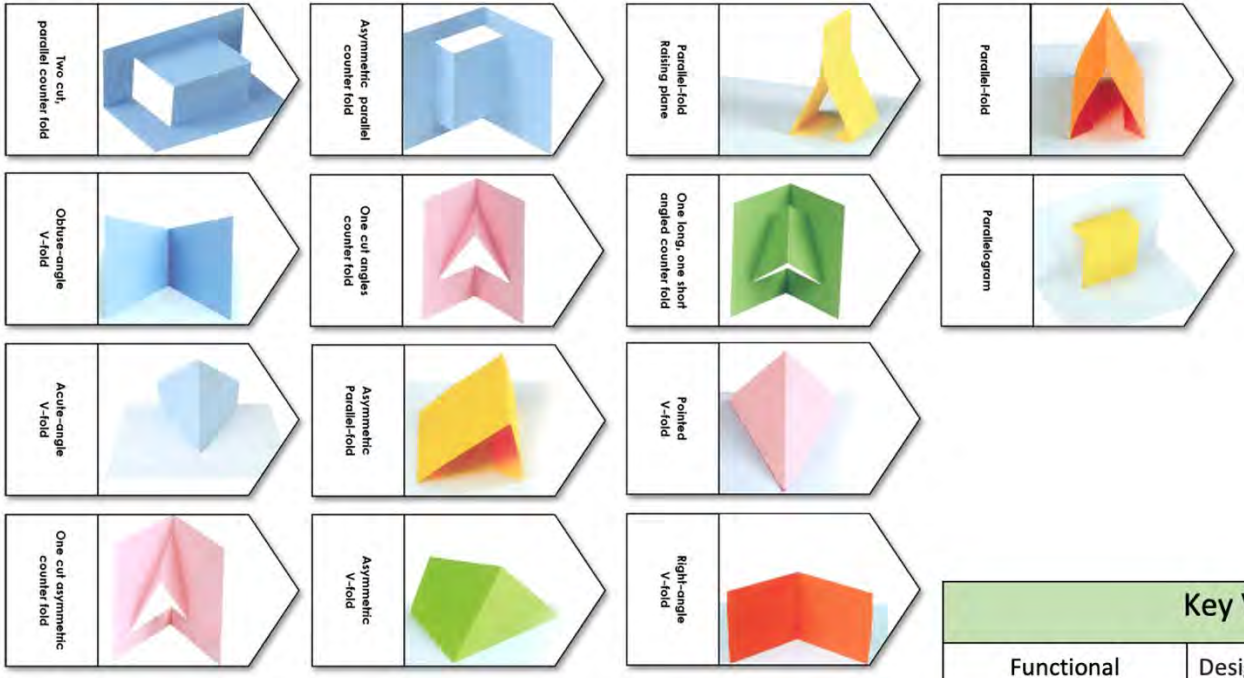
Disadvantages of CAM

- CAM machines are usually very expensive, although their cost is reducing with time.
- Operators must be trained to use the equipment, which adds time and cost.
- For one-off products, CAM can actually be slower than if the product was produced by hand.

CAD/CAM

Hans Price

DT: Paper Pop-up



Board	Properties	Uses
Corrugated cardboard	Strong, lightweight	Packaging protection in transportation of products and used to package some hot food such as a pizza due to its insulating properties.
Duplex board	Cheaper than white board, available with different finishes (metallic, holographic etc.)	Food packaging, eg biscuit boxes or containers
Solid white board	Top quality, range of thicknesses, excellent to print on	Hardback books
Foil-lined board	Expensive, good quality, aluminium foil lining, excellent barrier against moisture	Pre-packed food packages, cosmetic cartons
Inkjet board	Expensive, printable, photo quality	Posters, photography, art reproductions
Foam-core board (foam board)	Strong, lightweight, paper face, foam core	Model making, mounting photographs

Key Vocabulary	
Functional	Designed to be practical and useful.
Appealing	Attractive or interesting.
Pop - up	(of a book or greetings card) containing folded cut-out pictures that rise up to form a three-dimensional scene or figure when the page is turned.
Mechanics	The machinery or working parts of something.
Mechanisms	A system of parts working together in a machine; a piece of machinery.
Prototypes	The first version of something you make
Affixed	To stick, attach, or fasten (something) to something else.
Component	A part of element of an object
Textile	A type of cloth or woven fabric
Rotate	Move or cause to move in a circle round an axis or centre.

The Holocaust	
The Holocaust is the Nazi persecution and mass killing of the Jewish population in Europe during WW2. It started in 1941 and ends in 1945.	
Key events	
30th Jan 1933	Hitler becomes the leader of Germany.
1935	The Nuremburg Laws are passed.
7th April 1933	Law passed which restricted employment in the German Civil Service for Jews.
7th Nov 1938	Kristallnacht
1943	Warsaw ghetto uprising
Key Concepts	
	**Before the Holocaust...** Jewish minorities have faced persecution and discrimination throughout history in Europe. Key examples include the massacre at Clifford's Tower in 1190, they were blamed for the death of Jesus, and they were banned from England in 1290-1656.
	**Nazi persecution of the Jews...** included being blamed for Germany losing WW1, boycotts of Jewish shops, legal restrictions, and violence.
	**Ghettos...** were where Jews were forced to live in terrible conditions before the use of concentration camps. The largest was the Warsaw Ghetto which held at least 400,000 Jews in a 1.3 square mile area.
	**Nuremburg Laws...** included the German Reich Law which denied Jews of their German citizenship; and the Law for the Protection of German Blood and German Honour, which banned marriage and children between Germans and Jews.

Key Terms	
Anti-Semitism	Hostility or prejudice directed against the Jewish people.
Persecution	hostility and ill-treatment, especially because of race or political or religious beliefs
Ritualistic	Set actions performed as part of a ceremony, usually with religious importance.
Blood Libel	Libel means to make a false and damaging claim about, someone or something. 'Blood Libel' refers to the lies spread about the Jews committing ritualistic murders.
Pogrom	Violent attacks directed against an ethnic minority, such as Jews.
Stereotype	An untrue view of someone or something- eg. That all English people drink tea and eat fish and chips.
Theory of Evolution	Dawin's theory that evolution happens by natural selection – animals who are unable to adapt will die and the strong will adapt and pass on their traits.
Aryan	An ancient race that were believed to be racially superior to other races.
Synagogue	Jewish place of worship.
SS	Protection squad, they were elite Nazi troops. They were heavily involved in running the Holocaust.
Sonderkommando	Jewish prisoners who were forced to help operate the gas chambers.

