



Name:

Class: Bodiam

Teacher: Ms Jordan

Knowledge Organiser

Term 5



"Intelligence plus character-that is
the goal of true education."

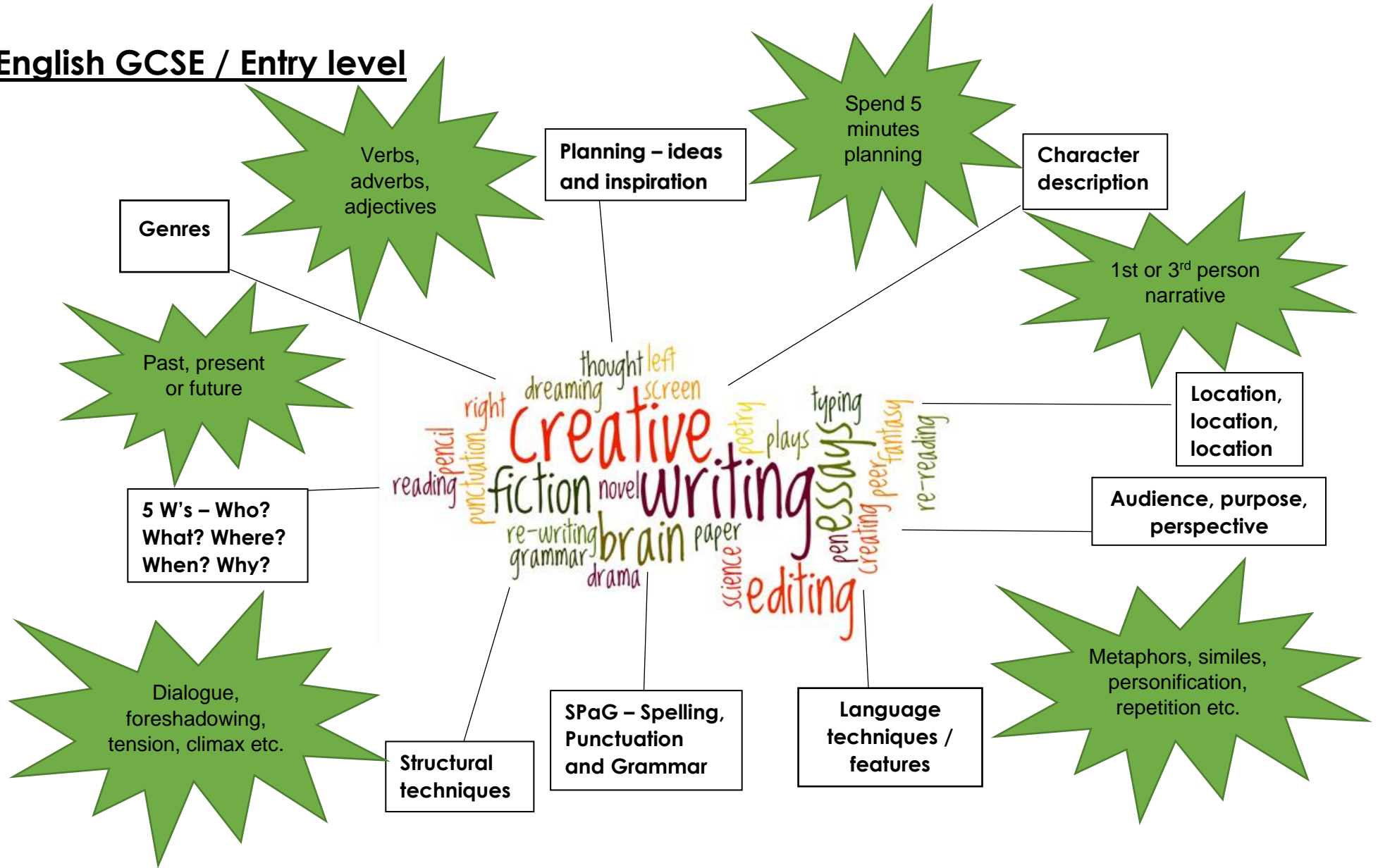
Martin Luther King

How to use your Knowledge Organiser

Using in Class	
Quiz your neighbour	Your teacher will give you a topic and you can create questions to test your neighbour's knowledge and understanding
Multiple choice quiz	A quick quiz based on the knowledge organiser
Key words	Tell your teacher if any key words from your knowledge organiser come up in lessons
Spelling Tests	Using the key words, your teacher might give you some spelling tests
Extended Writing	Using this key information, create longer pieces of writing showing your specialist knowledge
Knowledge test	At the end of the unit, your teacher might give you a test based on your knowledge organiser

