

Macbeth Knowledge Organiser



Very Brief Plot Summary

Act 1: Macbeth and Banquo meet the witches; Cawdor is executed; Lady Macbeth reads the letter and taunts Macbeth; Duncan arrives.

Act 2: Macbeth kills Duncan; Malcolm flees; Macbeth is crowned. Act 3:

Banquo suspects Macbeth; Banquo is murdered but Fleance escapes; Macbeth is haunted by Banquo's ghost at the banquet.

Act 4: The Witches show Macbeth future kings – sons of Banquo; Macduff's family is murdered; Malcolm tests Macduff's loyalty.

Act 5: Lady Macbeth sleepwalks, dies; Macduff kills Macbeth, Malcolm restored as King.

Characters

Macbeth: One of King Duncan's generals. He loves power; the witches tempt him into murder. Originally Thane of Glamis, he becomes the Thane of Cawdor, then King of Scotland.

Lady Macbeth: Macbeth's wife. She is ambitious and drives him to murder but is driven mad by conscience.

Three Witches: Sinister ladies of witchcraft who tempt Macbeth to do dark deeds.

Banquo: A general and friend of Macbeth. The prophecy does not corrupt him. He is murdered by Macbeth as he is considered a threat. His ghost haunts Macbeth.

King Duncan: The good and noble King of Scotland, murdered by Macbeth.

Macduff: Thane of Fife. He opposes Macbeth and supports Malcolm. He kills Macbeth in revenge for the murder of his family.

Malcolm: Duncan's son. He flees with his brother after the murder of Duncan but returns with English support to challenge Macbeth.

Fleance: Banquo's son. Macbeth tries and fails to murder him. He flees Scotland but it's implied he will return one day to fulfil the prophecy and become King.

Hecate: Queen of the Witches.

Politics

Written in 1606. There is a strong political theme throughout, with the idea that excessive ambition has terrible consequences. Shakespeare enjoyed a close relationship with King James I and it is thought that in focusing on Macbeth as a figure from Scottish history he was paying homage to the King's lineage.

Supernatural

Witchcraft and the supernatural were both of great interest and hugely feared. Again, King James I was highly intrigued by (and suspicious of) the supernatural, and even wrote about the subject. The audience believed anything associated with the supernatural to be evil and menacing.

Order

A century earlier, England had experienced chaotic disorder during the War of the Roses. An underlying threat is evident throughout the play that treachery may once again bring disaster. Many events in the play challenge the idea of 'order'.

Philosophy

The accepted belief was that everyone had his or her place in life. Monarchs were seen as second only to God. The idea of Macbeth planning to kill the King of Scotland would have caused outrage and shock in the audience.

This would have gone against everything that was so firmly believed at the time.

Gender

There were strong expectations of both men and women throughout this period. Women were expected to be submissive to their husbands. A woman with an education was still a rarity. Women were ruled by men and supposed to be pious and pure. The idea that a woman could challenge a man was unheard of and would have shocked audiences.

Key Quotations

"Fair is foul and foul is fair." Act I, Scene i

"When shall we three meet again
In thunder, lightning, or in rain?" Act I, Scene i

"O valiant cousin, worthy gentleman." Act I, Scene iii
"So foul and fair a day I have not seen." Act I, Scene iii

"Look like the innocent flower, but be the serpent under 't." Act I, Scene v

"Come, you spirits, That tend on mortal thoughts, unsex me here."
Act I, Scene v

"Yet do I fear thy nature, It is too full o' th' milk of human kindness to catch the nearest way." Act I, Scene v

"Is this a dagger which I see before me, The handle toward my hand?
Come, let me clutch thee." Act II, Scene i

"I have thee not, and yet I see thee still." Act II, Scene i

"That hath made them drunk hath made me bold. What hath quenched them hath given me fire." Act II, Scene ii

"To know my deed, 'twere best not know myself." Act II, Scene ii
"It was the owl that shrieked, the fatal bellman." Act II, Scene ii

"O gentle lady, 'tis not for you to hear what I can speak. The repetition in a woman's ear would murder as it fell." Act II, Scene iii

"Things without all remedy should be without regard: what's done, is done."
Act III, Scene iii

"There's daggers in men's smiles. The near in blood, The nearer bloody." Act III, Scene iii

"Be bloody, bold, and resolute. Laugh to scorn the power of man, for none of woman born shall harm Macbeth." Act IV, Scene i

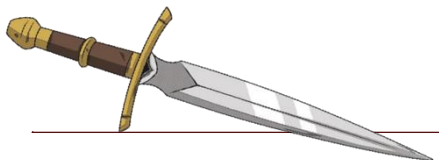
"Double, double toil and trouble; Fire burn, and cauldron bubble."
Act IV, Scene i

"Here's the smell of the blood still. All the perfumes of Arabia will not sweeten this little hand." Act V, Scene i

"Out, damned spot! Out, I say!" Act V, Scene i

"Let fall thy blade on vulnerable crests; I bear a charmed life, which must not yield to one of woman born." Act V, Scene viii

Themes		Key Vocabulary	Language and Techniques
Ambition <ul style="list-style-type: none"> • Most well-known theme. • Affects both Macbeth & Lady Macbeth. • Ambition is corrupting and leads to evil. 	Good and Evil <ul style="list-style-type: none"> • Macbeth must choose between them. • The witches symbolise evil. • Choices have consequences. 	ambition/ambitious manipulate/manipulative greed usurp prophecy contempt supernatural apparition malevolent noble moral/immoral vile witchcraft power villain hamartia machiavellian treachery sinister regicide surreal valour disorder blood night time sleep fear nature	similes metaphors personification alliteration rhyming coupletsmetre questioning imagery related to themes animal imagery irony/dramatic irony pathetic fallacy paradox symbols and motifs rhetorical questions soliloquy protagonist allude/allusion iambic pentameter
Appearance and Reality <ul style="list-style-type: none"> • Lady Macbeth believes Macbeth is a poor actor. • Macbeth sees powerful visions. • Banquo appears as a 'vision'. • Witches seem 'useful' to Macbeth but bring about his downfall. 	Order and Chaos <ul style="list-style-type: none"> • A century earlier – War of the Roses. • Civil disorder seen as perilous. • Macbeth's restored 'order' is only an illusion. 		
The Supernatural <ul style="list-style-type: none"> • Idea that mysterious forces control us. • Does Macbeth become possessed? • Strong belief and fear of witchcraft at the time. 	Loyalty and Betrayal <ul style="list-style-type: none"> • Dominate the play as themes. • Cawdor punished for betrayal. • Macbeth rewarded for loyalty at outset. • Macbeth betrays Banquo and Duncan. • Macbeth remains loyal to Lady Macbeth. 		
Symbols and Motifs <p>Cruelty and masculinity; blood and guilt; hallucinations and dreams; prophecy; light/dark/inclement weather; sleep.</p>			





Your teacher will tell you which topic you should revise. Revise all the information in the topic, ready for a Quiz in lesson.

Topic 1: Equations and Inequalities

Section 1: Quadratic Equations

Revision: <https://corbettmaths.com/2013/05/03/solving-quadratics-by-factorising/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/solving-quadratics-factorising-pdf1.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2015/03/solving-quadratics-answers1.pdf>

Section 2: Simultaneous equations

Revision: <https://corbettmaths.com/2013/03/05/simultaneous-equations-elimination-method/>

Practice: <https://corbettmaths.com/wp-content/uploads/2022/10/Simultaneous-Equations.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2022/10/Simultaneous-Equations-Answers.pdf>

Section 3: Solving Linear Inequalities

Revision: <https://corbettmaths.com/2013/05/07/solving-inequalities-one-sign-corbettmaths/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/inequalities.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2021/09/inequalities-1.pdf>



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Topic 2: Probability of events

Section 1: Probability Tree Diagrams

Revision: <https://www.mathsgenie.co.uk/probability-trees.html>

Practice: <https://www.mathsgenie.co.uk/resources/5-probability-trees.pdf>

Solutions: <https://www.mathsgenie.co.uk/resources/5-probability-treesans.pdf>

Section 2: Venn Diagrams

Revision: <https://www.mathsgenie.co.uk/venn-diagrams.html>

Practice: <https://www.mathsgenie.co.uk/resources/5-venn-diagrams.pdf>

Solutions: <https://www.mathsgenie.co.uk/resources/5-venn-diagramsans.pdf>

Section 3: Experimental probability

Revision: <https://corbettmaths.com/2013/06/20/relative-frequency/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/relative-frequency-pdf.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2015/03/relative-frequency-answers.pdf>



Your teacher will tell you which topic you should revise. Revise all the information in the topic, ready for a Quiz in lesson.

Topic 3: Graphs

Section 1: Real-life Graphs

Revision: <https://corbettmaths.com/2021/11/18/real-life-graphs-video/>

Practice: <https://corbettmaths.com/2019/09/02/distance-time-graphs/>

Solutions: <https://corbettmaths.com/wp-content/uploads/2020/10/travel-graphs-answers.pdf>

Section 2: Linear Graphs

Revision: <https://corbettmaths.com/2012/12/23/drawing-graphs-using-xy-tables/>

Practice: <https://corbettmaths.com/wp-content/uploads/2019/01/Drawing-Linear-Graphs.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2019/01/Drawing-Linear-Graphs-Answers.pdf>

Section 3: Quadratic Graphs

Revision: <https://corbettmaths.com/2013/06/23/drawing-quadratics/>

Practice: <https://corbettmaths.com/wp-content/uploads/2019/06/Drawing-Quadratics.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2019/06/Drawing-Quadratics-answers.pdf>



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Topic 1: Graphs

Section 1: Real Life Graphs

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Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/travel-graphs-pdf.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2020/10/travel-graphs-answers.pdf>

Section 2: Coordinates

Revision: <https://corbettmaths.com/2013/04/15/coordinates/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/coordinates-pdf1.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2015/03/coordinates.pdf>

Section 3: Distance-time graphs

Revision: <https://www.mathsgenie.co.uk/real-graphs.html>

Practice: <https://www.mathsgenie.co.uk/resources/4-real-life-graphs.pdf>

Solutions: <https://www.mathsgenie.co.uk/resources/4-real-life-graphsans.pdf>



Your teacher will tell you which topic you should revise. Revise all the information in the topic, ready for a Quiz in lesson.

Topic 2: Transformations

Section 1: Translation

Revision: <https://corbettmaths.com/2012/08/10/transformations-translations/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/translations-pdf1.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2019/06/Translations.pdf>

Section 2: Enlargements

Revision: <https://corbettmaths.com/2012/08/19/enlargements/>

Practice: <https://corbettmaths.com/wp-content/uploads/2016/02/enlargements-pdf.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2015/03/enlargements-answers1.pdf>

Section 3: Transformations

Revision: <https://www.mathsgenie.co.uk/transformations.html#reflections>

Practice: <https://www.mathsgenie.co.uk/resources/3-reflections.pdf>

Solutions: <https://www.mathsgenie.co.uk/resources/3-reflectionsans.pdf>



Your teacher will tell you which topic you should revise. Revise all the information in the topic, ready for a Quiz in lesson.

