Dorset Studio School
CENTRE OF EXCELLENCE FOR ENVIRONMENTAL SCIENCES

Knowledge Organiser Booklet

Year 7 Autumn Half Term 2

Name:_____ Tutor group:_____

Contents

Education Endowment Foundation

Research carried out by the Education Endowment Foundation proved that: Homework has a positive impact on average of + 5 months, particularly with pupils in secondary schools.

Home learning timetable

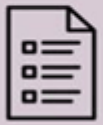
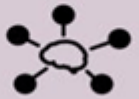
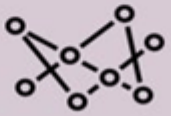
The table below details which days each subject will set home learning on each week. Students will have one week to complete home learning tasks for each subject.

Group	Monday	Tuesday	Wednesday	Thursday	Friday
7N	Humanities Art	Science MFL	Maths Science	English Music	
7E	Humanities Art	Science	Maths Science	English MFL	Music
7W	Humanities MFL	Art	Maths	English Science	Science Music

Please note you have two science teachers; science home learning will be set by both teachers

These knowledge organisers have been created by your teachers to support your learning both in class and for home learning. They are also a valuable revision tool for you to use independently when preparing for assessments. It is important that you make good use of your knowledge organisers by learning how to use them in different ways.

How to use a knowledge organiser – step by step guide

	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your KO. 	Write down the key words and definitions. 	Use your KO to condense and write down key facts or information onto flash cards. 	Use your KO to create a mini quiz. Write down your questions using your KO. 	Create a mind map with all the information you can remember from your KO. 	Ask a friend or family member to have the KO or flash cards in their hands. 
Step 2	Cover or flip the KO over and write down everything you can remember. 	Try not to use your KO to help you. 	Add pictures to help support. Then self-quiz using the flash cards. You could write questions on one side, and answers on the other! 	Answer the questions and remember to use full sentences. 	Check your KO to see if there are any mistakes on your mind map. 	They can test you by asking you questions on different sections of your KO. 
Step 3	Check what you have written down. Correct any mistakes in green pen and add anything you have missed. Repeat. 	Use your green pen to check your work. 	Ask a friend or family member to quiz you on the knowledge. 	Ask a friend or family member to quiz you using the questions. 	Try to make connections, linking the information together. 	Write down your answers, 

Foundation Knowledge	Definition
M.A.I.N Acronym	M stands for militarism, A is alliances, I is imperialism, and N is nationalism.
Militarism	The belief that a country should maintain a strong military capability and be prepared to use it aggressively to defend or promote national interests
Alliances	A union or association formed for mutual benefit, especially between countries or organizations.
Imperialism	A policy of extending a country's power and influence through colonization, use of military force, or other means.
Nationalism	Identification with one's own nation and support for its interests, especially to the exclusion or detriment of the interests of other nations.
Chronological Order	The order something happens or is shown in time order.
DAFOREST	This acronym stands for: direct address; anecdote; facts; opinion; rhetorical questions; emotive language; statistics; three (rule of three) OR triplets.
PEEL Structure	It's an acronym and stands for '**point, evidence, explain, link**'.
Retrieval	The process of finding and bringing back something: the storage and retrieval of information.
Atmosphere	The tone or mood of a place, situation, or creative work.
Annotation	A note by way of explanation or comment added to a text or diagram.
Speculation	The activity of guessing possible answers to a question without having enough information to be certain

PARAGRAPH STRUCTURE

Point

Evidence

Explain the effects of the language on the reader

Link to the other text

Repeat for second text

Useful Sentence Starters

Point	Evidence	Explain
The writer uses… The writer gives the impression that… We can clearly see…	We see this when… …in the line '__' When X says '_'…	This:- suggests implies highlights illustrates portrays conveys the idea depicts contrasts with reinforces

Link	
Similarity	Difference
Both X and Y… Similarly… Likewise… In the same way…	In contrast… However… On the other hand… Unlike X, Y

Persuasive Devices / Techniques: DAFOREST

Technique	Explanation	Example
Direct Address	Addressing the reader directly using pronouns such as "we" or "you".	"You can stop the spread of coronavirus by staying at home"
Anecdote	A short personal story that provides an example related to the topic	"The crime rate in Amsterdam dropped significantly when they legalised cannabis"
Facts	Something which can be proven true	"'E' is the most common letter in the English language."
Opinions	A belief which cannot be proven true – someone's ideas.	"Exeter City is the greatest football club of all time"
Rhetorical Question	A question which does not require a response.	"Do you want to pass your exams?"
Emotive Language	Words which provoke an emotional response from the audience.	"This ludicrous idea will result in utter catastrophe."
Statistics	Numerical facts and data used to support a point.	"12% of people worldwide have never used the internet"
Three (rule of)	List of three things in a sentence.	"Smoking is a filthy, selfish and costly habit"

Conventions of a Letter

Sentences to Impress

IMAGINE + 3
Imagine a world where…, where… and where…
Imagine… Imagine… Imagine…

METANOIA – correcting yourself for emphasis
I think – no, I know – that something has to change.

EPISTROPHE – repetition at the end
The internet tells us to look better, eat better, sleep better, act better…

3 NEGATIVES + QUESTION
Bullied, isolated afraid – is this how we want school pupils to feel?
Abused, unwanted, abandoned – when will it stop?