Using at Home	
Catching up	Use the knowledge organiser to catch up on any lessons you have missed
Quiz yourself	Read through the information, repeat it to yourself, cover and test your knowledge
Create Flashcards	Turn the information in to revision cards
Application	Use this information to add to any homework or classwork, including longer pieces of writing
Revise	Use the information to revise for any assessments or end of topic tests

English GCSE / Entry level



Term 5 - KS4 PEARSON EDEXCEL MATHEMATICS

Probability and events; Transformations

PROBABILITY AND EVENTS

Topic/Skill	Definition/Tips	Example
1. Probability	<p>The likelihood/chance of something happening.</p> <p>Is expressed as a number between 0 (impossible) and 1 (certain).</p> <p>Can be expressed as a fraction, decimal, percentage or in words (likely, unlikely, even chance etc.)</p>	
2. Probability Notation	P(A) refers to the probability that event A will occur .	P(Red Queen) refers to the probability of picking a Red Queen from a pack of cards.
3. Theoretical Probability	$\frac{\text{Number of Favourable Outcomes}}{\text{Total Number of Possible Outcomes}}$	Probability of rolling a 4 on a fair 6-sided die = $\frac{1}{6}$.
4. Relative Frequency	$\frac{\text{Number of Successful Trials}}{\text{Total Number of Trials}}$	<p>A coin is flipped 50 times and lands on Tails 29 times.</p> <p>The relative frequency of getting Tails = $\frac{29}{50}$.</p>
5. Expected Outcomes	To find the number of expected outcomes, multiply the probability by the number of trials .	<p>The probability that a football team wins is 0.2 How many games would you expect them to win out of 40?</p> <p style="text-align: center;">$0.2 \times 40 = 8 \text{ games}$</p>

TRANSFORMATIONS

Topic/Skill	Definition/Tips	Example
1. Translation	Translate means to move a shape . The shape does not change size or orientation .	
2. Column Vector	In a column vector, the top number moves left (-) or right (+) and the bottom number moves up (+) or down (-)	$\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ means '2 right, 3 up' $\begin{pmatrix} -1 \\ -5 \end{pmatrix}$ means '1 left, 5 down'
3. Rotation	<p>The size does not change, but the shape is turned around a point.</p> <p>Use tracing paper.</p>	<p>Rotate Shape A 90° anti-clockwise about (0,1)</p>
4. Reflection	<p>The size does not change, but the shape is 'flipped' like in a mirror.</p> <p>Line $x = ?$ is a vertical line. Line $y = ?$ is a horizontal line. Line $y = x$ is a diagonal line.</p>	<p>Reflect shape C in the line $y = x$</p>
5. Enlargement	The shape will get bigger or smaller . Multiply each side by the scale factor .	<p>Scale Factor = 3 means '3 times larger = multiply by 3'</p> <p>Scale Factor = $\frac{1}{2}$ means 'half the size = divide by 2'</p>



ANCIENT GREECE KNOWLEDGE ORGANISER









Diagram - Map of Ancient Greece

Map of Ancient Greece













Greece's position next to the sea (there are over 1400 islands) meant Ancient Greeks were a seafaring people. Trade between the islands led to the creation of 'city-states' (polis). Each city-state was ruled by a powerful city, led by a ruler or (later) government. Greece is a warm country, but winds from the Mediterranean, and rains from the north, kept temperatures livable and created fertile farming conditions.