Topic 3: Averages and Range

Section 1: Averages and Range

Revision: <https://corbettmaths.com/2013/12/21/the-mode-video56/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/averages-and-range-pdf2.pdf>

Solutions: <https://corbettmaths.com/2016/07/31/textbook-answers-averages-and-range/>

Section 2: Mean from a frequency table

Revision: <https://corbettmaths.com/2012/08/19/means-from-frequency-tables/>

Practice: <https://corbettmaths.com/wp-content/uploads/2013/02/mean-from-a-frequency-table-pdf3.pdf>

Solutions: <https://corbettmaths.com/wp-content/uploads/2019/08/Averages-mean-from-table.pdf>

Section 3: Averages

Revision: <https://www.mathsgenie.co.uk/averages.html>

Practice: <https://www.mathsgenie.co.uk/resources/2-averages-ws.pdf>

Solutions: <https://www.mathsgenie.co.uk/resources/2-averagesans.pdf>



KS4 Knowledge Organiser



Subject:

Mrs Allen Raising Standards Leader for KS4	stern029@sflt.org.uk
Miss Murphy Head of Year 11	murphc210@sflt.org.uk
.... Head of Department	

Knowledge Organiser instructions:

You will be set three pieces of homework per week and you should use the information from each topic to make a poster or a mind map. You will need to bring your work in to school and will be quizzed on each topic in class.

At the back of the knowledge organiser there are some suggested extra tasks that could be completed on top of the homework you will be set.



For further support,
follow this link to the
school website.

Homework Schedule for the Term

Week	Subject and section	Revision technique
1 (A)	Options: Topic 1	Create a mind map for the information in Topic 1
2 (B)	English, Maths and Science Topic 1	Create a mind map for the information in Topic 1
3 (A)	Options: Topic 2	Create a poster using the information in Topic 2
4 (B)	English, Maths and Science: Topic 2	Create a poster using the information in Topic 2

5 (A)	Options: Topic 3	Create a mind map for the information in Topic 3
6 (B)	English, Maths and Science: Topic 3	Create a mind map for the information in Topic 3

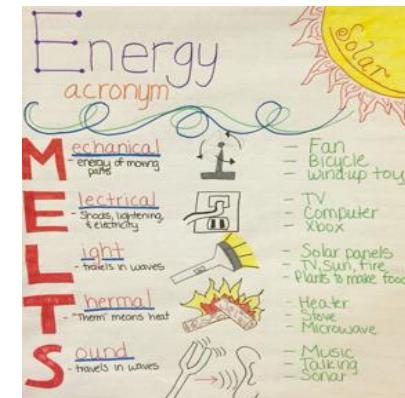
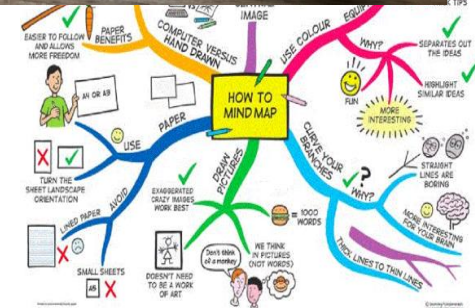
Optional Extra Tasks

If you would like to spend more time working independently to develop excellence in your subjects. Here is a suggested timetable for you to follow. If you have forgotten your usernames and passwords for these apps, speak to your form tutor and they will be able to support you.

Monday	Spend 30mins on Pixl Lit completing a revision Quiz on Macbeth/AIC/Frankenstein
Tuesday	Spend 30 minutes on Pixl Maths completing a revision quiz on a topic you are finding challenging.
Wednesday	Spend 30 minutes on GCSE Pod revising one of your option subjects e.g. History/Geography
Thursday	Spend 30 minutes on Tassomai
Friday	Create a glossary of 10 new terms that you need to know from your Knowledge Organiser.

Revision techniques and strategies

1. Turn your huge amount of revision notes into small and easy to handle
2. Put a question on the front of your flash cards and write the answer on the reverse – then ask someone to quiz you
3. Mind map – what is the topic and what are the key points you need to remember? You could use different colours for different ideas/characters
4. A question a day – complete an exam question, under timed conditions, each day
5. Record yourself reading your notes and listen back to yourself
6. BUG the question – write out exam questions, examine the key words and plan an answer
7. Use of post-it notes – place post-it notes in key places so you are constantly reading key information
8. Make lists of important facts and figures
9. Draw diagrams to help you visually remember your notes
10. 'Look, cover, say, write, check' – use this method to make sure that you are remembering key information



Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 1: Diamond, Graphite, Graphenes and Fullerenes

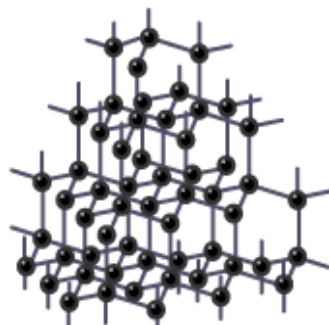
Diamond and graphite

Diamond and graphite are different forms of the element carbon. They both have giant structures of carbon atoms, joined together by covalent bonds. However, their structures are different so some of their properties are different.

Diamond - Structure and bonding

Diamond is a giant covalent structure in which:

- each carbon atom is joined to four other carbon atoms by strong covalent bonds
- the carbon atoms form a regular tetrahedral network structure
- there are no free electrons



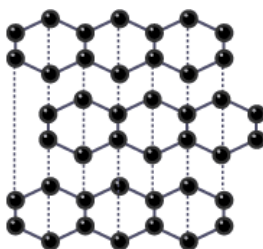
Properties and uses

The rigid network of carbon atoms, held together by strong covalent bonds, makes diamond very hard. This makes it useful for cutting tools, such as diamond-tipped glass cutters and oil rig drills. Diamond has a very high melting point because a lot of energy is required to break the strong covalent bonds between the atoms. It does not conduct electricity because it has no free electrons.

Graphite Structure and bonding

Graphite has a giant covalent structure in which:

- each carbon atom forms three covalent bonds with other carbon atoms
- the carbon atoms form layers of hexagonal rings
- there are no covalent bonds between the layers
- there is one non-bonded - or delocalised - electron from each atom



Properties and uses

Graphite has delocalised electrons, just like metals. These electrons are free to move between the layers in graphite, so graphite can conduct electricity. This makes graphite useful for electrodes in batteries and for electrolysis.

The forces between the layers in graphite are weak. This means that the layers can slide over each other. This makes graphite slippery, so it is useful as a lubricant.

Graphene and fullerenes

Graphene and fullerenes are forms of carbon. Their structures are different from those of diamond and graphite, which are also forms of carbon.

Graphene

Graphene is a single layer of graphite. The strong covalent bonds between the carbon atoms mean that graphene:

- has a very high melting point
- is very strong

Like graphite, graphene conducts electricity well because it has delocalised electrons that are free to move across its surface.

These properties make graphene useful in electronics and for making composites. Graphene has a giant covalent structure, but fullerenes have large molecules.

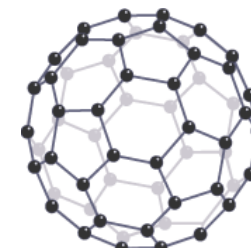
Fullerenes

Fullerenes are molecules of carbon atoms with hollow shapes. Their structures are based on hexagonal rings of carbon atoms joined by covalent bonds. Some fullerenes include rings with five or seven carbon atoms. Two examples of fullerenes are buckminsterfullerene and nanotubes.

Buckminsterfullerene was the first fullerene to be discovered. Its molecules are made up of 60 carbon atoms joined together by strong covalent bonds. Molecules of C₆₀ are spherical.

There are weak intermolecular forces between molecules of buckminsterfullerene.

These need little energy to overcome, so buckminsterfullerene is slippery and has a low melting point.





Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 2: Fractional distillation and Crude Oil

Alkanes

The alkanes form a homologous series. Like all homologous series, the alkanes:

- have the same general formula
- differ by CH_2 in molecular formulae from neighbouring compounds
- show a gradual variation in physical properties, such as their boiling points
- have similar chemical properties

General formula

The general formula for the alkanes is $\text{C}_n\text{H}_{2n+2}$, where n is the number of carbon atoms in the molecule.

Example

Decane is an alkane. Its molecules contain 10 carbon atoms. Predict the molecular formula of decane and explain your answer.

The formula will be $\text{C}_{10}\text{H}_{22}$. This is because $n = 10$.
So, $2n + 2 = (2 \times 10) + 2 = 20 + 2 = 22$.

Fractional distillation of crude oil

Fractional distillation separates a mixture into a number of different parts, called **fractions**.

A tall fractionating column is fitted above the mixture, with several condensers coming off at different heights. The column is hot at the bottom and cool at the top. Substances with high boiling points condense at the bottom and substances with lower boiling points condense on the way to the top.

Crude oil is a mixture of hydrocarbons. The crude oil is evaporated and its vapours condense at different temperatures in the fractionating column. Each fraction contains hydrocarbon molecules with a similar number of carbon atoms and a similar range of boiling points.

Oil fractions

The diagram below summarises the main fractions from crude oil and their uses, and the trends in properties. Note that the **gases leave at the top of the column**, the **liquids condense in the middle** and the **solids stay at the bottom**.

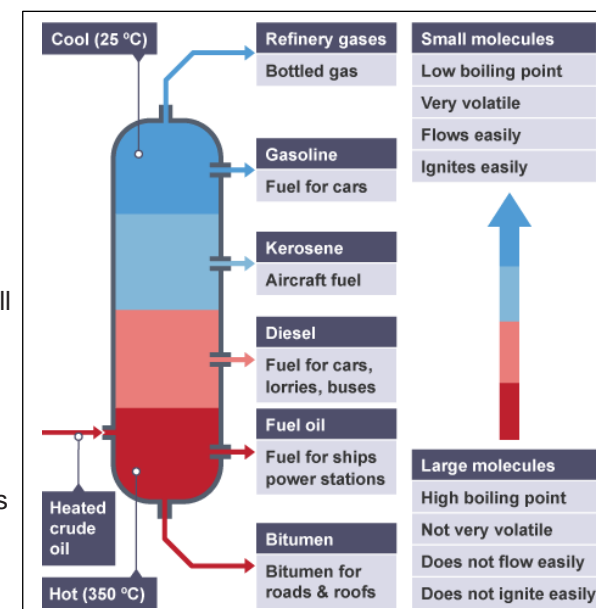
As you go up the fractionating column, the hydrocarbons have:

1. lower boiling points
2. lower viscosity (they flow more easily)
3. higher flammability (they ignite more easily).

Other fossil fuels. Crude oil is not the only fossil fuel.

Natural gas mainly consists of methane. It is used in domestic boilers, cookers and Bunsen burners, as well as in some power stations.

Coal was formed from the remains of ancient forests. It can be burned in power stations. Coal is mainly carbon but it may also contain sulfur compounds, which produce sulfur dioxide when the coal is burned. This gas is a cause of acid rain. Also, as all fossil fuels contain carbon, the burning of any fossil fuel will contribute to global warming due to the production of carbon dioxide.





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Topic 3: Pathogens and Transmission

Pathogens

A pathogen is a microorganism that causes a disease. There are four main types of pathogen: All types of pathogen have a simple life cycle. They infect a host, reproduce themselves or replicate if it is a virus, spread from their host and infect other organisms. They also all have structural adaptations that make them successful at completing their life cycles, which enable them to cause further disease.

Diseases caused by pathogens are called communicable diseases. This means they can be transferred from one person to another.

There are other types of disease which cannot be caught:

1. Inherited genetic disorders like cystic fibrosis.
2. Deficiency diseases which are caused by a lack of essential vitamins or minerals, such as scurvy which occurs when an individual has insufficient vitamin C.
3. Diseases like cancer that develop as a result of exposure to carcinogens or develop naturally as cell division occurs incorrectly.