History – Year 9 Knowledge Summary

What was life like in Nazi Germany?

Key Events

1	**9th November 1918** - The leader of Germany, **Kaiser** Wilhelm, **abdicated**. A democratic government set up, **the Weimar Republic.**
2	**11th November 1918 -** Germany signed **armistice** agreement.
3	**28th June 1919 – The Treaty of Versailles** is signed deciding the terms of peace between the Allies and Germany.
4	**1923** – Germany was **struggling to pay the reparations** to France. They printed more money leading to **hyperinflation.** The USA provide a loan to help them recover.
5	**November 1923 – The Munich Putsch** – The NSDAP try to take over the Weimar Government, they fail and Hitler is sent to prison.
6	**October 1929 – The Wall Street Crash**, the American stock market collapsed and needed their loans back from Germany.
7	**30th January 1933 –** Hitler is named **chancellor** of Germany.
8	**February 1933 – The Reichstag Fire** was blamed a Dutch communist and used as propaganda, support gained for NSDAP.
9	**23rd March 1933 - The Enabling Act** was passed which meant Hitler was able to make laws without consulting the Reichstag.
10	**30th June 1934 - The Night of the Long Knives** - purge of SA leadership who threatened Hitler and other political opponents.
11	**2nd August 1934 –** President **Hindenburg died**. **Hitler** combines the role of chancellor and president and becomes **Führer** (leader).

Key Skills

12	Causation	Explaining how events are caused by developments that came before.
13	Consequence	The result or effect of an event.
14	Source Analysis	**Nature**: What is the type of source? **Content**: What does it tell us? **Origin**: Who wrote it? When? Where? **Purpose**: Why was the source made?

Key Terms

15	peace armistice	a document which is signed to halt fighting whilst peace negotiations take place.
16	November criminals	the name given to the men who signed the peace armistice.
17	abdication	Renouncing (giving up) the throne.
18	Treaty of Versailles	A treaty which formally ended WWI.
19	reparations	Germany was to made to pay £6.6 billion reparations for damage during the war.
20	NSDAP	National Socialist German Workers' Party – Was known as the Nazi Party.
21	Weimar Republic	The democratic government elected after the end of WWI.
22	chancellor	The head of the German government appointed by the president.
23	Reichstag	The name of Germany's parliament.
24	propaganda	Information, can be biased, that promotes a political cause/point of view.
25	Third Reich	The name of the Nazi regime (government).
26	Kinder, Küche and Kirche	'Children, Kitchen, Church.' Nazi's asked women to do these instead of work.

Key Groups/People

								
Kaiser Wilhelm	**Adolf Hitler**	**Joseph Goebbels**	**President Hindenburg**	**SA**	**SS**	**Gestapo**	**Hitler Youth**	**League of German Maidens**
Leader of Germany during WW1 until 1918.	German politician and leader of the Nazi Party.	Nazi minister for propaganda 1933 - 1945.	President of Germany from 1925 – 1934.	Protectors of Nazi leaders formed in 1921.	Established 1925 to protect Hitler & then policed Third Reich.	The Nazi's secret police force.	The HJ, boys would join the main group from age 14.	The female equivalent of the HJ they would join from age 14.

History – Year 9
Knowledge
Summary
Were The 1960s a decade of 'revolution'?

People mainly lived in houses, flats or bungalows which were **similar to those today**. Many homes had a television, telephone, beds, washing machines, fridges, baths and toilets.
They often **worked in different ways** than today.

Clothing began to be **colourful with patterns**. People started **following trends.**
Women wore shorter, more **casual dresses**.
Men wore **flared trousers** wide ties and shirts with wide collars.

People owned **fridges** so food could be kept fresh for longer. **Before this food was stored in a cool rom called a larder.** Shopping was done at **lots of smaller shops** rather than one supermarket.

Healthcare was provided for **free by the NHS**, just like it is today. The NHS **built many hospitals** so that people could be **treated locally**.

The number of families with **cars increased a lot** during the 60's. **Motorways were built** to allow people to travel between different parts of the country.

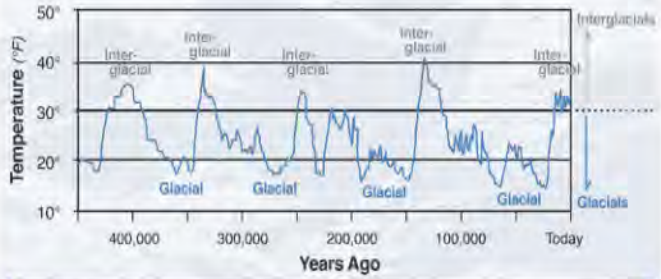
The 1960's is often referred to as **'the swinging sixties'** because music was so important. Music from the 60's has **influenced music today**. **The Beatles** were a popular band in the 60's.

Bungalow	A house with only one floor.
Appliance	An item used for a specific task
Similar	Characteristics which are the same.
Different	Characteristics which are not the same.
Fashion or Trend	A popular or new style of clothing or hair.
Casual	Clothes suitable for everyday wear.
Formal	Clothes suitable for special events, or a specific purpose.
Preserve	Maintaining the freshness of food, so that it remains safe to eat.
Healthcare	Giving medical care to people.
Popularity	How many people like and use something.

9.3 Climate Change

- The planet has always experienced natural changes in its climate. **Glacial periods** are periods of relatively low temperatures; **interglacial periods** are periods of relatively warmer temperatures.
- In more recent decades, human behaviour has created an **enhanced greenhouse effect** which is causing the planet to heat up more than might be expected.
- Climate change has a **range of impacts** at local, national and global scales, including sea level rises and the increased frequency of extreme weather events like floods and storms.

Glacial-interglacial cycles over the past 450,000 years



- People who campaign for action against climate change are known as activists.
- **Greta Thunberg** is a Swedish teenager who began a 'School Strike for Climate Change' and has become a world leader of the youth campaign against climate change.
- **Extinction Rebellion** are a worldwide group of activists that use disruptive – and at times illegal – strategies to campaign against climate change.
- There have been significant efforts from the world's political leaders to act against climate change, including the **2015 Paris Agreements** and the 2021 agreements made at the **COP26 conference**.

CLIMATE CRISIS

What are the goals at COP26?

The **UK is hosting the 26th Conference of the Parties**, with four goals to be discussed during the annual climate change summit in Glasgow.