TRICOLON
Every selfie that is edited, every filter that is applied, comment that is posted slowly erodes our mental health.
Destructive, damaging, desolating: social media…

PROLEPSIS – answering an objection
Might some people might argue…? Those people are mistaken.

HYPOPHORA – asking and then answering a question
When will we be satisfied? Perhaps never.

POLYSYNDETON – extending a list using 'and'
Children should be climbing trees and riding bikes and swimming in the river and playing chase.

7N: **Year 7 Maths: Autumn 2**

What you need to know:

Collecting like terms

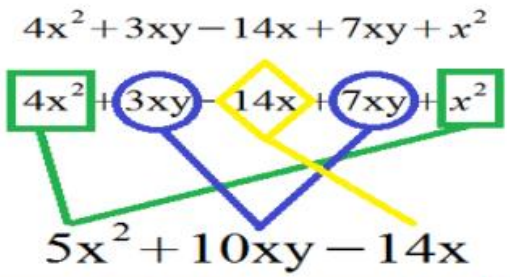
Simplify the expression: **4w + 3 + 2w - 1**

4w + 3 + 2w – 1 (Now Group Like Terms)

= 4w + 2w + 3 – 1 (Combine Like Terms)

= 6w + 2

= **6w + 2** ✓



Note – you can only collect terms that have the same power eg $5x + 4x^2 \neq 9x^2$

Set up equations from word problems

Jenny, Kenny, and Penny together have 51 marbles. Kenny has double as many marbles as Jenny has, and Penny has 12. How many does Jenny have?

Set up an equation then solve

Jenny's + Kenny's + Penny's = 51

n + 2n + 12 = 51

3n + 12 = 51

-12 -12

3n = 39

÷3 ÷3

n = 13

Expanding and factorizing expressions:

Expanding brackets:

$3(x + 4)$

3x + 12

$x(x + 5)$

$x^2 + 5x$

$(x + 2)(x + 3)$

$x^2 + 2x + 3x + 6$

$x^2 + 5x + 6$

Factorising expressions

$5x + 15$

Common factor = 5

$5(x + 3)$

Factorise: $x^2 + 6x$

Common factor = x

$x(x + 6)$

Factorise $x^2 + 6x + 8$

2 numbers that add to give 6, and multiply to give 8? 2 and 4

(x + 2)(x+ 4)

Fraction of an Amount	Divide by the bottom, multiply by the top	Find $\frac{2}{5}$ of £60 $60 \div 5 = 12$ $12 \times 2 = 24$
Adding or Subtracting Fractions	Find the Lowest Common Multiple of the denominators to find a common denominator. Use equivalent fractions to change each fraction to the common denominator. Then just add or subtract the numerators and keep the denominator the same.	$\frac{2}{3} + \frac{4}{5}$ Multiples of 3: 3, 6, 9, 12, 15.. Multiples of 5: 5, 10, 15.. $\frac{2}{3} = \frac{10}{15}$ $\frac{4}{5} = \frac{12}{15}$ $\frac{10}{15} + \frac{12}{15} = \frac{22}{15} = 1\frac{7}{15}$
Multiplying Fractions	Multiply the numerators together and multiply the denominators together. Simplify if you can.	$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ $\frac{3}{8} \times \frac{2}{9} = \frac{6}{72} = \frac{1}{12}$
Dividing Fractions	Multiply by the reciprocal Keep the first fraction the same Flip the second fraction upside down Change the divide to a multiply Multiply by the reciprocal of the second fraction.	$\frac{1}{2} \div \frac{1}{2} = \frac{1}{2} \times \frac{2}{1} = \frac{2}{2} = 1$ $\frac{3}{4} \div \frac{5}{6} = \frac{3}{4} \times \frac{6}{5} = \frac{18}{20} = \frac{9}{10}$

Factors, Multiples and Primes

What you need to know:

Multiples and factors

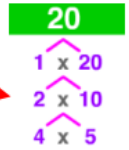
Multiples: The result of multiplying a number by and integer. It is the times table of a number.

Multiples of 4: 4, 8, 12, 16,20 ...
Multiples of 5: 5, 10, 15, 20, 25....

Multiples are the list of times tables.

Factors: A number that divides exactly into another number without a remainder. It is often helpful to write them in pairs.

Write them in pairs first so you don't miss any!



Factors of 20 = 1, 2, 4, 5, 10, 20

Prime numbers

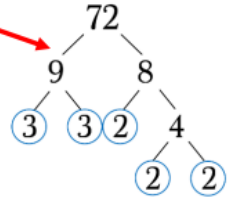
Prime: This is a number that has exactly 2 factors; 1 and itself.

2 is the only even prime. The first 10 prime numbers are:
2, 3, 5, 7, 11, 13, 17, 19, 23, 29

These are not the only prime numbers.

Prime factorisation: This is when we split a number into its prime factors using a factor tree. We circle the prime factors.

We need to find pairs of numbers that multiply to give the number above.



If a number is repeated we write it as a power.