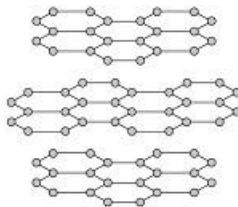
All organisms are affected by pathogens. Even bacteria are infected by certain types of virus. Some of these infections can be transferred to organisms of a different species.

Transmission can occur in a number of important ways, as shown in the table below.

Pathogen	Example in animals	Example in plants
Viruses	HIV potentially leading to AIDS	Tobacco mosaic virus
Bacteria	Salmonella	Agrobacterium
Fungi	Athlete's foot	Rose black spot
Protists	Malaria	Downy mildew

Type	Examples
Direct contact	This can be sexual contact during intercourse or non-sexual contact, like shaking hands.
Water	Dirty water can transmit many diseases, such as the cholera bacterium.
Air	When a person who is infected by the common cold sneezes, they can spray thousands of tiny droplets containing virus particles to infect others.
Unhygienic food preparation	Undercooked or reheated food can cause bacterial diseases like Escherichia coli which is a cause of food poisoning.
Vector	Any organism that can spread a disease is called a vector. Many farmers think tuberculosis in their cattle can be spread by badgers.



Vocabulary	Wider Research	Apply
<ol style="list-style-type: none"> 1. Diamond 2. Graphite 3. Carbon 4. Strong 5. Bond 6. Covalent 7. Electron 8. Structure 9. Conduct 10. Electricity 11. Layer 12. High 13. Low 14. Melting point 15. Graphene 16. Fullerene 17. Molecule 18. Nanotube 19. Hydrocarbon 20. Fractional distillation 21. Burning 22. Fuel 23. Cracking 24. Pathogen 25. Disease 26. Infection 27. Bacteria 28. Virus 29. Defence system 30. Vaccination 31. Antibiotics 32. Genetic modification 	<p>Carbon Chemistry:</p> <ol style="list-style-type: none"> 1. Diamond and Graphite https://www.bbc.co.uk/bitesize/guides/z9twsrd/revision/2 2. Graphenes and Fullerenes https://www.bbc.co.uk/bitesize/guides/zgq8b82/revision/3 3. Crude oil, hydrocarbons and alkanes https://www.bbc.co.uk/bitesize/guides/zshvw6f/revision/2 4. Communicable diseases https://www.bbc.co.uk/bitesize/guides/zxr7ng8/revision/1 5. Human body defence and response https://www.bbc.co.uk/bitesize/guides/zxr7ng8/revision/8 6. Genetic modification https://www.bbc.co.uk/bitesize/guides/zx6g87h/revision/1 7. Stem cells https://www.bbc.co.uk/bitesize/guides/z2kmk2p/revision/3 	<ol style="list-style-type: none"> 1. Graphene and graphite are used in electronics. Suggest one reason why graphene is a more suitable material for use in electronics than graphite. (3 marks) 2. Figure 2 represents part of the structure of graphite. <div style="text-align: center;"> <p>Figure 2</p>  </div> Graphite is used as a contact in electric motors because graphite: <ul style="list-style-type: none"> • conducts electricity • is slippery Explain why graphite has these properties. You should refer to the structure and bonding of graphite in your answer. (6 marks) 3. Malaria affects many people across the world. Describe how the white blood cells might respond to an infection of the malaria pathogen. (3 marks) 4. A person has been vaccinated against measles. The person comes in contact with the measles pathogen. The person does not catch measles. Explain why. (3 marks)



KS4 Knowledge Organizer. Subject: French (Y10)

Raising Standards Leader for KS4: Mrs Bennett (bailc197@sflt.org.uk).

Head of Languages Department: Ms Lara (larae006@sflt.org.uk).

How to use the Knowledge Organiser:

- Your teacher will direct you to what topics to revise for each week. **This topic is usually the topic taught in class during that week.** Topics are taught in a chronological order from **sections 1 to 4** as stated in this document.
- **You are expected to revise the vocabulary and the key sentences for at least 30 minutes each evening.**
- Ask someone to quiz you on the key information
- Remember to **APPLY** the information using the tasks included in each Knowledge Organiser

F.R.A.C.T.I.O.N. =

F.R.A.C.
T.I.O.N.

1. F → Frequency words / time expressions.
2. R → Reasons
3. A → Another pronoun/ person apart from "je"
4. C → Connectives
5. T → Tenses (at least 3)
6. I → Intensifiers/ qualifiers
7. O → Opinions
8. N → Negatives

Made and used by Mrs Sangari



Revision techniques and strategies

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Revision tips

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- Switch off social media/distractions - ignore your phone for a few hours! It will help you keep focused. Social networking, while it's fun, is a big distraction from your revision.
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- Do small chunks of revision. Your brain is not capable of mass storing information in a short space of time. Digesting small chunks of information, over a longer period of time, means you are more likely to remember it

Click on the QR code below which will take you to the revision support page on our website:





French. Theme 1: Identity and culture (l'identité et la culture)

Unit 4: Customs and Festivals (les coutumes et fêtes)

Section 1

4.1G On fait la fête!

<i>apporter</i>	to bring	<i>la fête du travail</i>	May Day
<i>le bal</i>	ball	<i>les feux d'artifice (m)</i>	fireworks
<i>le cadeau</i>	present	<i>militaire</i>	military
<i>célébrer</i>	to celebrate	<i>le muguet</i>	lily of the valley
<i>le char</i>	float	<i>la naissance</i>	birth
chercher	to look for	<i>Noël</i>	Christmas
<i>le défilé</i>	procession	<i>Pâques</i>	Easter
<i>se déguiser</i>	to dress up	<i>religieux(-se)</i>	religious
<i>la fête</i>	festival / celebration / party	<i>la Saint-Valentin</i>	Valentine's Day
<i>la fête des Rois</i>	Twelfth Night / Epiphany		

When you use "être" to form the **the perfect/ past tense**, you must make **the past participle agree** with **the subject**.

Il y a beaucoup de fêtes en France.	There are a lot of celebrations in France.
La fête des Rois est le six (6) Janvier	Twelfth Night is on January 6 th
et on mange un gâteau qui s'appelle "la galette des Rois."	and we eat a cake that is called "the Kings' cake."
L'an dernier/ l'année dernière, je suis allé(e) à Paris	Last year, I went to Paris
le quatorze (14) Juillet pour la fête de la Bastille .	on July 14 th for Bastille Day .
Samedi dernier, Valérie est partie en train à Nice pour le carnaval.	Last Saturday, Valérie left by train to (go to) Nice for the carnival.
Malheureusement, sa mère et sa tante sont restées à la maison.	Unfortunately, her mother and her aunt stayed at home.

Section 2

4.1F La fête chez nous

<i>accrocher</i>	to hang	<i>les festivités (f)</i>	celebrations
<i>l'agneau (m)</i>	lamb	<i>la fête des Mères</i>	Mother's day
<i>s'arrêter</i>	to stop	<i>l'huître (f)</i>	oyster
<i>la blague</i>	joke	<i>le jour férié</i>	public holiday
<i>la boule de Noël</i>	bauble	<i>la pâte</i>	dough
<i>la bûche de Noël</i>	Christmas log	<i>se reposer</i>	to relax
<i>la Chandeleur</i>	pancake day	<i>se retrouver</i>	to meet
<i>la crêpe</i>	pancake	<i>le réveillon de Noël</i>	Christmas Eve
<i>se dépêcher</i>	to hurry	<i>rigolo(-te)</i>	funny
<i>la dinde</i>	turkey	<i>le sapin</i>	Christmas tree

All **reflexive verbs** use "être" to form the **the perfect/ past tense**. **The past participle** must **agree** with **the subject**.

Ma fête préférée est Noël car on fait la fête .	My favourite celebration is Christmas because we do a party .
Normalement, on se retrouve en famille.	Normally, we meet as a family.
L'hiver dernier , le jour de Noël, je me suis réveillé(e) à onze (11) heures	Last winter , on Christmas Day, I woke up at eleven o'clock
et je me suis dépêché(e) de m'habiller .	and I hurried to get dressed.
On est tous retournés chez ma tante pour le repas de Noël.	We all returned to my aunt's for the Christmas meal.
On s'est bien amusés . Après, on est rentrés à la maison et on s'est reposés	We had good fun . Afterwards, we went back home and we relaxed/ had a rest
car on était fatigués.	because we were tired.

Section 3

4.2G Partout, c'est la fête!

<i>l'affiche (f)</i>	poster	<i>gratuit(e)</i>	free (of charge)
<i>annulé(e)</i>	cancelled	<i>hilarant(e)</i>	hilarious
<i>la bande dessinée</i>	cartoon strip	<i>la lecture</i>	reading
<i>le billet</i>	ticket	<i>la pluie</i>	rain
<i>célèbre</i>	famous	<i>la programmation</i>	schedule
<i>le comique</i>	(stand-up) comedian	<i>récolter</i>	to collect
<i>contemporain(e)</i>	contemporary	<i>rire</i>	to laugh
<i>déçu(e)</i>	disappointed	<i>le rire</i>	laughter
<i>le dessinateur</i>	cartoonist, illustrator	<i>le spectacle</i>	show
<i>le festival</i>	festival	<i>le sport nautique</i>	water sport

The **imperfect tense** is used to say **what used to happen, a habit in the past or what was happening.**

To form the imperfect tense:

- take **-ons** off the present tense **nous** form of the verb, e.g. **aimons**
- add the **imperfect endings**:

j'aimais *nous aimions*
tu aimais *vous aimiez*
il/elle/on aimait *ils/elles aimaient*

The verb **être** has the stem **ét-**, e.g. **j'étais** (I was).

je suis allé(e) au Festival international de musique à Besançon	I went to the international Festival of music in Besançon
car j'adore écouter la musique et danser.	because I love to listen to music and to dance.
J'y étais avec mes amis: Carine, Sarah et Léon.	I was there with my friends: Carine, Sarah and Léon.
Il y avait des artistes français et étrangers très célèbres.	There were some very famous French and foreign artists.

Section 4

4.2F La fête pour tout le monde!

<i>assister</i>	to attend	<i>le / la malade</i>	patient
<i>la boue</i>	mud	<i>le métro</i>	tube, underground
<i>le casque</i>	helmet / headphones	<i>le numéro de cirque</i>	circus act
<i>le cirque</i>	circus	<i>se passer</i>	to take place
<i>coûter</i>	to cost	<i>la recherche</i>	research
<i>dormir</i>	to sleep	<i>réserver</i>	to book, to reserve
<i>durer</i>	to last	<i>la scène</i>	stage
<i>les gens (m)</i>	people	<i>sensibiliser</i>	to increase someone's awareness
<i>informatif(-ve)</i>	informative	<i>le SIDA</i>	AIDS
<i>les jeunes (m)</i>	young people	<i>le spectacle de rue</i>	street show
<i>le jonglage</i>	juggling	<i>tout le monde</i>	everyone
		<i>voyager</i>	to travel

Common expressions in the imperfect tense.

Present tense: C'est = It is il y a = there is/ are. il fait chaud/ froid = it is hot / cold.	Imperfect tense: C'était = it was il y avait = there was / were. il faisait chaud/ froid = it was hot / cold.
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Il y avait beaucoup de monde.	There were a lot of people.
On logeait / Nous logions dans un camping.	We were staying in a camping site.
On dansait / Nous dansions et on rigolait / nous rigolions .	We were dancing and we were laughing .
Il faisait chaud.	It was hot.
C'était trop chouette!	It was too nice!

Section 5

Wider Research

Apply

- Online Dictionary and conjugation tool:

www.wordreference.com

- Also, please remember that you should spend at least **20 minutes each week, PRACTISING INDEPENDENTLY**, on each of the following app and website:

<https://www.memrise.com/>

<https://www.kerboodle.com/users/login>

If you need support with any of the above learning resources, please email your teacher.