1.5°

Net zero and 1.5 degrees

Countries are called on to reach **net-zero carbon emissions by 2050** and to keep global temperatures **below 1.5C**

Protect ecosystems and habitats

States are encouraged to **protect and restore ecosystems** and build resilient infrastructures to withstand climate change

Mobilise finance

Developed nations are asked to mobilise **$100bn in climate finance** per year for poorer nations to tackle climate change

Collaboration

Parties at COP26 will need to **collaborate** to finalise the **Paris Rulebook**, which sets out the rules of the Paris Agreement

Activism is the policy or action of using vigorous campaigning to bring about political or social change.

Adaptation is the process of change in order to deal with a situation. In this instance, changing behaviours to deal with changes in our climate. Learning to live in a warmer world.

Mitigation is the action of reducing something. In this instance, actions to reduce greenhouse emissions

Greenhouse gases are gases such as carbon dioxide, and methane, which absorb heat from earth.

The **greenhouse effect** is the warming of the lower atmosphere by heat released from earth.

Changes to the UK climate and weather events

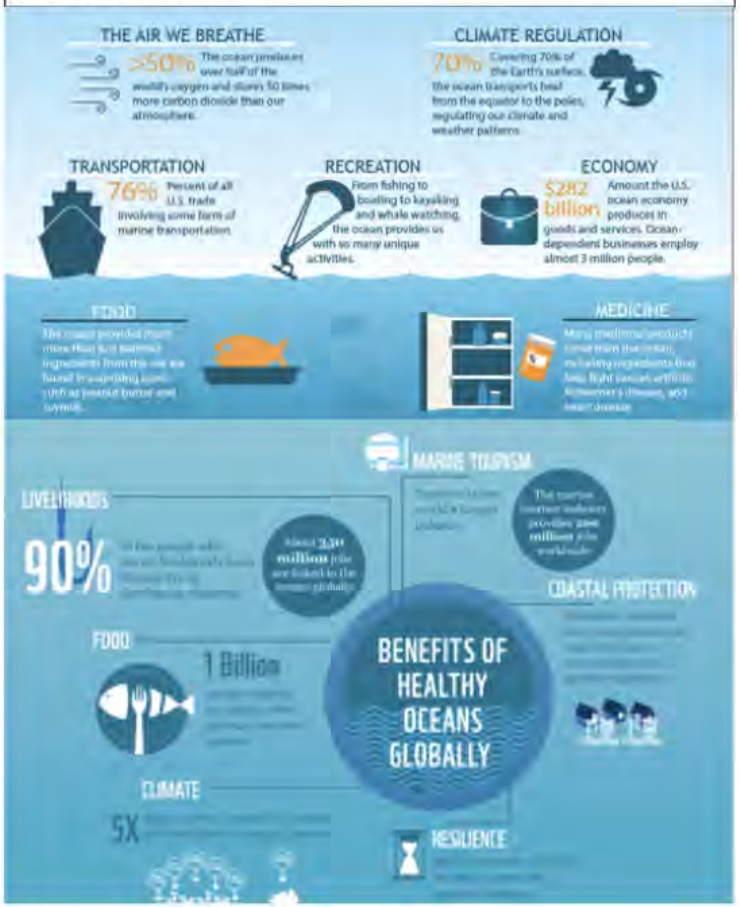
	Changes in intensity or frequency so far	Is this linked to climate change?	What is expected in the future?
UK warm spells	Increase	Yes	Increase
UK cold spells	Decrease	Yes	Decrease
UK heavy rain	Increase	Inconclusive	Increase
UK dry spells	No trend detected	Inconclusive	Increase (summer)
UK wind storms	No trend detected	Inconclusive	Increase*

Natural Factor	What is it?	How does it affect climate?
Cosmic Materials	When huge meteors and asteroids reach the Earth's surface	Dust can shield the Earth from incoming heat, (exposure to the Sun's rays), lowering global temperature.
Orbital Changes	Variations in the tilt and/or orbit of the Earth around the Sun	Distance of orbit from the sun can affect global temperatures.
Volcanic Activity	Volcanic eruptions eject huge amounts of ash and dust into the atmosphere.	Dust can shield the Earth from incoming heat, (exposure to the Sun's rays), lowering global temperature.

- **Mitigation strategies** are those designed to slow down, or even reverse the increase in the planet's temperature.
- Mitigation strategies are usually around reducing the use of fossil fuels, for example by increasing renewable energy sources and promoting sustainable transport options.
- **Adaptation strategies** are those designed to adjust human life to the change in the planet's temperature, for example by growing crops that can cope with higher temperatures and less rainfall.

Year 9 Geography: Topic 4: Why should we care about the oceans?

Why are the oceans important?



Sustainability focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs

Overfishing and the impact

- Overfishing means to catch more fish than the natural system can replace.
- In 1900 our oceans contained six times more fish than today.
- In 2003, a scientific report estimated that industrial fishing had reduced the number of large ocean predators to just 10% of their preindustrial population.
- Millions of people rely on fisheries for employment. In 1993, the North Cod Fishery in Newfoundland, Canada collapsed because of overfishing. Approximately 40,000 jobs were lost. A billion people rely on fish as their main source of protein
- Habitats such as coral reefs are destroyed by dredging of sea beds by large fishing nets.
- The UK catches 24% more fish stocks than scientific advisors recommend.
- Quotas (limits) in the EU mean that countries can only catch so many tonnes of fish.
- Overfishing means that fish stocks are not naturally being replaced.

What are ocean currents?

- The water in the oceans is constantly moving in patterns called **currents**.
- As the currents flow around the planet they move cold and warm water from one place to another.
- The ocean currents also help move anything that floats in them. This can be sea creatures or ships, but unfortunately can also be rubbish that has been dumped carelessly by people. This rubbish finds its way around the world, **polluting** the oceans and can be harmful to sea creatures

Gyre – Large circular current within the ocean

The Great Pacific Garbage Patch

- It is an acculumation of a large area of plastic and other polluting waste – three times the size of France
- 1.15 to 2.41 million tonnes of plastic enter the oceans each year
- Plastic doesn't sink, and it is transported vast distances before ending up in the garbage patch
- The plastics may eventually degrage to microplastics, due to the effects of the sun and waves, but these further damage marine life.

The Great Pacific Garbage Patch – solutions?

- Recycling, getting rid of single use plastics and using paper straws.
- Booms that collect plastic from the surface of oceans.
- Biodegradable bags.
- Getting rid of single use plastics.