$72 = 2^3 \times 3^2$

Key Terms:

Prime number: A prime is a number that has only two factors which are 1 and itself.
Multiple: A number in the given numbers times table.
Factor: A number that fits into another number exactly.
LCM: The smallest number that is in the times tables of the given numbers.
HCF: The biggest number that divides exactly into two or more numbers.

Hegarty maths clip numbers

Factors and Multiples: 27 and 33

Prime Numbers and HCF and LCM: 28 – 32, 34 – 36

hegartymaths

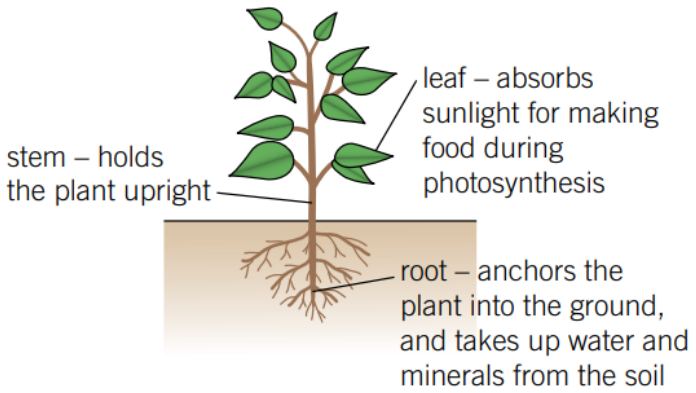
You need to be able to:

- Identify factors and multiples.
- Identify a prime number.
- Complete a prime factor tree and write the number in index notation.
- Calculate HCF and LCM of two values using an appropriate method.

Multicellular organisms are made up of many cells and have five levels of organisation

cell	tissue	organ	organ system	multicellular organism
the smallest building block of an organism	a group of specialised cells working together	a group of tissues working together	a group of organs working together	a group of systems working together

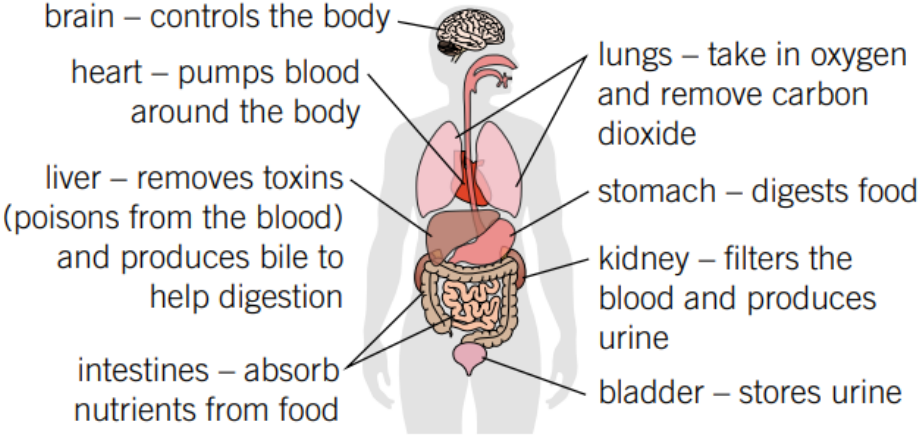
Plant Organs



Skeleton

The four main functions of the skeleton are to:
- support the body
- protect vital organs
- help the body move
- make blood cells (in the bone marrow).

Animal Organs



Antagonistic Muscles

Muscles are a type of tissue – lots of muscle cells work together to cause movement.

Pairs of muscles that work together are called antagonistic muscles. When one contracts the other relaxes.

Atoms - There are 92 types of atoms that exist naturally. All chemical substances are made of atoms.
Each type of atom has its own chemical and physical properties.

Elements - There are 92 types of elements that exist naturally.

An element is a chemical made **only** of **one type of atom.**

An element **cannot** be broken down into other substances.

The names and symbols of all the elements can be found in the **Periodic Table** of elements.

Hydrogen	H
Carbon	C
Nitrogen	N
Oxygen	O
Sodium	Na
Magnesium	Mg
Aluminium	Al
Silicon	Si
Sulfur	S

Chlorine	Cl
Potassium	K
Calcium	Ca
Iron	Fe
Copper	Cu
Zinc	Zn
Silver	Ag
Gold	Au
Lead	Pb

Compounds - There are millions of compounds that exist naturally.

A compound is a chemical made of **two or more types of atom chemically bonded** together.

A compound **can** be broken down into other substances.

In a compound made of a **metal** and a **non-metal**, the name of the metal comes first. (iron bromide, magnesium fluoride)

If the non-metal atom is oxygen, it is called oxide. (copper oxide)
If the non-metal atom is chlorine, it is called chloride. (sodium chloride)

In a compound made of a **non-metal** and **oxygen**, oxygen comes second and is called monoxide if there is one oxygen atom or dioxide for two oxygen atoms.
(carbon monoxide, sulfur dioxide)

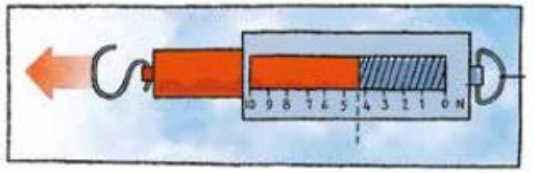
Molecule – Made of atoms chemically bonded together.