Ancient Greek Gods

Zeus	Hades
 <p>Zeus was the king of the Greek gods, who lived on the Mount Olympus. He was also the god of the sky and the god of thunder. He was married to the goddess Hera and his symbol was the lightning bolt. Zeus was believed to be able to control the weather, creating huge storms. It was thought that he could change people into animals as punishment. His two brothers were Hades and Poseidon.</p>	 <p>Hades (brother of Zeus and Poseidon) was the God of the Underworld. He was normally depicted as having a pitchfork and his three-headed dog, Cerberus. He rode a chariot pulled by black horses. The Underworld was where dead people went in Greek Mythology. Hades originally wasn't happy about this, until Zeus reminded him that it meant that all people would eventually be his subjects!</p>
Poseidon	Hera
 <p>Poseidon (brother of Zeus and Hades) was the God of the sea, earthquakes, and horses. Along with his brothers, he was one of the three most powerful gods. As god of the ocean, he was especially important to sailors and fishermen. He was usually pictured with a trident, curly hair, and a beard. It was thought that Poseidon could create sea storms to ruin ships, or clear weather to help them along.</p>	 <p>As the wife of Zeus, Hera was considered as the queen of Mount Olympus. She was most often considered to be the goddess of women, marriage and childbirth. She was normally pictured wearing long flowing robes and a crown, and holding a scepter. The women of ancient Greece prayed to Hera during childbirth, and to aid them through their marriages. As wife of Zeus, she also had power over the skies.</p>
Apollo	Aphrodite
 <p>Apollo was the Greek God of music, poetry, light, prophecy and medicine. He was often pictured as a handsome athletic youth with curly hair. Items associated with him are his bow and arrow and his lyre. It was believed that he could see into the future, and heal people. As a punishment, he could bring people illness and disease.</p>	 <p>Aphrodite was the Greek God of love and beauty. She was famous for being the most beautiful of all of the Goddesses. She was often shown as being a beautiful young woman with an apple, scallop shell, dove or swan. It was said that Aphrodite had a belt, which made people fall in love with the wearer. Fighting couples would look to Aphrodite to help them fall in love again.</p>

Places, People, and Daily Life in Ancient Greece

The Acropolis		The Acropolis of Athens is the best known acropolis in Greece - an acropolis is a settlement built on high ground. It was built during the rule of Pericles, a golden age for Athens, as a monument to the city's greatness.	Where? Athens	Key Facts The Acropolis is on a flat-topped rock that rises 150m above sea level
The Parthenon		The Parthenon is a temple in the middle of the Acropolis in Athens. It was a temple to Athena, the goddess of wisdom, and originally had a statue to her. It has now stood for nearly 2,500 years, a superb architectural achievement!	Where? Athens	Key Facts The building used 22,000 tonnes of marble!
Mount Olympus		Mount Olympus is the highest mountain in Greece. It was believed in Ancient Greek times that when things needed to be decided in the mystical world, the 12 main Gods would gather at Mount Olympus, and that many lived there.	Where? 50 miles southwest of Thessaloniki	Key Facts Mount Olympus rises to 2,918m
Knossos Palace		Knossos Palace is positioned in what was the capital of Minoan Crete. It is the site of a beautiful and expansive palace, which is supposed to be the same location as the fabled labyrinth in which the minotaur dwelt!	Where? Northern Crete	Key Facts The Knossos Palace was rumoured to originally hold 5000 rooms!
Socrates		Socrates was a famous philosopher, who taught others to question things. This led to his downfall, as he questioned the Gods and was arrested for influencing the young.	When? Socrates was born around 470BC	Key Facts Socrates died when he drank poison in prison.
Plato		Plato, a philosopher, was a student of Socrates. After Socrates' death, Plato founded the first university, called the Academy. He believed a philosopher's job was to seek the truth.	When? Plato was born around 428BC	Key Facts Plato was one of the first to argue that women should receive the same education as men.
Aristotle		Aristotle was a philosopher and scientist. At the age of 17, he travelled to Athens to attend Plato's university. He began to dissect animals to learn more about their anatomy.	When? Aristotle was born around 384BC	Key Facts Aristotle was the private tutor of Alexander the Great!
Alexander the Great		Alexander the Great gained a strong and united Greece when he became King. He used his military genius to then win battle after battle, conquering eastern Europe and Egypt.	When? 356-323BC	Key Facts He died aged only 32. He accomplished a lot in his short life!
Greek Homes		Ancient Greek homes were built around a courtyard, which was the centre of activity. Around the courtyard were the rooms of the house, including work rooms and bedrooms.	How? Homes were made of sun-dried bricks.	Key Facts Most houses had an 'andron' - a room just for men.
Childhood		When a child was born, a father could decide whether to keep or abandon the child. At age seven, the child could start school, learning maths, reading, and writing.	How? Sometimes, children also studied music.	Key Facts Children were considered adults at only 17!
Food		The Ancient Greeks mostly ate bread dipped in wine, cheeses, fish, olives, and vegetables. Meat was eaten on rare occasions, such as festivals. Watered down wine was the main drink.	How? Foods/wines were traded between cities.	Key Facts Many food festivals were for men only!
Clothes		The Ancient Greeks wore a tunic called a 'chiton' - worn by both men and women. These were fastened together at different places, and a belt was also normally worn at the waist. Chitons came in many sizes and colours.	How? Chitons were generally made out of a thin wool material	Key Facts The rich could afford linen and silk chitons.