The Northwest Passage

- The Northwest Passage is a sea route that connects the Atlantic and Pacific Oceans.
- In the past, the Northwest Passage has been virtually impassable because it was covered by thick, year-round sea ice. However, in recent years, climate change is allowing commercial traffic to pass through the Arctic via this once-impossible route.

Ocean acidification is a change in the properties of ocean water that can be harmful for plants and animals. Scientists have observed that the ocean is becoming more acidic as its water absorbs carbon dioxide from the atmosphere.

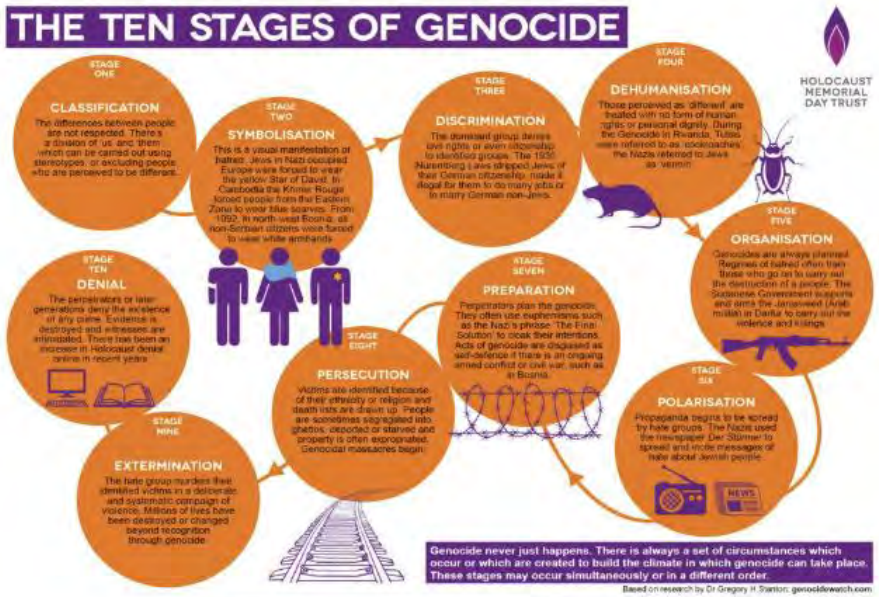
Biodiversity - the variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable

What are the impacts of ocean acidification?

- A change in the pH of the ocean can cause fish to become ill, including slowing their growth
- The growth of coral reefs is limited and they may begin to erode
- Some species of algae grow better under more acidic conditions with the boost in carbon dioxide.
- Other algae, which build calcium carbonate skeletons and help cement coral reefs, do not fare so well. In acidifying conditions, coralline algae can cover up to 92% less area, making space for other types of non-calcifying algae, which can smother and damage coral reefs.
- Oysters, mussels, urchins and starfish will have trouble forming their shells in acidic conditions, and they shells they do form may be weaker

Year 9 Unit 2- Does religion cause conflict?

Persecution cruel or unfair treatment, especially because of race or religious or political beliefs.
Schism A tear or split. In religion it is when the religion splits into opposing groups.
denomination or sect A branch or group within a religion. For example, Sunni and Shia in Islam, or Catholic and Protestant in Christianity.
Islamophobia The fear of, hatred of, or prejudice against the religion of Islam or Muslims in general.
Homophobia dislike of or prejudice against gay people.
Holocaust also known as the Shoah, between 1941 and 1945, this was the genocide of European Jews during World War II.



Justice A situation where people are treated fairly or correctly
Pacifism The belief that no violence or war can ever be justified
Civilians People who are not members of the armed forces or other military group
Jihad To struggle to follow Allah, in some situations this may require the use of violence to prevent further suffering. (lesser Jihad)
War Armed conflict between two countries or different groups
Just War A war which is considered morally justified as it follows Thomas Aquinas' 7 rules of Just War.
Justified When an action is considered good because of the reasons for it or outcome it might produce.

9.11 My school
Knowledge Organiser

School – Subjects, uniform and time
Future plans & jobs

The present tense	ER verb	IR verb	RE verb
Je (I)	-e	-is	-s
tu (you)	-es	-is	-s
Il/Elle/On (he/she/one)	e	-it	-
Nous (we)	-ons	-issons	-ons
Vous (you all)	-ez	-issez	- ez
Ils /Elles (they)	-ent	-issent	-ent

The future tense in French

You can talk about the future by using the **near future** tense.
Use part of the verb ALLER and the infinitive to say what you are **going** to do.

Ce soir, je vais jouer au tennis. This evening I am going to play tennis.
Demain, Paul va faire un gâteau. Tomorrow Paul is going to make a cake.

You can also use the following phrases with an infinitive to refer to the future.
Je veux= I want
Je voudrais = I would like
J'aimerais = I would like
J'espère = I hope

Adjectives describe nouns e.g., a **black** blazer.

In French, adjectives normally go after the words they are describing e.g., une chemise bleue (a blue shirt) and they must agree with the noun they are describing.

Adjectives must agree with the noun (or pronoun) they describe in gender and in number.

This means that if the noun an adjective describes is feminine, the adjective must be feminine e.g., une veste noire (a black blazer).

If that same noun is also plural, the adjective will be feminine **AND** plural as well e.g., les chaussettes noires (black socks).

Comparatives – to express more or less than
... est plus + adjective + que - is more...adjective...than
... est moins + adjective + que - is less...adjective... than
... est aussi + adjective + que – is as...adjective...as
For example:
L'anglais est plus intéressant que la géographie. (English is more interesting than Geography)
L'histoire est moins amusant que l'E.P.S. (History is less fun than PE)
Le français est aussi difficile que les maths. (French is as difficult as maths).