Answer the following questions in French.

- it is wise to use words/ expressions that you'll easily remember. **Aim to write 3 sentences maximum as answer per question set – where possible.** Have, on average 30 words in total per answer – where possible.
- **Mind the tense** in which each question is set. The tense in your answers should reflect the tense in the question you are answering. **Remember that what you write does not have to be true. Just show off your vocab and grammar knowledge.**

1/ Es-tu pour ou contre les fêtes traditionnelles? pourquoi? (*Are you for or against traditional celebrations? Why?*)

2/ Quelle est ta fête préférée et pourquoi? (*What is your favourite celebration and why?*)

3/ C'est quand ta fête préférée? (*When is your favourite celebration?*)

4/ Qu'est-ce que les gens font généralement? (*What do people do generally?*)

5/ Qu'est-ce que **tu as fait la dernière fois** pour célébrer ta fête préférée? Qu'est-ce qui **s'est passé**? (*What did you do last time to celebrate your favourite celebration? What happened?*)

6/ Comment **vas-tu fêter ton prochain anniversaire**? (*How are you going to celebrate your next birthday?*)

7/ Parle-moi d'UNE fête typiquement Française que tu connais. (*Tell me about A festival which you know is typically French*)

8/ Est-ce que **tu aimerais** aller à un festival ici au Royaume Uni ou en France? Pourquoi? (*Would you like to go to a festival here in the UK or in France? Why?*)



KS4 Knowledge Organiser. Subject: Spanish (Y10).

Raising Standards Leader for KS4: Mrs Bennett (bailc197@sflt.org.uk).

Head of Languages Department: Ms Lara (larae006@sflt.org.uk).

How to use the Knowledge Organiser:

- Your teacher will direct you to what topics to revise for each week. **This topic is usually the topic taught in class during that week.** Topics are taught in a chronological order from **sections 1 to 6** as stated in this document.
- **You are expected to revise the vocabulary and the key sentences for at least 30 minutes each evening.**
- Ask someone to quiz you on the key information
- Remember to **APPLY** the information using the tasks included in each Knowledge Organiser



Revision techniques and strategies

1. Turn your huge amount of revision notes into small and easy to handle
2. Put a question on the front of your flash cards and write the answer on the reverse – then ask someone to quiz you
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Spanish. Theme 1: Identity and culture (Identidad y cultura)

Unit 4: Customs and festivals (Tradiciones y festivales)

Section 1. Family Life in Spain

4.1G La vida en familia

<i>a media mañana</i>	at mid-morning
<i>acostarse</i>	to go to bed
<i>el bollo</i>	bun
<i>la cena</i>	evening meal
<i>coger</i>	to catch
<i>la comida</i>	food, meal, lunch
<i>el desayuno</i>	breakfast
<i>la dieta</i>	diet
<i>la leche</i>	milk
<i>levantarse</i>	to get up
<i>ligero/a</i>	light

<i>la sobremesa</i>	sitting chatting at the table after a meal
<i>el trabajador</i>	worker
<i>la tradición</i>	tradition
<i>traer</i>	to bring
<i>tranquilamente</i>	calmly
<i>el vaso</i>	glass

Normalmente como a la una, pero ayer comí a las tres.	Normally, I eat / I have lunch at one o'clock but yesterday I ate/ I had lunch at three.
Por lo general, me levanto a las siete, pero ayer me levanté a las diez.	In general, I get up at seven, but yesterday I got up at ten.
Normalmente tomo un café para desayunar, pero ayer tomé un zumo de naranja.	Normally, I have a coffee for breakfast, but yesterday I had an orange juice.

Section 2. Local customs

4.1F Algunas costumbres regionales

<i>la actuación</i>	performance
<i>agradable</i>	pleasant
<i>el ambiente</i>	atmosphere
<i>antiguo/a</i>	old
<i>la batalla</i>	battle
<i>el caballo</i>	horse
<i>la camisa</i>	shirt
<i>el concurso</i>	competition
<i>conmemorar</i>	to commemorate
<i>correr</i>	to run
<i>la costumbre</i>	custom
<i>demasiado</i>	too much, too many
<i>el desfile</i>	parade, procession
<i>el diablo</i>	devil
<i>divertirse</i>	to enjoy oneself
<i>emocionante</i>	exciting
<i>el encierro</i>	bull run
<i>encontrar</i>	to find

<i>enorme</i>	enormous
<i>entender</i>	to understand
<i>entrenarse</i>	to train
<i>el espectáculo</i>	show, display
<i>extraño/a</i>	strange
<i>fatal</i>	awful
<i>formar</i>	to form
<i>histórico</i>	historic
<i>humano</i>	human
<i>impresionante</i>	impressive
<i>incómodo/a</i>	uncomfortable
<i>llevar</i>	to wear, take, carry
<i>el Mediterráneo</i>	Mediterranean
<i>el/la moro/a</i>	Moor (historically a person from North Africa)
<i>nadie</i>	no one
<i>natural</i>	natural
<i>el origen</i>	origin
<i>pasarlo bien</i>	to have a good time
<i>el peligro</i>	danger
<i>peligroso/a</i>	dangerous
<i>por encima de</i>	over
<i>precioso/a</i>	beautiful
<i>el producto</i>	product
<i>saltar</i>	to jump
<i>la seguridad</i>	safety, security
<i>la suerte</i>	luck
<i>el toro</i>	bull
<i>la torre</i>	tower
<i>el traje</i>	suit, costume
<i>único/a</i>	only, unique
<i>varios/as</i>	several
<i>vestirse (de)</i>	to dress (in)

Section 3. A Spanish Festival: La Tomatina.

4.2G Las fiestas de España – la Tomatina

<i>al final</i>	at the end	<i>llegar</i>	to arrive
<i>americano/a</i>	American	<i>la manguera</i>	hose, hosepipe
<i>australiano/a</i>	Australian	<i>mojado/a</i>	wet, soaked
<i>británico/a</i>	British	<i>el montón</i>	heap, pile
<i>el camión</i>	lorry	<i>la plaza mayor</i>	the main square
<i>la camiseta</i>	T-shirt	<i>primero/a</i>	first
<i>el carnaval</i>	carnival	<i>pronto</i>	soon
<i>divertirse</i>	to enjoy oneself	<i>rojo/a</i>	red
<i>duchar</i>	to shower	<i>sucio/a</i>	dirty
<i>empezar</i>	to start	<i>típico/a</i>	typical
<i>la entrada</i>	(entry) ticket	<i>tirar</i>	to throw
<i>la foto</i>	photo	<i>todo el mundo</i>	everyone, everybody
<i>la gente</i>	people	<i>el tomate</i>	tomato
<i>hace (+ tiempo)</i>	(time) ago	<i>el turismo</i>	tourism
<i>japonés/esa</i>	Japanese	<i>varios/as</i>	several
<i>limitar</i>	to limit	<i>el/la visitante</i>	visitor
<i>limpiar</i>	to clean	<i>el/la voluntario/a</i>	volunteer
		<i>volver</i>	to return, to go back,

Mi fiesta preferida es la Tomatina porque es muy emocionante.

My favourite celebration / festival is the Tomatina because it is very exciting.

Durante la fiesta, los camiones llegan con montones de **tomates que la gente tira**. Es divertido, pero puede ser peligroso.

During the festival, lorries arrive with mountains of **tomatoes that people throw**. It is fun but it can be dangerous.

Section 4. Latin American Culture.

4.2F Las fiestas del mundo hispano

<i>el altar</i>	altar, shrine	<i>famoso/a</i>	famous
<i>los antepasados</i>	ancestors	<i>la flor</i>	flower
<i>aparecer</i>	to appear	<i>hispanico</i>	Hispanic
<i>el azúcar</i>	sugar	<i>la mina</i>	mine
<i>la calavera</i>	skull	<i>el/la minero/a</i>	miner
<i>celebrarse</i>	to be held	<i>el mole</i>	'mole' sauce / Mexican chocolate sauce
<i>el cementerio</i>	cemetery	<i>la montaña</i>	mountain
<i>cerca de</i>	close to, near to	<i>muerto</i>	dead
<i>la ciudad</i>	city, town	<i>la normalidad</i>	normality
<i>comenzar</i>	to start	<i>el número</i>	number
<i>completamente</i>	completely	<i>la plata</i>	silver
<i>describir</i>	to describe	<i>proteger</i>	to protect
<i>el desfile</i>	parade	<i>el pueblo</i>	village, (small) town
<i>el diablo</i>	devil	<i>el regalo</i>	present, gift
<i>disfrazado</i>	dressed up, disguised	<i>triste</i>	sad
<i>en honor a</i>	in honour of	<i>la tumba</i>	grave
<i>encendido/a</i>	lit	<i>la vela</i>	candle
<i>el esqueleto</i>	skeleton	<i>vender</i>	to sell
<i>el estaño</i>	tin	<i>viejo/a</i>	old
<i>los familiares</i>	family members		

La fiesta que me interesa más es **el Día de los Muertos**, que se celebra en México en noviembre.

The festival that interests me most is **the Day of the Dead**, which is celebrated in Mexico in November.

Es una fiesta para recordar a los seres queridos muertos y

It's a festival to remember dead loved ones and

la gente decora las tumbas y las casas con altares, velas y flores.

the people decorate graves and houses with altars, candles and flowers.

La gente ve desfiles y lleva disfraces y **me parece** una fiesta con mucha tradición.

People watch processions and wear costumes and **it seems like** a very traditional festival.

Section 5

Wider Research	Apply
<ul style="list-style-type: none">• Online Dictionary and conjugation tool: www.wordreference.com• Also, please remember that you should spend at least 20 minutes each week, PRACTISING INDEPENDENTLY, on each of the following app and website: https://www.memrise.com/ https://www.kerboodle.com/users/login <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"><p style="color: red;">If you need support with any of the above learning resources, please email your teacher.</p></div>	<p>Answer the following questions in Spanish.</p> <ul style="list-style-type: none">• It is wise to use words/ expressions that you'll easily remember. Aim to write 3 sentences as answer per question set – where possible. Have, on average 30 words in total per answer – where possible.• Mind the tense in which each question is set. The tense in your answers should reflect the tense in the question you are answering. Remember that what you write does not have to be true. Just show off your vocab and grammar knowledge. <p>1/ ¿Cuál es tu celebración preferida? ¿Por qué? (<i>What is your favourite celebration? Why?</i>) 2/ ¿Qué fiesta celebraste en España? ¿Qué hiciste? (<i>What festival did you celebrate in Spain? What did you do?</i>) 3/ ¿Qué fiesta celebraste en México? ¿Qué hiciste? ¿Cómo fue? (<i>What festival did you celebrate in México? What did you do? How was it?</i>)</p>



Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 1: London case study

Location: London is the capital city of England and is located in the South East of England.

London's local, regional and national influence:

- London is connected to transport hubs through HS1 to the South East Coast.
- London is served by 6 international airports which are used for trade, tourism and domestic travel.
- Many people work in London but commute into the city.
- Workers in London gain extra income on their basic salary through a 'London Weighting Allowance'
- London is a major cultural centre boasting high levels of diversity.
- 50,000 new residents move to London on average every year.
- Pull factors for London include high salaries, high quality jobs and services.
- Push factors for people leaving London include busyness, population growth and the cost of housing.