Ancient Greece Timeline

776 BC - The first Olympic games take place in honour of Greece

600 BC - The first Greek coins are used to buy and sell goods

570 BC - Pythagoras is born. He made major breakthroughs in science and maths

508 BC - Democracy begins in Athens, giving greater power to the people

432 BC - The Parthenon, the most famous building in Athens, is completed

400-300 BC - Socrates, Plato and Aristotle live, advancing learning

336 BC - Alexander the Great is King and completes many conquests

146 BC - Rome conquers Greece, making it a part of the Roman Empire.

AQA GCSE Chemistry (Combined Science) Unit 2: Bonding, Structure and Properties of Matter

Formation of Ions

Ions are charged particles. They can be either positively or negatively charged, for example Na^+ or Cl^- .

When an element loses or gains electrons, it becomes an ion.

Metals lose electrons to become positively charged.

Non-metals gain electrons to become negatively charged.

Group 1 and 2 elements lose electrons and group 6 and 7 elements gain electrons.

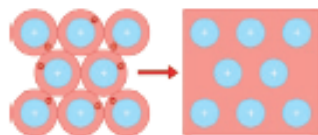
Group	Ions	Element Example
1	+1	$\text{Li} \rightarrow \text{Li}^+ + \text{e}^-$
2	+2	$\text{Ca} \rightarrow \text{Ca}^{2+} + 2\text{e}^-$
6	-2	$\text{Br} + \text{e}^- \rightarrow \text{Br}^-$
7	-1	$\text{O} + 2\text{e}^- \rightarrow \text{O}^{2-}$

Metals and Non-metals

Metals are found on the left-hand side of the periodic table. Metals are strong, shiny, malleable and good conductors of heat and electricity. On the other hand, non-metals are brittle, dull, not always solids at room temperature and poor conductors of heat and electricity. Non-metals are found on the right-hand side of the periodic table.

Metallic Bonding

Metallic bonding occurs between metals only. Positive metal ions are surrounded by a sea of delocalised electrons. The ions are tightly packed and arranged in rows.



There are strong electrostatic forces of attraction between the positive metal ions and negatively charged electrons.

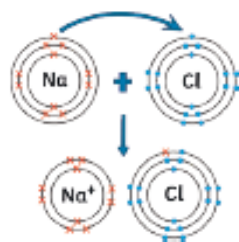
Pure metals are too soft for many uses and are often mixed with other metals to make alloys. The mixture of the metals introduces different-sized metal atoms. This distorts the layers and prevents them from sliding over one another.

This makes it harder for alloys to be bent and shaped like pure metals.



Ionic Bonding

Ionic bonding occurs between a metal and a non-metal. Metals lose electrons to become positively charged. Opposite charges are attracted by electrostatic forces – an ionic bond.



Ionic Compounds

Ionic compounds form structures called giant lattices. There are strong electrostatic forces of attraction that act in all directions and act between the oppositely charged ions that make up the giant ionic lattice.



Properties of Ionic Compounds

- High melting point – lots of energy needed to overcome the electrostatic forces of attraction.
- High boiling point
- Cannot conduct electricity in a solid as the ions are not free to move.
- Ionic compounds, when molten or in solution, can conduct electricity as the ions are free to move and can carry the electrical current.

Covalent Bonding

Covalent bonding is the sharing of a pair of electrons between atoms to gain a full outer shell. This occurs between non-metals only. Simple covalent bonding occurs between the molecules below. Simple covalent structures have low melting and boiling points – this is because the weak intermolecular forces that hold the molecules together break when a substance is heated, not the strong covalent bonds between atoms. They do not conduct electricity as they do not have any free delocalised electrons.

Dot and cross diagrams are useful to show the bonding in simple molecules. The outer electron shell of each atom is represented as a circle, the circles from each atom overlap to show where there is a covalent bond, and the electrons from each atom are either drawn as dots or crosses. There are two different types of dot and cross diagram – one with a circle to represent the outer electron shell and one without.

You should be able to draw the dot and cross diagrams for the following simple covalent structures: chlorine, oxygen, nitrogen, water, ammonia, hydrogen chloride and methane.