9.11 My School Life – Vocabulary List

Cabot Learning Federation

Quelle est ta matière préférée?	What is your favourite subject?
L'anglais	English
L'espagnol	Spanish
Le français	French
Le théâtre	Drama
Le dessin	Art
Le sport (L'EPS)	P.E.
L'informatique	I.C.T. (Computer Studies)
La musique	Music
La technologie	D.T.
La géographie	Geography
L'histoire	History
La religion	R.S. (Religious Studies)
L'éducation civique	P.S.H.E (Health and Wellbeing)
Les mathématiques	Maths
Les sciences	Science

Quelles sont les règles?	What are the rules?
On doit / On ne doit pas	You must / You must not
On peut / On ne peut pas	You can / You can not
Il faut	You must
Il est interdit de/d'	It is forbidden to
Écouter en classe	(to) listen in class
Utiliser son portable en classe	(to) use your phone in class
Porter des bijoux	(to) wear jewellery
Porter du maquillage	(to) wear make-up
Porter des baskets	(to) wear trainers
Manquer les cours	(to) miss lessons
Être à l'heure	(to) be on time
Mâcher du chewing-gum	(to) chew chewing-gum
Faire ses devoirs	(to) do homework

Qu'est-ce que tu en penses?	What do you think of it?
C'est/Ce n'est pas	It is/It is not
Intéressant (e)	Interesting
Pratique	Practical
Utile/inutile	Useful/not useful
Facile/Difficile	Easy/difficult
Ennuyeux (se)	Boring
Passionnant (e)	Exciting
Créatif (ve)	Creative
Important (e)	Important
Trop	Too
Très	Very
Assez	Quite
Un peu	A bit (a little)
du tout	At all

Qu'est-ce que tu voudrais faire dans le futur?	What would you like to do in the future?
Je vais	I am going
Je voudrais/J'aimerais	I would like
Réussir mes examens	To pass my exams
Recevoir des bonnes notes	To get good results
Faire un apprentissage	To do an apprenticeship
Chercher du travail	To search for a job
Faire du bénévolat	To do voluntary work
Voyager autour du monde	To travel the world
Avoir des enfants	To have children
me marier	To marry
Apprendre à conduire	To learn to drive
Devenir	To become
Médecin/Veterinaire	A doctor/a vet
Professeur/Avocat(e)	A teacher/a lawyer
Mécanicien(ne)/Plombier(ière)	A mechanic/a plumber
Pompier (ière)	A firefighter
Coiffeur(euse)	A hairdresser

Comment est ton uniforme scolaire?	What is your school uniform like?
Je porte	I wear
Il faut porter	You must wear
Une veste/ un blazer	A blazer/jacket
Un pull	A jumper
Une chemise	A shirt
Un t-shirt	A t-shirt
Une cravate	A tie
Une jupe	A skirt
Des chaussettes	Socks
Un pantalon	Trousers
Des chaussures	Shoes
Un collant	Tights
Un hijab	Hijab
Moche	Ugly
Beau/belle	Beautiful
(In)confortable	(un)comfortable
Cher	Expensive
Pas cher/bon marché	Not expensive/cheap
À la mode	Fashionable
Démodé(e)	Old-fashioned

La journée scolaire	The school day
Je quitte la maison	I leave the house
Je vais au collège	I go to school
Les cours commencent à	Lessons start at
Les cours terminent à	Lessons end at
Ça dure	It lasts
La récréation	Breaktime
L'heure du déjeuner	Lunchtime
Le matin	The morning
L'après-midi	The afternoon
Le soir	The evening

9.12 Tenses and Festivals

Verbs and the present tense in French

The infinitive

When you look up a verb in the dictionary, you find its original, unchanged form which is called the ***infinitive*** (regarder, manger, boire, finir, jouer, avoir, être, etc.). The infinitive ends in **–er**, **-ir** or **–re.**

Forming the present tense in French

Take off the last 2 letters of the infinitive (**–er**, **-ir** or **–re)** and add the following endings depending on the pronoun:

	ER verb	IR verb	RE verb
je	-e	-is	-s
tu	-es	-is	-s
il / elle/ on	-e	-it	/
nous	-ons	-issons	-ons
vous	-ez	-issez	-ez
ils/elles	-ent	-issent	-ent

Verbs and the near future tense in French

You can talk about the future by using the **near future** tense (*le future proche*). Use part of the verb ALLER followed by the infinitive to say what you are **going** to do.

Ce soir je **vais jouer** au tennis. *Tonight I am going to play tennis.*
Demain Paul **va faire** un gateau. *Tomorrow Paul is going to make a cake.*

ALLER	
Je vais	I am going
Tu vas	You are going
Il /elle /on va	He /she/one is going
Nous allons	We are going
Vous allez	You (lot) are going
Ils /elles vont	They are going

Verbs and the past tense in French

You can talk about the past by using the **perfect** tense (*le passé composé*).

The perfect tense has 2 parts:

•The auxiliary (***avoir*** or ***être***) – use ***être*** *with* ***Mrs Vandertramp*** *verbs*

•The past participle (must agree in number and gender for ***Mrs Vandertramp*** *verbs)*

To form the past participle, take off the infinitive endings (**–er**, **-ir** or **–re)** and add **–é, - i** or **–u**.

J'**ai** acheté des baskets au centre commercial. *I* ***have bought*** *trainers at the shopping mall.*

Hier il **a** joué au foot dans le parc. *Yesterday he played football in the park.*

Hier elle est allée au cinema - *Yesterday she went to the cinema*

AVOIR auxiliary	ÊTRE
Avoir	Être
J'ai	Je suis
Tu as	Tu es
Il /elle a	Il /elle est
Nous avons	Nous sommes
Vous avez	Vous êtes
Ils /elles ont	Ils /elles sont

Cabot Learning Federation

Year 9 Term 6 – Culture, History and Geography

Les pays francophones	French Speaking Countries
La France	France
Le Cameroun	Cameroon
Le Sénégal	Senegal
La Corse	Corsica
La Guadeloupe	Guadeloupe
La Suisse	Switzerland
La Belgique	Belgium
L'Algérie	Algeria
La Tunisie	Tunisia
La Guinée	Guinea
La Guyane	French Guiana
La Côte d'Ivoire	Ivory Coast
La Polynésie Française	French Polynesia
Le Bénin	Benin
Le Burkina Faso	Burkina Faso
Le Burundi	Burundi
Le Canada	Canada
Le Tchad	Chad
Le Congo	Congo
Le Djibouti	Djibouti
Le Haïti	Haiti
Le Luxembourg	Luxembourg
Le Madagascar	Madagascar
La République du Mali	Mali
Le Monaco	Monaco
Le Niger	Niger
Le Rwanda	Rwanda
Les Seychelles	Seychelles
Le Togo	Togo
Le Vanuatu	Vanuatu
Les Antilles	French speaking Caribbean Islands

Les directions	Directions
nord	north
nord-est	northeast
est	east
sud-est	southeast
sud	south
sud-ouest	southwest
ouest	west
nord-ouest	northwest

La géographie	Geography
Je suis francophone	I speak French
Une langue maternelle	Mother tongue
L'Hexagone	France (slang)
Les DOM TOM	French overseas territories
L'outre-mer	Overseas
Le métropole	Mainland France
Un territoire	Area
Un département	Department
Une région	Region