KEYWORDS:

- Development – the state of growth where people and places improve over time.
- Counter-urbanisation – the movement of people from urban areas into rural areas; these may be people who originally made the move into a city.
- Emigrants – people who leave one country to settle in another.
- Immigrants – people who move from one country to settle in another.
- Infrastructure – the basic structures and facilities needed for a society to function, such as buildings, roads and power supplies.
- Rural-urban migration – the movement of people from the countryside into towns and cities; occurs as a result of push and pull factors relevant to both locations.

Contemporary challenges facing London:

- Affordable housing is a major issue as new properties are expensive and rents are high which causes locals to have to move to cheaper areas.
- Waste management is a problem in London due to an ever growing population.
- Transport - London needs to expand transport connectivity to the rest of the UK.

Sustainable strategies to deal with the challenges:

- The Mayor of London has created minimum recycling and waste management commitments to deal with waste in the 2020 Environment Strategy.
- The Mayor of London has committed to delivering 130,000 affordable homes for Londoners by 2026 in the Affordable Homes Programme. This will be funded by The UK Government by £7.3 billion.
- HS2 is a planned transport scheme connecting London to the North of The UK through high speed rail - lowering travel times.



Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 2: Air masses

Factors affecting the UK's weather

Prevailing wind

- The dominant wind direction is from the SW.
- This brings mild, moist air towards the UK keeping the UK warmer and wetter than we should be.

Air masses

- Air masses have different characteristics and bring different types of weather based on where they have come from.

North Atlantic Drift

- This warm ocean current comes from the Caribbean. It brings warm ocean waters so the temperature in the UK is warmer, particularly in the winter.

Continentality

- Large areas of land respond quickly to changes in temperature so the further you are from the ocean, the colder the winter and the hotter the summer will be.
- The further inland you are, the drier it is too.

Air masses and the UK

Arctic Maritime: Heavy snow in 2009-2010

- Extremely cold, wet air mass from the North Pole.
- Most severe winter conditions in 20 years.
- Night time temperatures fell to below -10°C and 10-20cm of snow fell.
- Transport badly affected with blocked roads, cancelled trains and airports disrupted.
- Ice brought down power lines disrupting electricity to 25,000 homes.
- Farm animals in the UK severely affected.

Polar Maritime

- This brings cold, wet weather from the NW.

Polar Continental

- This brings cold, dry weather from the NE (Siberian winds).



Tropical Maritime: Strong winds in 2014

- Warm, wet air mass from the SW.
- In February 2014 storm winds came from the Atlantic creating huge waves that hit the south and west coasts.
- SW mainline railway damaged at Dawlish took many weeks to fix.
- Coastal flooding and damage to infrastructure, buildings and sea defences in Cornwall, Devon and Dorset.
- Power lines brought down in Wiltshire killing 1 person.

Tropical Continental: Heatwave in 2003

- Warm, dry air mass from the SE.
- Most extreme heatwave in 500 years to hit Europe.
- Over 20,000 people died across Europe.
- Wildfires broke out and rivers ran dry.
- Water reservoirs ran low, affecting water supplies and wildlife.
- Tourism in the UK increased as people stayed to enjoy the weather rather than go abroad.
- Some food prices rose as farm animals died and crops failed.
- Road surfaces in the UK melted and railway tracks buckled in the heat.



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Topic 3: Somerset Levels case study 2014

Location of The Somerset Levels:

The Somerset Levels are located in South West England between the Quantock and Mendip hills.



Human causes of flooding:

- Rivers had not been dredged for 20 years adding capacity for the rivers to carry water
- River Parrett was completely blocked
- Building on the floodplain, removing vegetation for infiltration of water

Physical (natural) Causes of flooding:

- From mid-December 2013 to mid-February 2014, there were twelve major storms
- Very flat landscape
- Much of the land is below sea level
- Close to the River Severn
- Worst storms for 20 years
- The River Parrett and Tone Flooded causing the flat levels to be flooded
- 65million m³ of floodwater covered the levels
- Prolonged rainfall, hurricane force winds and tidal surges pushed water onto the levels.
- The storms were caused by a powerful jet stream driving low-pressure systems and their storms across the Atlantic Ocean.

Effects of flooding:

Social -

- 600 homes were affected
- Villages like Munchelney were completely cut off from the rest of the country
- Roads were inaccessible so journey times increased

Economic -

- The cost to the Somerset economy was between £82million to £147million
- Businesses lost trade

Environmental -

- 6,900 hectares of agricultural land was underwater for a month
- Natural England reported that the floods had little impact on wildlife

Management of the flood event:

- Environment Agency installed 62 pumps to remove 1.5 million tonnes of water
- Royal Marines were sent in to help villages cut off by flood water
- Police increased their patrols to keep the area safe
- Flood defences were planned to be repaired: Floodgates, Pumping stations, Embankments, Coastal defences

- More dredging is planned
- Raising of roads to stop them becoming cut off
- Making new pumps permanent
- Building a barrier to stop tidal surges



Vocabulary	Wider Research	Apply
<ul style="list-style-type: none"> • Air mass • Arctic Maritime • Atlantic • Biomass • Caribbean • Coal • Continentality • Dredging • Embankment • Environment Agency • Floodgate • Floodplain • Geothermal • Hydro-electric • Natural gas • North Atlantic Drift • Nuclear • Oil • Polar Continental • Polar Maritime • Prevailing wind • Solar • Storm • Tidal • Tidal surge • Tropical Continental • Tropical Maritime • Wave • Wind 	<p>Air masses: https://www.bbc.co.uk/bitesize/guides/zsxcwmn/revision/2 https://www.metoffice.gov.uk/weather/learn-about/weather/atmosphere/air-masses/types</p> <p>UK climate: https://www.bbc.co.uk/bitesize/guides/zpykxsg/revision/3 https://climateknowledgeportal.worldbank.org/country/united-kingdom/climate-data-historical#:~:text=The%20UK's%20climate%20is%20maritime,800%20mm%20to%201%2C400%20mm.</p> <p>Somerset case study: https://www.internetgeography.net/topics/the-somerset-levels-flood-case-study/ https://www.studysmarter.co.uk/explanations/geography/living-with-the-physical-environment/somerset-floods/</p> <p>Energy in the UK: https://www.internetgeography.net/topics/how-is-the-uks-energy-mix-changing/ https://www.bbc.co.uk/bitesize/guides/zxhnwxs/revision/1</p>	<p>Using your wider research complete the following exam questions</p> <ol style="list-style-type: none"> 1. Describe the influence of prevailing wind. [3] 2. Explain how air masses impact the UK. [3] 3. What was the most significant cause of the flooding in Somerset – human or physical causes? [4] 4. How was the flooding in Somerset managed? [4] 5. What is the most important renewable resource that is used in the UK? [3] 6. Why does the UK need to still use non-renewable resources? [2] 7. What do you think should contribute more to the future of the UK's energy – wind power or nuclear? [6] <p>Create some revision material</p> <ul style="list-style-type: none"> • Create a detailed diagram to show the influence of air masses on the UK. • Create some revision cards about the Somerset Levels flooding case study. • Research the lesser used renewable energy sources in the UK, for example geothermal, wave, biomass. Why are they not used more in the UK?



Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 1: The Composition of the Army in the Middle Ages and Early Modern Period

1250-1500

- In the Middle Ages, there were **no permanent** armies.
- The size of the army **fluctuated** depending on the seriousness of the threat.
- The King would raise an army on his accord.
- The **infantry** made up the largest proportion of the army.
- At the start of the era, they were **unskilled agricultural labourers** armed with basic spears, stones, and farming equipment.
- By the end of the era, majority of the infantry soldiers had trained to become **longbow men**.
- They were not **permanent** but had to be skilful.
- The army also had **mounted knights**.
- At the beginning of the era mounted armoured knights had a decisive role in battle. Their plated armour gave them significant protection during combat.
- By the end of the era their role in battle started to decline. New formations in the army tended to use knights fighting dismounted in the centre of the battlefield flanked by archers.
- Knights continued to conduct raids on horseback, and they destroyed farmland and took valuable resources.

1500-1700

- In the Early Modern period, the **infantry** remained the biggest proportion of the army.
- Infantry soldiers were **musketeers** and **pikemen**.
- The proportion of musketeers increased steadily throughout the period.
- There were units called **dragoons**. These were mounted infantry armed with muskets. They usually rode into a position but then fought on foot. They used smaller horses and cheaper equipment than the cavalry.
- A third of the army were **cavalry** soldiers. They were armed with pistols and swords.
- During the English Civil War, Oliver Cromwell created the "**New Model Army**". These soldiers were more professional, well trained, standard uniform and basic equipment.
- The army also had **artillery units** but very few in numbers.



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Topic 2: The Composition of the Army in the Industrial Period

1700-1900

- In the 18th and 19th century, the infantry continued as the largest proportion in the army.
- For example, in the Battle of Waterloo, there were 50,000 men out of 67,000 that were infantry soldiers.
- A permanent standing army of around 50 000 men continued to exist. This fluctuated depending on wars.
- Most Infantry soldiers were **musketeers** at the beginning of the period, due to the advancement of weapons, musketeers were replaced by **riflemen**.
- The cavalry were no longer mounted knights, but their role declined due to the **square formations**.
- The **artillery units** became increasingly more important in this era.
- The 6-pounder artillery gun was the most common British artillery at Waterloo.
- In 1700, the **Royal Regiment of Artillery** was formed where gunners were trained.
- The growth of the British Empire meant more soldiers were needed and numbers reached 250 000 by 1899.





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Topic 3: Composition of the Army in the Modern Era

1900 to present day

- In the modern era, there were **two peaks** in the size of the army e.g. WW1 and WW2 (due to conscription).
- However, the most significant change is the increasing **professionalisation** and **specialisation** of the army.
- Before 1900, the army was split into mainly the artillery, infantry, and cavalry.
- In the modern era, there are hundreds of roles e.g. *radar surveillance operator, rocket system gunners, tank gunners, artillery IT systems operators, tank crew.*
- Growth in specialist roles due to new weapons and communications has required specific training e.g. *specialist schools for the training of snipers, An Intelligence Corps, Specialised bomb disposal units.*
- In 1914 5% of the army had specialist troops, in 2015 there is 55%.
- The increase of guerrilla warfare and counterinsurgencies has led to the development of the **SAS** (Special Air Service).
- However, the infantry remains the major proportion of the army as highlighted by WW1, WW2, and the Iraq/Afghanistan invasions.

Growth of logistics corps

Timeline

1914–18 Scale of the First World War led to improvements: the Army Service Corps.

1993 Royal Army Service Corps joined with other army corps: Royal Logistics Corps (RLC).

• **1900** Army logistics badly organised.

• **1939–45** Second World War logistics were even more demanding.

• **2003** 15 per cent of the British army, the RLC organised logistics for the invasion of Iraq.

Changes in structure

Two reforms shaped the structure of the modern army:

Haldane's Reforms, 1908 Response to Boer War (1899–1902)	Professional army: 150 000	Territorial Force: national reserve of part-time soldiers; renamed Territorial Army in 1920.
Army 2020 An ongoing review	Professional army: 82 000	Territorial Army renamed as Army Reserve in 2013; 30 000 part-time soldiers.