It might be an **element**, several of the **same type** of atom bonded together.
It might be a **compound**, with **two or more types** of atoms.

Chemical formulae – tells you how many of each atom there are in a molecule.

Foe example water - H_2O – two hydrogen atoms and one oxygen atom

Forces
A force can be a push or a pull.
Forces can be measured using a newton-meter. Forces are measured in newtons (N).



Types of forces
Contact forces occur when objects are touching, for example:
- friction
- drag forces (air resistance and water resistance)
- support forces (e.g., reaction forces)

Non-contact forces work at a distance, for example:
- gravity
- magnetic force
- electrostatic force

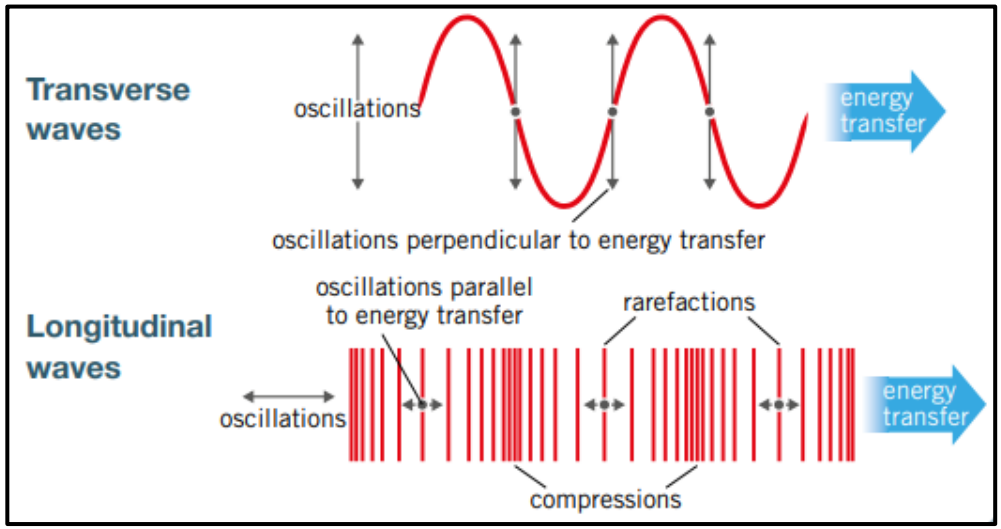
Balanced and unbalanced forces
When the forces acting on an object are the same size, but act in opposite directions, we say that they are balanced.
The balanced forces cancel out, and the object is in equilibrium.

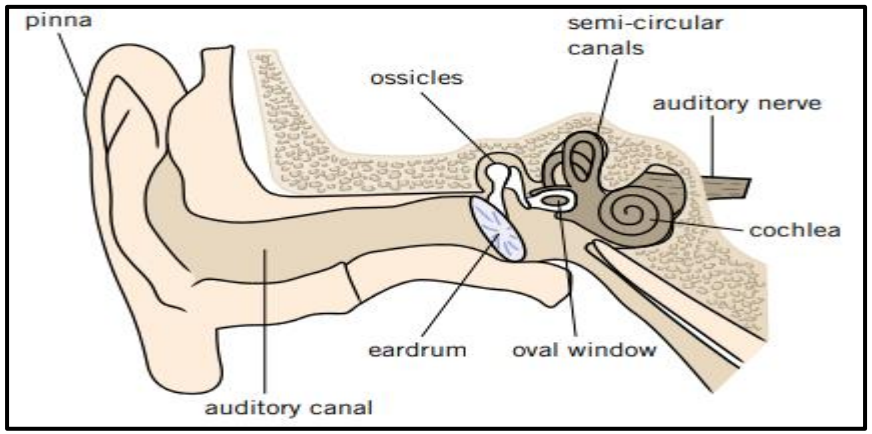
If the forces are not the same size, and do not we say they are unbalanced.

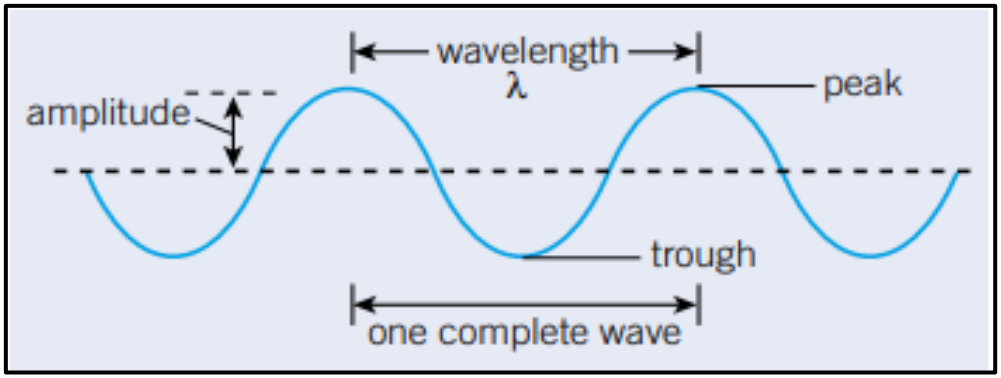
Mass and Weight
Mass is the amount of 'stuff' something is made of – it is measured in kilograms (kg).
Weight is a force - it is measured in newtons (N).
weight (N) = mass (kg) × gravitational field strength (N/kg)
The gravitational field strength on Earth is about 9.8 N/kg. Your weight depends on the gravitational field strength, but your mass is the same everywhere.