L'histoire	History
La révolution française	The French Revolution
La colonisation	Colonisation
La civilisation	Civilisation
Le conflit	Conflict
La culture	Culture
Le cinquième république	The 5th Republic
L 'indépendance	Independence
La liberté	Freedom
La Renaissance	The Rennaissance
Un siècle	A century
Contemporain	Contemporary
Moderne	Modern
Laïque	Secular

La langue de tous les jours	Everyday language
Bonjour!	Good morning, hello
Bienvenue.	Welcome
Pardon, excusez-moi.	Pardon, excuse me.
Parlez-vous anglais?	Do you speak English?
Je ne parle pas français.	I do not speak French.
À tout à l'heure!	See you later!
Merci/Merci beaucoup.	Thank you/Thank you very much.
Au revoir!	Goodbye!
De rien.	You're welcome.
Je ne comprends pas.	I do not understand.
Où est un bon restaurant/un bon café?	Where is a good restaurant/a good café?
Où est la plage/le centre-ville?	Where is the beach/city center?
Je cherche le métro/le gare/l'aéroport.	I am searching for the metro/train station/airport
Je cherche l'hôtel/l'hôpital/la banque.	I am searching for the hotel/hospital/bank.
Pourriez-vous prendre ma photo/notre photo?	Can you take my/our photo?
Il n'y a pas de quoi	It's nothing/don't mention it
Vas-y, Allez-y	Go on, go ahead
Bonne soirée!	Good evening!
À demain!	See you tomorrow!
Je suis desolé(e)	I'm sorry
Tu t'appelles comment?	What's your name?
Je suis perdu	I'm lost
Attention! Fais/faites attention!	Careful! Be Careful!
Bien sûr	Of course
C'est n'importe quoi!	That's nonsense!
Laisse tomber…	Forget it…
Ça te dit?/Ça vous dit?	You up for it?
Tiens-moi au courant!	Keep me up to date!
Bref	all in all
T'sais?	Ya know?
Ça te changera les idées…	It'll take your mind off things…

French Year 9 .12 Tenses and Festivals

Les phrases du passé	Past Tense Time Phrases
L'année dernière	Last year
Le mois dernier	Last month
Avant hier	The day before yesterday
La semaine dernière	Last week
Hier	Yesterday
Dans le passé	In the past
Quand j'avais...ans	When I was.... years old
L'été dernier	Last summer
L'hiver dernier	Last winter
Il y a .... (deux ans)	... ago (two years ago)
Le weekend dernier	Last weekend

Les verbes au passé	Past Tense Verbs
Je suis allé(e)	I went
J'ai célébré	I celebrated
J'ai mangé	I ate
J'ai bu	I drank
J'ai ouvert	I opened
C'était	It was

Les phrase du futur	Future Tense Time Phrases
L'année prochaine	Next year
Le mois prochain	Next month
Après demain	The day after tomorrow
Demain	Tomorrow
La semaine prochaine	Next week
Dans le futur	In the future
Quand j'aurais ... ans	When I will be.... years old
L'été prochain	Next summer
L'hiver prochain	Next winter
Le weekend prochain	Next weekend

Les verbes clés	French Festivals
Ma fête préférée est...	My favourite festival is
Noël	Christmas
La veille de Noël	Christmas Eve
Le Pâques	Easter
Le Dipavali	Divali
Le Hanoukka	Hanukkah
L'Aïd	Eid
Le premier avril	April Fool's Day
La Chandeleur	Candelmas
Le Nouvel An	New Year
La Saint-Sylvestre	New Year's Eve
La Saint-Valentin	Valentine's Day
La fête des Mères	Mother's Day
Le 14 juillet	Bastille Day
Un jour férié	A bank holiday
Le premier mai	May Day/Labour Day
La fête de la musique	Music festival
L'anniversaire	Birthday
Le mariage	Marriage
Un fête	Party
Les invités	Guests
Les cadeaux	Presents
Le muguet	Lily of the valley
Les blagues	Joke
Un repas spécial	A special meal
Un cadeau	A cake
Les feux d'artifices	Fireworks
Religieux/religieuse	Religious
Traditionnel/traditionnelle	Traditional
En famille	Family

Les verbes clés	Key Verbs
Célébrer	To celebrate
Boire	To drink
Décorer	to decorate
Donner les cadeaux	To give presents
Chanter	To sing
Danser	To dance
Allumer les bougies	To light candles
Manger	To eat
Préparer	To prepare
S'amuser	To have fun
Inviter	To invite
Regarder	To watch
S'habiller	To dress up
Se rencontrer	To meet up with family
Apporter	To bring
Se relaxer	To relax
Passer	To spend
Réunir	To gather
Ouvrir	To open
Voir	To see
Je célèbre avec	I celebrate it with
Nous allons nous souhaiter	We wish each other

Les verbes au futur	Future Tense Verbs
Je vais aller	I will go
Je vais célébrer	I will celebrate
Je vais manger	I will eat
Je vais boire	I will drink
Je vais ouvrir	I will open
Ça va être	It will be

9.11 My school Knowledge Organiser

School – Subjects, uniform and time
Future plans & jobs

The present tense	AR verb	ER verb	IR verb
yo (I)	-o	-o	-o
tu (you)	-as	-es	-es
él/ella (he/she)	-a	-e	-e
nosotros/as (we)	-amos	-emos	-imos
vosotros/as (you all)	-áis	-éis	- ís
ellos/ellas (they)	-an	-en	-en

The future tense in Spanish

You can talk about the future by using the **near future** tense.
Use part of the verb IR + a + the infinitive to say what you are **going** to do.

Este tarde **voy a jugar** al tenis. *This evening I am going to play tennis.*
Mañana Paul **va a hacer** un pastel. *Tomorrow Paul is going to make a cake.*

You can also use the following phrases with an infinitive to refer to the future.
Quiero = I want
Me gustaría = I would like
Quisiera = I would like
Espero = I hope

Adjectives describe nouns e.g. a **black** blazer.

In Spanish, adjectives normally go after the words they are describing e.g. una camisa azul (a blue shirt) and they have to agree with the noun they are describing.

Adjectives must agree with the noun (or pronoun) they describe in gender and in number.

This means that if the noun an adjective describes is feminine, the adjective must be feminine e.g. una chaqueta negra (a black blazer).

If that same noun is also plural, the adjective will be feminine AND plural as well e.g. las medias negras (black tights).