Vocabulary	Wider Research	Apply				
<ol style="list-style-type: none"> 1. Permanent army 2. Fluctuating 3. Standing army 4. Infantry 5. Mounted knights 6. Cavalry 7. Longbow men 8. Crossbow men 9. Formations 10. Musketeers 11. Pikemen 12. Dragoons 13. Civil War 14. New Model Army 15. Artillery 16. British Empire 17. Royal Regiment of Artillery 18. Gunners 19. Square Formations 20. Swedish Salvo Formation 21. Dutch Counter-March Formation 22. Professionalization 23. Specialisation 24. Specialised bomb disposal units 25. Logistics Corp 26. SAS 	<p>Royal Artillery History</p> <p>https://www.nam.ac.uk/explore/royal-artillery</p> <p>Royal Logistic Corps History</p> <p>https://www.nam.ac.uk/explore/royal-logistic-corps#:~:text=Formed%20in%201993%2C%20th%20is,by%20land%2C%20sea%20or%20air.</p> <p>The Square Formation</p> <p>https://www.historicalfirearms.info/post/86050072294/the-infantry-square-the-infantry-square-became</p> <p>Modern British Army</p> <p>https://www.army.mod.uk/who-we-are/corps-regiments-and-units/</p> <p>New Model Army</p> <p>https://www.historylearningsite.co.uk/stuart-england/the-new-model-army/</p>	<p>Task 1: Create a key word Glossary for you to put up in your room or at the back of your exercise book in class.</p> <table border="1" data-bbox="1070 427 1883 564"> <thead> <tr> <th data-bbox="1070 427 1476 496">Key Word</th> <th data-bbox="1476 427 1883 496">Definition</th> </tr> </thead> <tbody> <tr> <td data-bbox="1070 496 1476 564"> </td> <td data-bbox="1476 496 1883 564"> </td> </tr> </tbody> </table> <p>Task 2: Create a flash card for the composition of the army in each time period. Use different colours and images to help you.</p> <p>Task 3: Attempt the exam questions below.</p> <p>Explain one way in which the composition of the army was:</p> <ol style="list-style-type: none"> a) Similar in the 1400s and the 1600s (4 marks) b) Different in the 1700s and the 1900s (4 marks) <p>Structure</p> <ul style="list-style-type: none"> - Identify the key point (similarity or difference) - Give an example from the first time period. - Give an example from the second time period. 	Key Word	Definition		
Key Word	Definition					



KS4 Knowledge Organiser



Subject: Construction - Year 10 Term 3

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Also, please remember, you should spend 20 minutes on the following apps and websites:

GCSE Pod
PIXL Lit
PIXL Maths App
Tassomai
BBC Bitesize
Onmaths
Corbett Maths
English Instagram
@greenacreenglish
Quizlit

Click on the QR code below which will take you to the revision support page on our website:



If you would like support with any of the apps, please email gahomework@sflt.org.uk

How to use the Knowledge Organiser:

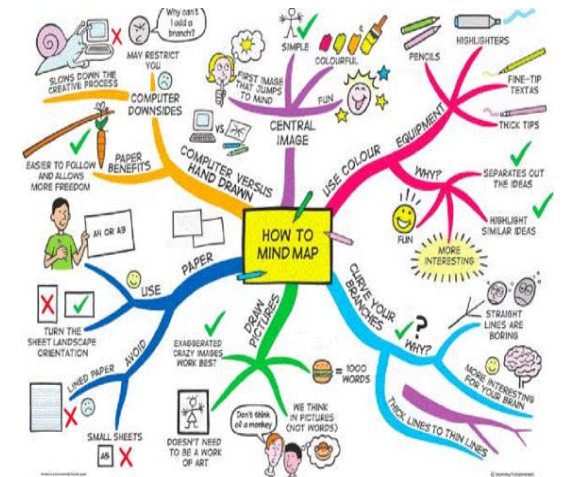
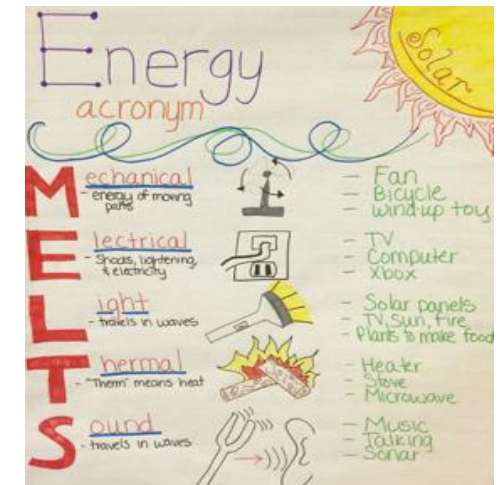
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7. Use of post-it notes – place post-it notes in key places so you are constantly reading key information
8. Make lists of important facts and figures
9. Draw diagrams to help you visually remember your notes
10. 'Look, cover, say, write, check' – use this method to make sure that you are remembering key information

Revision tips

- Make sure you get some sleep – cognition (acquiring and understanding information) and ability to recall learned facts is limited when you are sleep deprived.
- Eat a healthy, balanced diet - lots of fruit and veg, meats for protein, limit sugary fatty foods.
- Switch off social media/distractions - ignore your phone for a few hours! It will help you keep focused. Social networking, while it's fun, is a big distraction from your revision.
- Give yourself a nice space to work in - have a nice, organised study space with lots of stationary to help you make quality notes/highlight.
- Make a plan - schedule dedicated study time into your daily schedule. Be organised with your time. Stick to your plan. Sacrifice some of your social time for study time. No pain, no gain!
- Start your revision early - start now, if you have not already done so, not days before your exam.
- Do small chunks of revision. Your brain is not capable of mass storing information in a short space of time. Digesting small chunks of information, over a longer period of time, means you are more likely to remember it

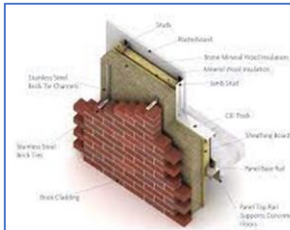




Constructing the Built Environment

Unit 1 revision

TOPIC: Technologies and materials



External walls

- External walls are load bearing masonry (insulating blockwork), Structural frame (timber or steel) and structural insulated panels (SIP)
- They are also made of insulation this includes fibre rolls, sprayed foam or rigid foam sheets. Sustainable options such as straw can be used.
- External cladding can either be brickwork or rendered blockwork, curtain walling, steel sheeting, aluminium faced insulated panels

Internal walls and floors

- Block or stud (timber or steel) Partitions
- Timber, concrete or steel floor joists



Secondary structures:

- These refer to the steel lintels, joists, timber trussed rafters for masonry walls
- Sheeting rails and purlins for steel frames

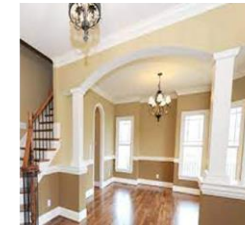
ROOFING MATERIALS

AT A GLANCE

CLAY TILE	SLATE TILE	CONCRETE TILE (FIBRE REINFORCED)	METAL	WOOD SHINGLES & SHAKES	SPANISH TILE	ASPHALT SHINGLE
<ul style="list-style-type: none"> + Attractive + Long lasting + Low maintenance + Variety of colours + Non combustible 	<ul style="list-style-type: none"> + Beautiful appearance + Fireproof + Long Lasting + Low maintenance 	<ul style="list-style-type: none"> + Durability + Low maintenance + Relatively light-weight + Variety of colours and styles 	<ul style="list-style-type: none"> + Durability + Fire resistant + Energy efficient + Low weight + Variety style and colour + Recyclable + Can be installed over existing roofs 	<ul style="list-style-type: none"> + Natural look + Offers insulation value + Easy to repair and replace + Long lasting 	<ul style="list-style-type: none"> + Upscale look + Long lasting up to 70 years + Non combustible + Great insulator 	<ul style="list-style-type: none"> + Low cost + Easy to install + Variety of colours + Suitable for most residential applications + Easy to repair + Fire resistant
<ul style="list-style-type: none"> - Heavy weight - Some colours may fade away - Expensive - Complex to install - Walking on roof may break tiles 	<ul style="list-style-type: none"> - Expensive - Heavy weight 	<ul style="list-style-type: none"> - Expensive 	<ul style="list-style-type: none"> - High initial cost - May need periodic painting - Difficult to install 	<ul style="list-style-type: none"> - Complicated to install - Low durability - High maintenance - Fire Hazard 	<ul style="list-style-type: none"> - Very expensive - Very heavy 	<ul style="list-style-type: none"> - Short life expectancy - High maintenance - Short life expectancy (15-30 years) - Environmentally unfriendly

Internal finishes

- Floor Screeds and boards
- Plasterboard for walls and ceilings
- Wall plaster for decorations



Solar Energy

- Solar photovoltaic: conversion of sunlight into electricity using photovoltaic (PV) cells/panels.
- Solar thermal: Conversion of sunlight into thermal energy (or Heat)



Wind Turbines

- Harness the power of the wind to generate electricity
- Domestic wind turbines may be pole mounted or building mounted



Water

- Rainwater harvesting
- Grey water Re-use
- Hydro-generation of electricity (tidal/hydroelectric)



Building Services

Building services

Incoming services run through substructure walls and then extended for external distribution
Internal drainage run through external walls for connection to underground systems

Building services Materials

This includes Plastic and copper pipework for plumbing and heating
Plastic rainwater goods such as guttering
Copper cables for electricity and communications





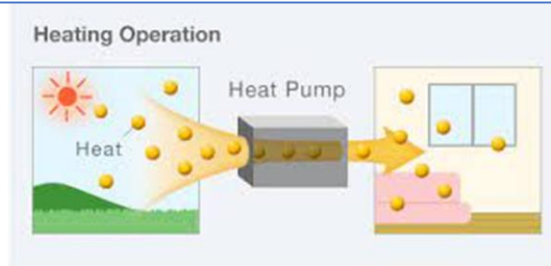
Constructing the Built Environment

Unit 1 revision

TOPIC: Technologies and materials

Heat Pumps

- Ground source: uses pipes that are buried underground to transfer heat from the ground into the building.
- Air source: transfers heat from the air outside of a building into the building.
- Water source: Transfers heat from a source of water outside of a building into the building.



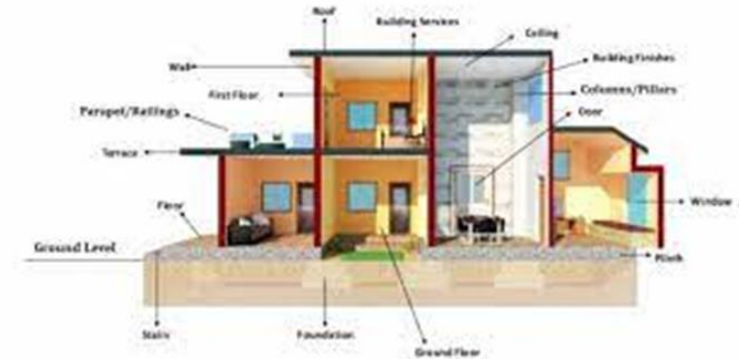
What do foundations do?-NEED TO KNOW DEFINITION

They provide support for structures by transferring their load to layers of soil and rock that have the sufficient bearing and capacity and suitable settlement characteristics to support them.

That's great but ...what does that ACTUALLY mean.

Foundations rely on the material used, trenches and or supporting elements such as rods or mesh to spread the weight (Load). We use materials that can carry the weight and transfer to the ground (soil) around them.