A **wave** is an oscillation or vibration that **transfers energy**. Matter is not transferred. Sound is produced by **vibrations**. It travels as a **longitudinal wave**.

Infrasound – below 20Hz. **Ultrasound** – above 20 kHz
Humans can hear frequencies **20 Hz to 20 kHz**.







Part of ear	Structure and function
Outer ear	Pinna – directs sound into …
	Auditory canal
	Eardrum - vibrates
Middle ear	Ossicles – amplifies vibrations
	Oval window - vibrates
Inner ear	Cochlea – detects vibrations
	Semi-circular canals –keep you balanced

Frequency - how many waves go past a particular point in a second, measured in hertz (Hz) or kilohertz (kHz).
Volume – measured in decibels (dB).

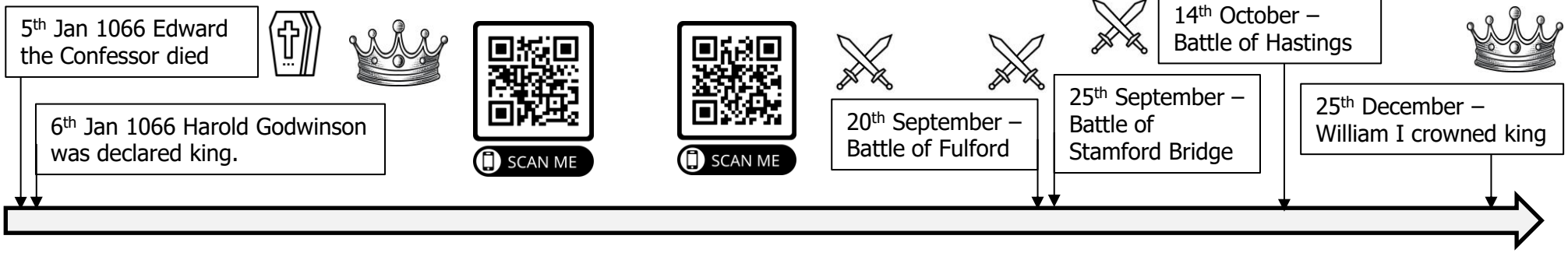
MEDIEVAL REALMS – The Norman Conquest

Year 7 Humanities: Autumn 2 – 2.0

2.1 Key Events	
2.1.1 Death of Edward The Confessor	On Christmas Day 1065, Edward the Confessor took to his bed feeling ill. On 5th January 1066 he died. Edward did not have any children.
2.1.2. Harold Godwinson crowned king	The Saxons were worried that Godwinson's claim to the throne was weak so he was crowned king the day after Edward the Confessor's death.
2.1.3. Viking Invasion	Upon hearing that Godwinson had been crowned king, Hardrada led a Viking invasion, landing his longboats in NE England in September 1066.
2.1.4. Battle of Fulford	Hardrada & Godwinson's angry brother Tostig defeated the Northern Saxon Earls; Edwin and Morcar.
2.1.5. Battle of Stamford Bridge	Godwinson and his army march north and defeat Hardrada.
2.1.6. Norman Invasion	Duke William of Normandy landed his army of 7,000 men at Pevensey 28th September 1066.
2.1.7. Battle of Hastings	Duke William defeated Godwinson's army Hastings 14th October 1066. Godwinson was killed.
2.1.8. William I Crowned	Duke William of Normandy was crowned King William I on Christmas Day 1066

2.2 Contenders To The Throne	
2.2.1. Harold Godwinson	Harold was a Saxon nobleman and the Earl of Wessex. His sister was the wife of Edward The Confessor. His family were very powerful.
2.2.2. Harald Hardrada	He was King of Norway and a great warrior who believed he was the rightful heir to the throne of England.
2.2.3. Duke William of Normandy	He was a distant cousin of Edward the Confessor and claimed that he had been promised the English throne.
2.2.4. Edgar Atheling	He was the Great-Nephew of Edward the Confessor & his closest relative, but he was just a child.

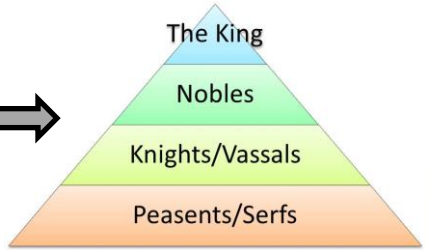
2.3 Key Terms	Definition
2.3.1. Witan	Saxon Council
2.3.2. Housecarls	Elite Saxon warriors
2.3.3. Cavalry	Soldiers fighting on horseback
2.3.4. Shield Wall	Saxon fighting formation