Comparatives – to express more or less than

... es más...adjective...que - is more...adjective...than
... es menos ...adjective ....que - is less...adjective... than
... es tan...adjective....como – is as...adjective...as
For example:
El inglés es **más** *interesante* ***que*** *la geografía. (English is more interesting than Geography)*
La historia es ***menos*** *activa* ***que*** *la educación física. (History is less active than PE)*
El francés es ***tan*** *difíil* ***como*** *las matemáticas. (French is as difficult as maths).*

9.11 My school -Spanish Vocab List

Cabot Learning Federation

¿Cuál es tu asignatura favorita?	What is your favourite subject?
El inglés	English
El español	Spanish
El francés	French
El teatro	Drama
El dibujo	Art
El deporte	PE
La informática	Computer Science
La música	Music
La tecnología	Technology
La geografía	Geography
La historia	History
La religion	RE
La educación personal y social	PSHE
Las matemáticas	Maths
Las ciencias	Science
Las humanidades	Humanities
¿Cuál es tu opinión?	What is your opinion?
Es	It is
Interesante	Interesting
Práctico	Practical
Útil	Useful
Ínutil	Useless
Fácil	Easy
Difícil	Difficult
Aburrido	Boring
Emocionante	Exciting
Creativo	Creative
Importante	Important

¿Qué llevas?	What do you wear?
Llevo...	I wear
Una chaqueta	Blazer
Un jersey	Jumper
Una camisa	Shirt
Una camiseta	T-shirt
Una corbata	Tie
Una falda	Skirt
Unos calcetines	Socks
Unos pantalones	Trousers
Unos zapatos	Shoes
Unas medias	Tights
¿Cómo es tu uniforme escolar?	What is your school uniforme like?
Es...	It is ...
Feo	Ugly
Bonito	Pretty
(in)cómodo	(un) comfortable
Caro	Expensive
Barato	Cheap
De moda	Fashionable
Pasado de moda	Unfashionable

La jornada escolar	The school day
Salgo de casa	I leave home
Voy al insti	I go to school
Las clases empiezan...	Classes start...
Las clases terminan...	Classes end ...
Dura...	It lasts ...
El recreo	Break
La hora de comer	Lunch
Por la mañana	In the morning
Por la tarde	In the afternoon

¿Cuáles son las reglas?	What are the rules?
(no) se debe	You must(n't)
(no) se puede	You can('t)
Hay que	You have to
Está prohibido	It is forbidden
Escuchar en clase	To listen in class
Usar el móvil en clase	To use your phone in class
Llevar joyas	To wear jewellery
Llevar maquillaje	To wear make up
Llevar zapatillas de deporte	To wear trainers
Dañar las instalaciones	To damage the facilities
Respetar el turno de palabra	To wait your turn to speak
Comer chicle	To chew gum
Hacer los deberes	To do homework

¿Qué quieres hacer en el futuro?	What do you want to do in the future?
Quiero / Me gustaria ...	I want / I would like ...
Aprobar mis exámenes	To pass my exams
Sacar buenas notas	To get good grades
Hacer un aprendizaje	To do an apprenticeship
Buscar trabajo	To look for a job
Trabajar como voluntario	To work as a volunteer
Viajar por el mundo	To travel the world
Tener hijos	To have children
Casarme	To get married
Aprender a conducir	To learn how to drive
¿Qué vas a ser en el futuro?	What are you going to be in the future?
Voy a ser ...	I am going to be ...
Médico/a	Doctor
Profesor(a)	Teacher
Abogado/a	Lawyer
Mecánico	Mechanic
Fontanero	Plumber
Bombero	Firefighter
Veterinario	Vet
Peluquero	Hairdresser

Festivals Year 9.12 Spanish – Vocab list

Cabot Learning Federation

Marcadores del tiempo pasado	**Past time expressions**
El año pasado	Last year
El mes pasado	Last month
Anteayer	The day before yesterday
La semana pasada	Last week
Ayer	Yesterday
En el pasado	In the past
Cuando tenía …. años	When I was…. years old
El verano pasado	Last summer
El invierno pasado	Last winter
Hace + time phrase (eg. hace dos años)	… ago (two years ago)
El fin de semana pasado	Last weekend

Marcadores del tiempo futuro	**Future time expressions**
El año próximo	Next year
El mes próximo	Next month
Pasado mañana	The day after tomorrow
Mañana	Tomorrow
La semana próxima	Next week
En el futuro	In the future
Cuando tenga…años	When I will be…. years old
El verano próximo	Next summer
El invierno próximo	Next winter
El fin de semana próximo	Next weekend

Vocabulario de 'La tomatina'	**'La tomatina' vocab**
Aplastar	To squash/smash
Ensuciar	To dirty/make messy
Lanzar	To throw
Tener lugar	To take place
La batalla	Battle
El caos	Chaos
El desfile	The parade
La muchedumbre	The crowd
Los tomates	Tomatoes
Insoportable	unbearable

Vocabulario de 'las fallas'	**'Las fallas' vocabulary**
El cartón	Cardboard
Los fuegos artificiales	Fireworks
La hoguera	The bonfire
La leña	Firewood
La maqueta	The model
Modelar	To model/sculpt
El molde	Mold
Los monigotes	Rag dolls/puppets
El muñeco	Doll
Quemar	To burn

Más vocabulario	**More vocab**	Conmemorar	To commemorate
Participar	To participate	El encierro	Bull run
La sobremesa	Sitting and chatting at the table after a meal	Histórico	Historic
		El origen	The origin
La tradición	The tradition	El traje	Suit, costume
El caballo	The horse	El carnaval	Carnival
		Típico	Typical

Festivales	**Festivals**
La navidad	Christmas
La semana santa	Easter / Holy Week
Las hogueras	The bonfires
La feria de abril	The April fair
Día de muertos	The day of deaths

Festivals Year 9.12 Spanish –
Knowledge Organiser

3 Time frames

Cabot Learning Federation

The preterite tense of **regular verbs** is formed on an infinitive stem with the following endings:

Infinitive:	**hablar**	**comer**	**vivir**
Stem:	habl-	com-	viv-
Yo (I)	hablé	comí	viví
Tú (you)	hablaste	comiste	viviste
él/ella/usted (he/she/you)	habló	comió	vivió
Nosotros (We)	hablamos	comimos	vivimos
Vosotros (You all)	hablasteis	comisteis	vivisteis
ellos/ustedes (They/ you all)	hablaron	comieron	vivieron

Ser / Ir (To be /to go)

fui (I was / I went)
Fuiste (You were / You went)
Fue (he/she was // he /she went)
Fuimos (we were / we went)
Fuisteis (you all were / you all went)
Fueron (they were /they went)

The future tense of **regular verbs** is formed adding the endings **e,as,a emos, eis, an** to the infinitive.