So there are a variety of foundations that we can use; shallow foundations, strip footings, trench fill, pads or rafts, deep foundations like piles (deep piles) and diaphragm walls



SHALLOW VS DEEP FOUNDATIONS

Shallow Foundations

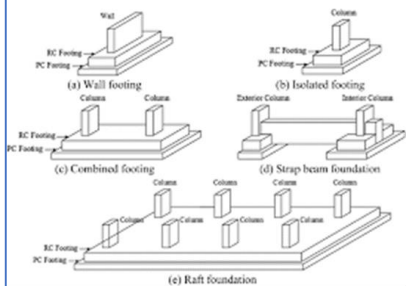
Used to: Handle the weight distribution for smaller and lighter buildings where the structure is **less than six feet** deep

Examples: Residential homes

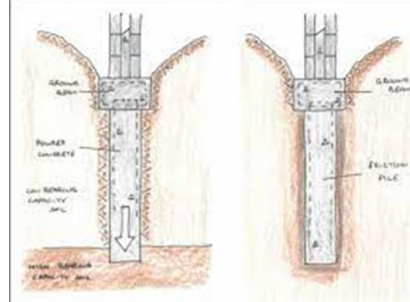
Deep Foundations

Used to: Transfer the weight of the superstructure to a layer of bedrock (down to a depth of **250+ feet**) to ensure structural stability

Examples: Skyscrapers, bridges, and shopping centers



Shallow foundations

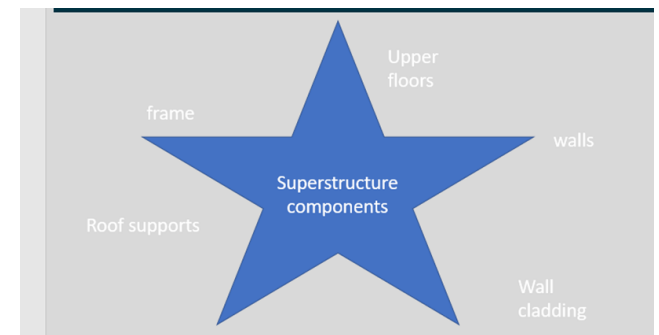


Deep foundations

Substructure:

This is the foundations as well as basement and retaining walls.

Substructures provide support for superstructures by transferring the load to the foundations and then to the soil underneath.



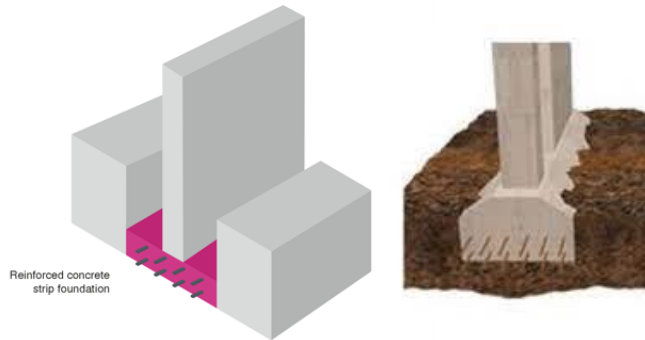


Constructing the Built Environment

Unit 1 revision

Shallow foundations

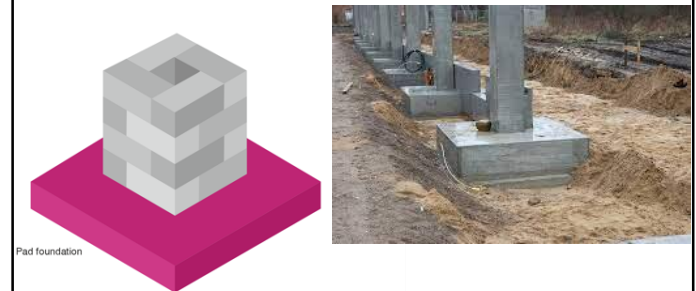
Strip foundations: Strip foundations or footings consist of unbroken trenches (or strips) of varying widths that carry the weight of load-bearing walls. These could be excavated trenches filled with concrete or rubble and loose stone. Although this is a traditional technique, strip foundations are used if water is an issue and enhanced drainage is required.



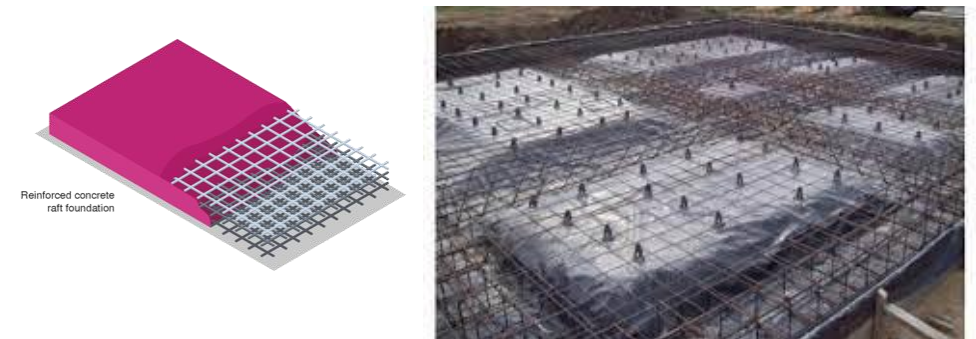
In a trench fill foundation, a trench is usually dug to a specified depth that is at or just below ground level, and the bottom of the trench is typically lined with a layer of hardcore to provide a stable base for the concrete. Concrete is poured into the trench, over the hardcore base, to create a foundation that is both level and stable



Pad foundations: Known variously as pad foundations, individual or spread footings, these consist of equally spaced round, rectangular or square pads in or on the ground. Usually made of concrete, these pads support load-bearing, uniform columns, which hold the building up, spreading the overall load.



Raft foundations: A raft or mat foundation consists of a slab covering a large area, up to the entire footprint of the structure, in order to spread the load over the building's whole area. This can be a preference if the substructure is poor or uneven, enhancing the likelihood of settlement. It's also the ideal type of foundation for the construction of a basement.



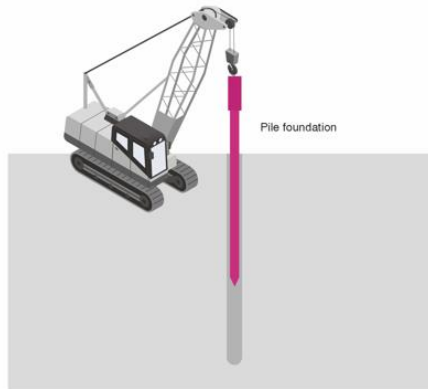


Constructing the Built Environment

Unit 1 revision

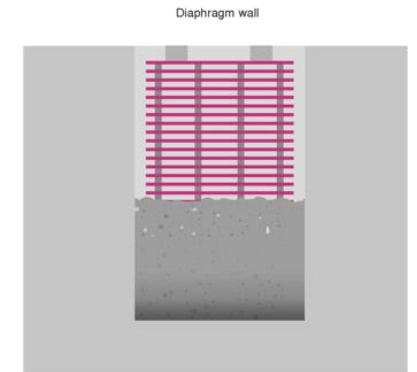
Deep foundations

Pile foundations: Pile foundations are lengthy columns that may be fabricated from wood, steel or reinforced concrete. They offer immense strength when the load is distributed evenly among them. Driven piles are fabricated elsewhere, then driven into position on site. This is the most common option, although shafts can be bored and concrete piles poured on site. An additional ground beam might be added to help. Retaining walls can be achieved by placing piles right next to each other.



Diaphragm walls: These are often used in foundation construction on tricky sites, where there are space, depth, access issues or where pile driving and its associated vibration might be problematic.

The continuous diaphragm wall is often found in large or industrial buildings or civil engineering projects, especially in so-called top-down building sites where great depths of soil would otherwise need to be excavated. The wall can be made using pre-cast concrete panels fabricated off-site or poured in-situ using shuttering.



Sheet piling can be used to provide permanent foundations, permanent or temporary retaining walls and as extremely strong shuttering when a poured concrete foundation or retaining wall is required. It creates a border which keeps soil back, away from the structure.



Vocabulary	Wider Research	Apply
Substructure Superstructure Infrastructure Masonry wall Stud wall Insulation Solar energy Wind energy Water energy Renewable technologies Roof finish Heat pump Foundations	Heat pumps https://www.youtube.com/watch?v=QykwWs3L1W8 Renewable energy https://www.youtube.com/watch?v=T4xKThjckKaE	Then complete the following. <ol style="list-style-type: none"> 1.Explain the definition of substructure and superstructure 2.Explain what is meant by the term infrastructure? 3.What is a load bearing masonry wall and why is it used? 4. Which material is used to make stud walls and why? 5.Explain why solar energy sources are used to generate electricity? 6.Explain why wind energy sources are used to generate electricity? 7.Explain why water energy sources are used to generate electricity? 8. A farmer in Wales wishes to install renewable technologies to generate electricity for their home and business. Explain, with reference to the benefits and limitations of renewable technologies, why the farmer should consider installing more than one form of renewable technology to generate electricity. 9) The entrance of the office block is to have a flat roof. The client has stated that they do not wish to use rubber-based sheeting as the finish for the flat roof. Suggest an alternative finish that would be suitable for the flat roof of the office block. 10) The client wishes to use a heat pump as part of the system to heat the office block. Name two types of heat pump and outline how they provide heat for a building. 11) Explain the four types of shallow foundations and why they are used. 11) Explain the three types of deep foundations and why they are used.



KS4 Knowledge Organiser
Subject: Engineering WJEC
Year 10 Term 4

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Mrs Adsett Head of Year 11	adsea001@sflt.org.uk
Mr Akehurst Head of Department	akehr005@sflt.org.uk

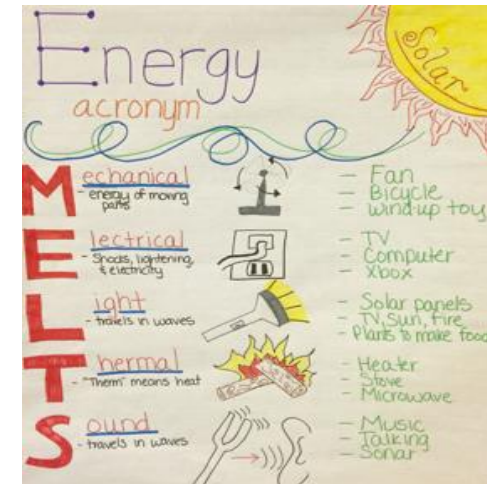
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- PIXL Maths App
- Tassomai
- BBC Bitesize
- Onmaths
- Corbett Maths
- English Instagram @greenacreenglish
- Quizlit

If you would like support with any of the apps, please email
akehr005@sflt.org.uk

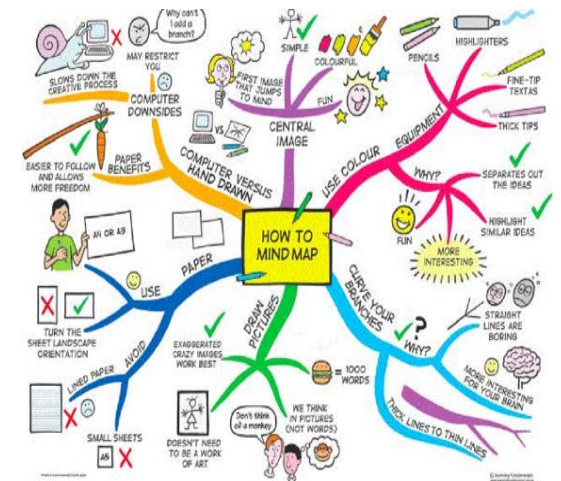


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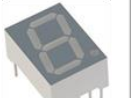