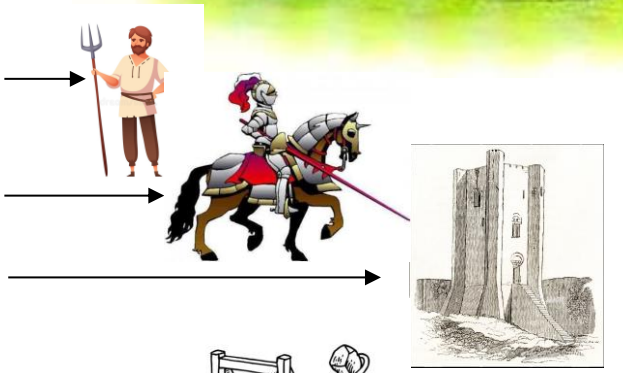
1066 Timeline of Key Events

2.4 Problems & Control	
2.4.1. Feudal System	This was a system to ensure everyone new their place with the king and nobles at the top of society and peasants at the bottom.
2.4.2. Harrying The North	A set of military campaigns 1069-1070 to bring all Saxons in to line and stop them from rebelling.
2.4.3. Domesday Book	This was a survey carried out by William to establish how wealthy England was so that he could tax the people.
2.4.4. Motte & Bailey Castles	Early temporary castles made out of wood and mud built quickly to control an area or region.
2.4.5. Square Keep Castles	More permanent castles built out of stone to dominate an area or region.

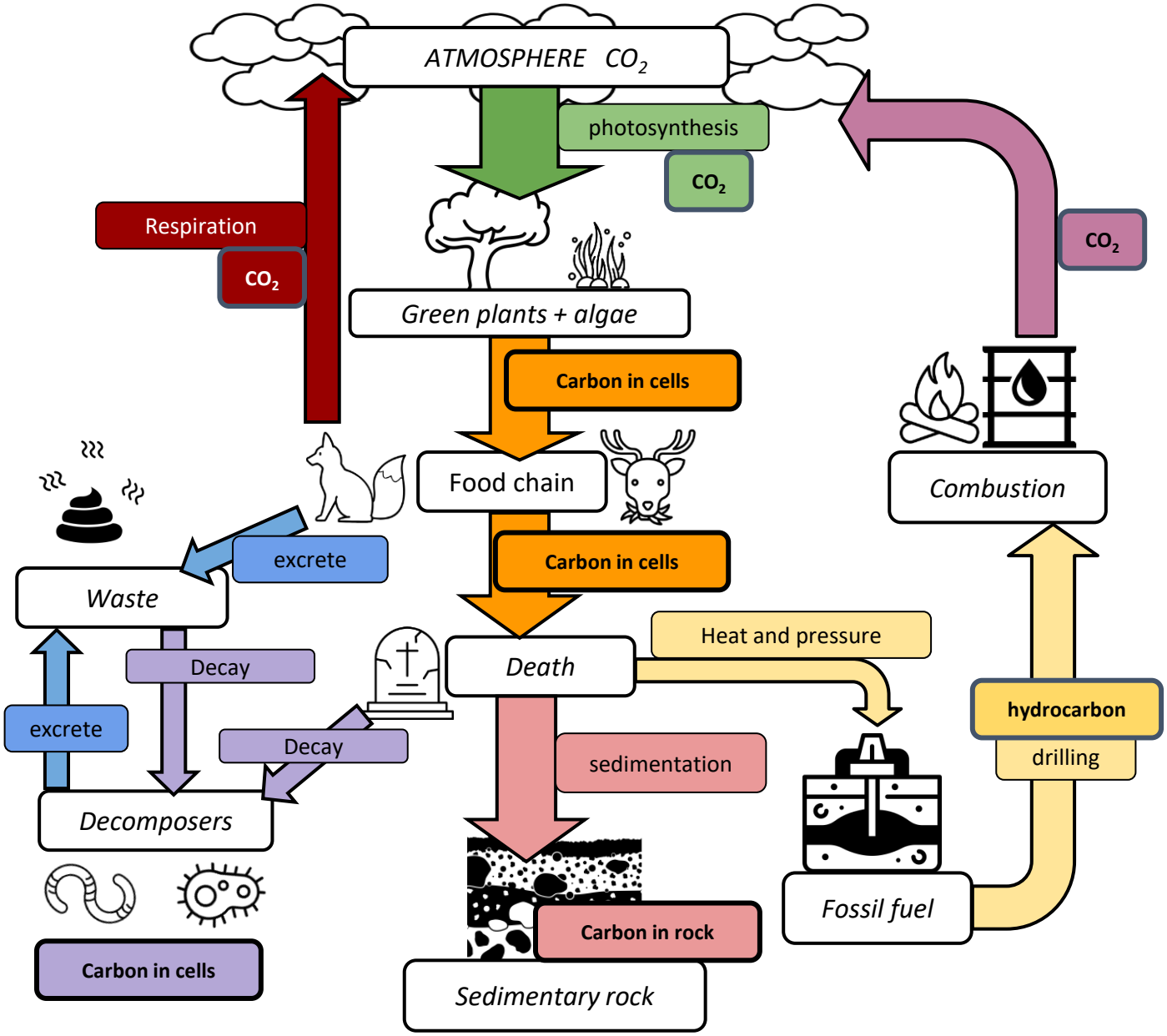
2.5 Key Words/Terms	
2.5.1. Monarch	King or Queen 
2.5.2. Villein/Serf	A peasant – the lowest member of society.
2.5.3. Knight	A person with an honorary title who represents the monarch.
2.5.4. Keep	Mani building at the heart of a castle.
2.5.5. Siege	Term used to attack a castle of fortified settlement.
2.5.6. Siege Engine	A contraption used to attach a castle e.g. a catapult.
2.5.7. Source	A place where we obtain information about the past e.g. the Bayeaux Tapestry



SCAN ME



TOP TIP: A *moat* is a ditch around a castle whilst a *motte* is a hill (sometimes man made).