FUTURE SIMPLE			
Person	**Verbs**		
	Hablar	Comer	Vivir
Yo	hablar - é	comer - é	vivir - é
Tú	hablar - ás	comer - ás	vivir - ás
Usted, él, ella	hablar - á	comer - á	vivir - á
Nosotros-as	hablar - emos	comer - emos	vivir - emos
Vosotros-as	hablar - éis	comer - éis	vivir - éis
Ustedes, ellos, ellas	hablar - án	comer - án	vivir - án

Regular verbs – present tense endings			
	AR verbs	**ER verbs**	**IR verbs**
I	o	o	o
you	as	es	es
he/she/it	a	e	e
we	amos	emos	imos
you(pl)	áis	éis	ís
they	an	en	en

TRAINING PROGRAMMES AND PRINCIPLES

TRAINING PROGRAM ME – a programme of exercise designed to improve performance.
There are four basic principles (guidelines) that a coach can follow

Frequency – How often to train per week

Intensity – How hard to train

Time – How long to train

Type – What training method (way of exercising) should be used to improve the type of fitness needed for the sport.

There are also seven more principles of training that a coach needs to think about:

SPECIFICITY – Training should be linked to the sport, activity or physical/skill-related fitness goal

INDIVIDUAL DIFFERENCES/NEEDS – The programme should be designed to meet individual training goals and needs e.g. a fitter person would have a harder training programme

VARIATION – It is important to do different activities in training to the performer doesn't get bored

REST AND RECOVERY -A sports performer needs to rest to allow their body to recover. During recovery the body repairs any damage caused by exercise

PROGRESSIVE OVERLOAD - In order to progress (improve), training needs to be demanding enough to cause the body to adapt(change) to improve performance

ADAPTATION – How the body reacts to training loads by increasing its ability to cope with those loads

REVERSIBILITY – If training stops or the intensity of training is not sufficient (enough) to cause adaptation, training effects will be reversed.

HEART RATE

HEART RATE – The number of times the heart beats per minute (bpm) **MAXIMUM HEART RATE** – also called **MHR**

MHR = 220 – age (years)

e.g. the maximum heart rate of a 25 year old is
HR max = 220 – age
= 220 – 25
= 195 bpm

HEART RATE TARGET ZONES

Heart rate needs to be high enough to cause adaptation and improve fitness The target zone recommend to improve cardiorespiratory fitness is

TARGET ZONE = 60% - 85% of MHR (most important)

ANAEROBIC ZONE = 85%-95% of MHR

MAXIMAL ZONE = 95% - 100% of MHR

WORKING OUT TARGET ZONES

1. Calculate maximum heart rate (HR max) or they might give it to you HR max = 220 – age (years)

2. Find **upper training threshold = MHR X 0.85**

3. Find **lower training threshold = MHR X 0.60**

4. Write down the lower heart rate followed by the higher heart rate to show the target zone

e.g. 220 – 25 (age) = 195 bpm
195 x 0.85 = 165.75 = 166 bpm (upper training threshold)
195 x 0.60 = 117 bpm (lower training threshold)
Target zone = 117 bpm – 166 bpm

SPACE and Careers Independent Study

This year you will take a Quizizz at the end of your SPACE topics to demonstrate your understanding of key topics. This will be uploaded to SIMS the same as your other subject with the instructions and Quizizz code you will need to use.

- When you enter your name, you must add your SPACE teacher's initials in brackets to show us which class you are in. E.g. Polly Thomas (DDA)
- When completed write your score and percentage in your knowledge organiser booklet on your SPACE page. Write the title and score along with 2 WWW's / EBI's in your IS textbook. These will be based on the questions you felt most confident about and ones you got wrong.

Topic	Quizizz Code	Score	Percentage

unifrog

Once a term you will have a careers lesson using Unifrog and one piece of I.S which will be to complete a Unifrog activity which will be explained in SIMS.

- You will find your login details in an email sent by Unifrog. If you have forgotten your details go to www.unifrog.org - sign in – reset password / resend welcome email.
- If you are still having issues logging in, please email Mrs Daw or go to I.S Club in A3 after school.

You can use Unifrog at any time to find out information about career pathways, post 16, post 18 and which jobs are best suited to your personality, likes and dislikes.
There will be termly rewards for students who complete the most activities, log the most and spend the most time using Unifrog.

Independent Study Deadlines:

Week commencing	Subject	Complete	Hand In
20 February 2023	English		
	Maths		
	Science		
	RS		
	Computing		
27 February 2023	English		
	Maths		
	Science		
	Music		
	SPACE		
06 March 2023	English		
	Maths		
	Science		
	Geography		
	Drama		
13 March 2023	English		
	Maths		
	Science		
	Art		
	MFL		
20 March 2023	English		
	Maths		
	Science		
	History		
	PE		
27 March 2023	English		
	Maths		
	Science		
	DT		
	Computing		
Easter Holiday			
17 April 2023	English		
	Maths		
	Science		
	Geography		
	Drama		

Week commencing	Subject	Complete	Hand In
24 April 2023	English		
	Maths		
	Science		
	MFL		
	PE		
01 May 2023	English		
	Maths		
	Science		
	RS		
	SPACE		
08 May 2023	English		
	Maths		
	Science		
	History		
	Music		
15 May 2023	English		
	Maths		
	Science		
	Computing		
	DT		
22 May 2023	English		
	Maths		
	Science		
	Geography		
	Art		
May Half Term			
05 June 2023	English		
	Maths		
	Science		
	History		
	MFL		
12 June 2023	English		
	Maths		
	Science		
	Computing		
	RS		

Week commencing	Subject	Complete	Hand In
19 June 2023	English		
	Maths		
	Science		
	Music		
	Drama		
26 June 2023	English		
	Maths		
	Science		
	Geography		
	PE		
03 July 2023	English		
	Maths		
	Science		
	DT		
	Art		
10 July 2023	English		
	Maths		
	Science		
	MFL		
	SPACE		
17 July 2023	English		
	Maths		
	Science		
	History		
	RS		

	Mon	Tue	Wed	Thu	Fri
1					
2					
LF					
Bre					
3					
4					
LBR					
5					
6					

#ReadyToLearnHPA

Hans Price Academy