Which process **removes** carbon from the atmosphere	Photosynthesis.
Which processes involve **releasing** carbon into the **atmosphere**?	Combustion Respiration
Which **5 processes** in the carbon cycle involve **living things**?	Photosynthesis Food chain Decay Excretion Respiration
What is a **carbon sink**?	Something that takes in and stores carbon, stopping it going back to the atmosphere.
Which parts of the cycle are **carbon sinks?**	Plants / algae Rock / soil
Which processes are due to **human activity alone**?	Drilling Combustion of fuel

How do you estimate the height of a tree?

Equipment:

- 30m ruler
- Ranging pole / flag
- Long tape measure
- 2 people

Method:

1. Person 1 stand at the trunk of the tree with the ranging pole or marker.
2. Person 2 faces the tree and hold their hand out straight in front of them with the ruler pointed up. **See image 1.**
3. Person 1 walks backwards from the tree keeping the ruler help out. Until the top of the ruler is in line with the top of the tree and the bottom of the ruler is in line with the trunk.
4. ONce the tree is lined up with the ruler. Turn your wrist so the ruler is in line with the ground. **See image 2.**
5. Person 2 then walks away from the tree until they line up with the end of the ruler.
6. Person 2 should place the raging pole / flag in the ground to mark the distance.
7. Measure the distance between the pole and the tree trunk in centimeters. That is the estimated height of the tree.

Image 1

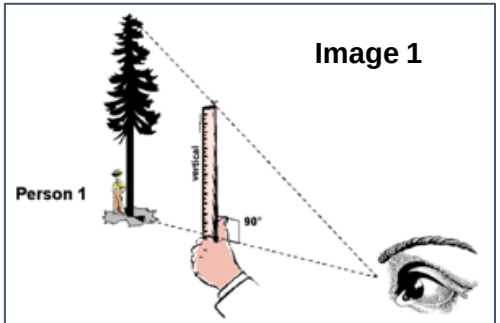
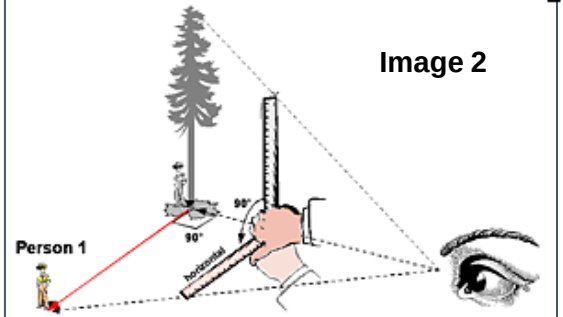


Image 2



How do you estimate the diameter of a tree?

Equipment:

-Tape measure - 2 people - Calculator

Method:

1. Wrap the tape measure around the tree at chest height.
2. Read the measurement on the tape measure in centimeters.
3. Divide that number by **π** (3.14) to calculate the diameter.

How do you estimate the volume of carbon a tree captures?

1 - Work out the **B**iomass **A**bove **G**round
B.A.G = 0.35 x Diameter ^{2} x height

2- Work out the **B**iomass **B**elow **G**round
B.B.G = 0.25 x B.A.G

3 - Work out the **T**otal **B**iomass
T.B = **B.A.G + B.B.G**

4 - Work out the **D**ry **W**eight of the tree
D.W = T.B x 0.725

5 - Work out the weight of carbon in the tree
WoC = (D.W x 0.5) x 3.67

Carbon capture is important as it removes CO_2 from the atmosphere, reducing global warming.

In this project we will be exploring the concept of **mythical creatures** and using inspiration from other artists and our imagination to create our own!

Medium and Techniques

Painting: Watercolour, blending, scumbling, splattering

COLOUR

SHAPE

Drawing: 4B pencil, fineliner, wet wash, monochrome

LINE

Clay: Modelling, texturing, relief, painting

TEXTURE

Collage: Selecting, cutting, combining shapes, placing, mosaic

DESIGN

Oil pastel: Blending, directional lines, tone, texture

TONE

Key vocabulary
Mark-making
Cross-hatching
Blending
Contrast
Texture
Hybrid
Gargoyle
Mosaic
Surrealist
Texture
Proportion
Expression
Monochrome
Scumbling

Artists we will study: Caravaggio, Antoni Gaudi, Salvador Dali, Henri Magritte, Redmer Hoekstra

1. Different Vocal Types

soprano	A high female (or boy's) voice
alto	A low female (or boy's) voice
tenor	A high (adult) male voice
bass	A low (adult) male voice

2. Vocal Warm-ups

Warm up	Why we do it	How can I warm-up?
stretches	When singing you are using your whole body!	Simple body movements, Stretching up, bending the knees, rolling the shoulders.
bubble gum	Works the muscles in your face, tongue and breathing support.	Unwrap and chew an imaginary piece of really sticky bubble-gum, use your tongue to get it off your teeth. Then blow a bubble until it pops and start again.
sirens	Activates the muscles attached to the layrnx (voice box) and the vocal folds (vocal cords).	Start with your lowest note and glissando (slide) to your top note and back again. Repeat multiple times.

3. Lyrics

How do I remember all of the lyrics to the song?	Below are a few tips and hints on how to remember the lyrics.
1. Surround yourself with the song.	Listening to the song on repeat every day will help you become familiar with the structure and lyrics of a song. Your brain will start to memorise it for you.
2. Sing along.	Print off the lyrics, or use a sing along YouTube video. Your brain learns by doing, not just listening.
3. Memorize the first lines of each section	By memorising the first line of each verse/chorus you can use association to remember the rest of that verse.
4. Write the lyrics down.	Copying the lyrics down multiple times then writing them from memory will help see which lyrics you lose the most.

4. Performing

How should I stand?	Stand with legs shoulder width apart, arms down by your sides.
Where should I look?	You should look at the conductor for any dynamic cues or tempo changes.

What is the school day like in France?
A school day is generally longer from 8am until 4 or 5pm.
How many lessons do they have? What is their timetable like?
You have 7 or 8 lessons a day. In France, when you are in year 8 or 9 you move to the exam years and have free periods in the day when you complete work on your own. You have to go to an exam hall to do your study during these free periods but you have the chance to get your homework out of the way before you go home.

J'adore = I love

J'aime = I like

Ç ava = It's OK

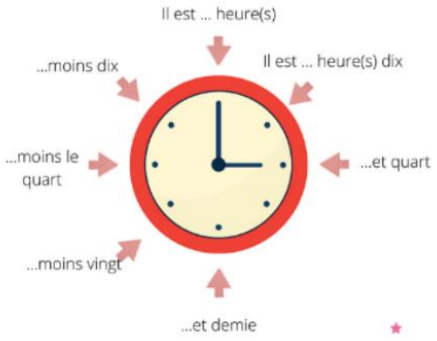
Je n'aime pas = I don't like

Je déteste = I hate

Je préfère = I prefer

Telling time in French

Quelle heure est-il ?

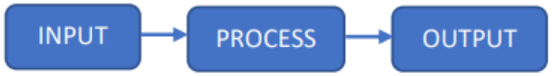


What is the climate like in the areas where French-speaking children go to school?
Some countries, like Africa have many French speakers and it gets very hot and dry. Children find it hard to study all day and need a break at lunch. Some countries, like Canada have very cold periods and children have to get to school in very wintery conditions. On some Islands in the Pacific, where French is spoken, children have to deal with Tsunami's, Hurricanes and Water spouts which can sometimes disrupt their education for long periods of time.

Computer System

A basic, **complete,** and **functional** computer.

It will include all the hardware and software required to make it functional



Hardware

Computer hardware refers to the **physical parts of a computer and related devices**. Internal hardware devices include motherboards, hard drives, and RAM.

Computer Components

Motherboard

Hard Disk Drive

CPU (Central Processing Unit)

Fan

PSU (Power Supply Unit)

RAM (Random Access Memory)

Types of Computer Storage

Storage is a **mechanism that enables a computer to retain data**, either temporarily or permanently. Storage is among the key components of a computer system and can be classified into several forms, although the types we cover are:

Internal Storage:

Most often refers to a **computer's internal** hard drive. This is the primary storage device used to store a user's files and applications. The computer's internal memory, **RAM (Random Access Memory)** and **ROM (Read Only Memory)** is also classed as internal storage.

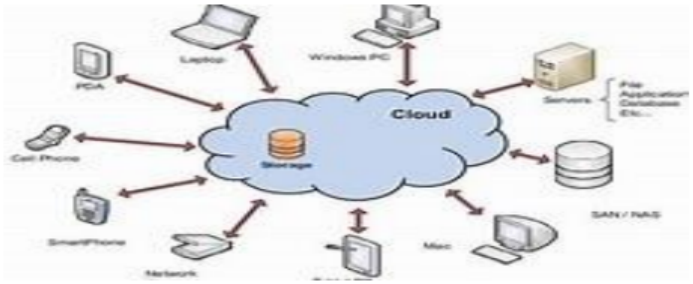
External Storage:

Commonly referred to as an external drive, external storage is storage that's not part of the internal parts of a computer. These drives often connect to the computer using a connection, such as USB (Universal Serial Bus).

Common types of external storage are **Flash Drives (USB Sticks)** and **DVDs.**

Cloud Storage

Cloud storage is a cloud computing model in which data is stored on remote servers accessed from the internet, or "cloud".



Software

Computer software refers to the programs and other operating information used by a computer.

The main piece of software on a computer is the

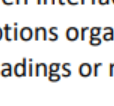
Operating System

The part of the operating system we see on screen is known as the User Interface.

- Graphical User Interface (GUI).
  The most popular type of system. They combine menu driven interfaces with icons.
- Command Line Interface (CLI).
  Users need to learn the commands to make it work.
- Menu Driven Interface.
  A list of options organised under various headings or menus

Most used Operating Systems (OS)

- Microsoft – Windows
- Apple – IOS
- Google - Android



Apple