- Give yourself a nice space to work in - have a nice, organised study space with lots of stationary to help you make quality notes/highlight.
- Make a plan - schedule dedicated study time into your daily schedule. Be organised with your time. Stick to your plan. Sacrifice some of your social time for study time. No pain, no gain!
- Start your revision early - start now, if you have not already done so, not days before your exam.
- Do small chunks of revision. Your brain is not capable of mass storing information in a short space of time. Digesting small chunks of information, over a longer period of time, means you are more likely to remember it

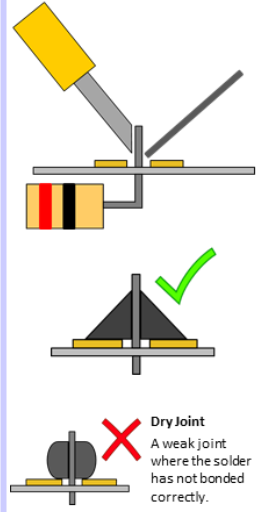
Click on the QR code below which will take you to the revision support page on our website:



Output Components

<p>Solenoid</p>  <p>Convert electrical power in to mechanical movement (pin moves in or out)</p>	<p>Motor</p>  <p>Converts electrical power to rotary motion. Direction can be reversed by reversing the supply polarity.</p>	<p>Light Emitting Diode (LED)</p>  <p>Provide light is a range of colours and sizes. Current must be controlled with a resistor.</p>	<p>7 Segment Display</p>  <p>Consists of 7 LEDs that can be programmed to display numbers.</p>
<p>Liquid Crystal Display (LCD)</p>  <p>They have a larger range of characters available than LEDs. They are programmed using an IC.</p>	<p>Loudspeaker</p>  <p>Uses an electromagnet to move a cone at the frequency of the sound being generated.</p>	<p>Piezo Sounder</p>  <p>Has a piezo-electric diaphragm that distorts rapidly when an AC signal is connected, causing sound.</p>	<p>Buzzer</p>  <p>Produces a sound when electrical current is applied.</p>

Soldering






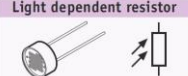
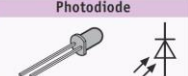
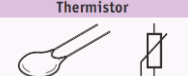
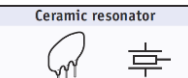
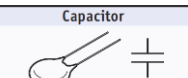
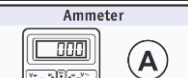
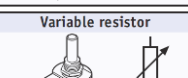

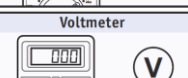
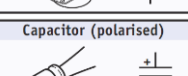
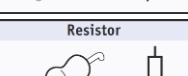
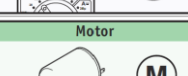
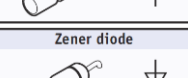


1. Tin the soldering iron. This involves applying a small layer of solder to the tip of the iron and then cleaning it off, the tip should appear **shiny** all around.
2. The component leg should be **straight**, do not **bend** the leg as this can lead to **weak joints**.
3. Turn the PCB over so the component is lying **flat** on the **heat proof mat**.
4. Apply the soldering iron against the component leg. From the other side apply enough solder to form a neat **volcano** shaped joint.
5. Use a **damp** sponge to clean the tip of the soldering iron.

Dry Joint
A weak joint where the solder has not bonded correctly.

Components should be soldered from **SMALLEST** to **LARGEST**



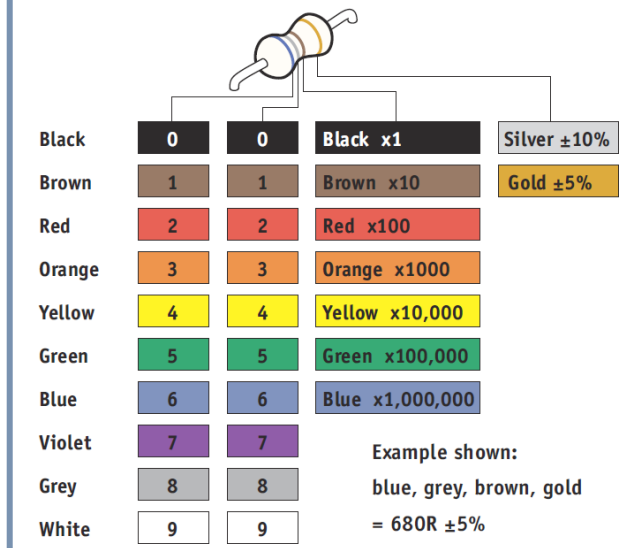
Circuit Symbols

<p>Switch (latching)</p> 	<p>Switch (non-latching)</p> 	<p>Microphone</p> 
<p>Light dependent resistor</p> 	<p>Photodiode</p> 	<p>Thermistor</p> 
<p>Ceramic resonator</p> 	<p>Capacitor</p> 	<p>Ammeter</p> 
<p>Variable resistor</p> 	<p>Semiconductor diode</p> 	<p>Voltmeter</p> 
<p>Capacitor (polarised)</p> 	<p>Resistor</p> 	<p>Motor</p> 
<p>Zener diode</p> 	<p>Potentiometer</p> 	<p>Relay</p> 

Calculations

Ohms Law	$V = I \times R$ <p>(V in volts, I in amps, R in ohms)</p>
Power	$P = V \times I$ <p>(P in watts, V in volts, I in amps)</p>
Resistors in Series	$R_{total} = R_1 + R_2 + R_3$ <p>(R in ohms) (the same formula can be used for capacitors in series)</p>
Resistors in Parallel	$\frac{1}{R_{total}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ <p>(R in ohms) (the same formula can be used for capacitors in parallel)</p>
Potential Divider	$Voltage\ Out = \frac{R_2}{R_1 + R_2} \times supply\ voltage$ <p>(V in volts, R in ohms)</p>
Time Constant	$1.1 \times R \times C$ <p>(R in ohms, C in farads)</p>


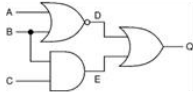

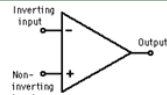


Resistor Colour Codes



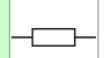

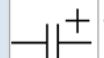

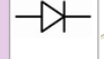

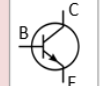

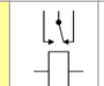

Black	0	0	Black x1	Silver ±10%
Brown	1	1	Brown x10	Gold ±5%
Red	2	2	Red x100	
Orange	3	3	Orange x1000	
Yellow	4	4	Yellow x10,000	
Green	5	5	Green x100,000	
Blue	6	6	Blue x1,000,000	
Violet	7	7		
Grey	8	8		
White	9	9		

Example shown:
blue, grey, brown, gold
= 680R ±5%

Integrated Circuits (ICs)

Voltage Regulator  A voltage regulator is used to supply a specific voltage that does not fluctuate. This is needed by some components.	Logic Gates  Logic gates are a means of making a decision or reasoning within a circuit. (see the separate card for types).	PIC microcontroller  PICs are ICs that can be easily programmed to carry out a task. They have a number of pins for inputs and outputs.
Operational Amplifier (Op-Amp)  An Op-Amp will apply the difference in voltage between two inputs and send the result to the output.	555 Timer  A 555 timer can be used to send a single pulse (monostable) or a stream of pulses (astable) to an output.	Darlington Drivers  Is an array of Darlington pair transistors that are used to boost output power. They can be cheaper than separate transistors.

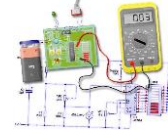
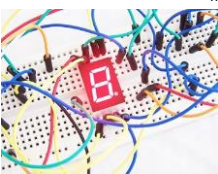

Discrete Components

 	Resistors are used to limit the amount of current flowing in the circuit and to set voltage levels in certain parts of the circuit. Measured in ohms (Ω) . 1R = 1 ohm 1K = 1,000ohms 1M = 1,000,000ohms
 	Capacitors are used to store electrical charge. They are used to create time delays (monostable), control the frequency of pulse generators (astable) and smooth the input across a power supply. The unit of measure is the farad (F) . 1microfarad (μF) = 0.000001F (10 ⁻⁶ F) 1 nanofarad (1nF) = 0.000000001F (10 ⁻⁹ F)
 	Diodes allow current to flow through them in only one direction . They are used to protect components from the possibility of incorrect battery polarity and to stop feedback from outputs.
 	Transistors are used as electronic switches and to amplify current . There are two types; NPN and PNP, the difference is the direction of current flow.
 	A relay is used to power a separate output circuit once the relay coil is powered by the input circuit. For this reason, relays are a safe way to power high-voltage outputs with a low-voltage input .

REVISION TOP TIPS

1. **Study in a quiet**, comfortable place away from the TV and computers.
2. Make a '**revision timetable**' and always let your family know when you are revising.
3. Create **summary notes** and anything simple that helps your **memory** – as short notes, drawings and sayings are much easier to remember.
4. **Get help**. Ask friends and family to **test you**. Also attend any teacher **revision classes** – as teachers will know better than anyone what will be in tests and exams!
5. **Record yourself** reading notes and **occasionally listen** to them instead of reading.
6. Take a **5 or 10 minute break** every hour and do some stretching exercises, go for a short walk or make yourself a drink.
7. Allow yourself some fun-time each day to **relax**...and make sure you get a good **8 hours of sleep** each night.
8. **Eat well**. Good brain foods? Wholegrain foods (cereals, wheat bran and whole wheat pasta). Blueberries. Blackcurrants. Broccoli. Tomatoes. Oily fish. Nuts.
9. **Don't panic** if you feel a bit nervy. A certain amount of **nervousness actually helps you perform** to the best of your ability, producing a rush of adrenaline that helps you to feel alert and focused.
10. **Think positive** – if you have given yourself enough time to revise, you will do well!

Circuit Design

	Simulating a circuit on the computer has many benefits. It can take far less time and gives accurate test results before the circuit is made. Faults can be quickly identified and corrected.
	Breadboarding is a quick method of testing a circuit. Breadboards are a temporary construction method, meaning components are not permanently attached so it is easy to move them around or to replace them in order to evaluate possible improvements to the circuit. They are a board covered with small sockets into which components can be plugged.
	Breaking a task into input-process-output sections and looking at what specific functions are needed at each stage allow you to pick the necessary components for each area. You should start by looking at the inputs and outputs you need and then determining what an appropriate process would be.

Ohms Law

Voltage = Current x Resistance



E.G. What current passes through a 180R resistor if the voltage across it is 9 volts?

$$I = V \div R$$

$$I = 9V \div 180R$$

$$I = 0.05A \text{ or } 50mA$$

Voltage must always be in VOLTS (v)

Convert mV into V = $\div 1,000$ OR $\times 10^{-3}$







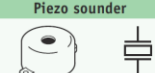





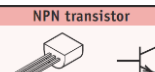
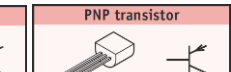
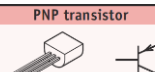
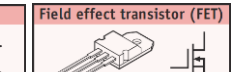
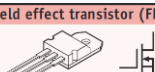

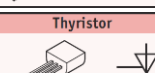
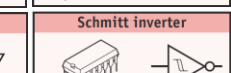
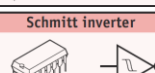
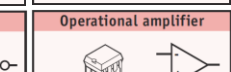
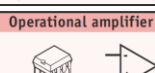

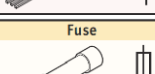
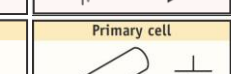
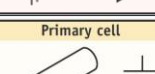
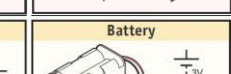
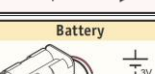


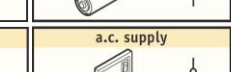
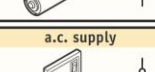



Current must always be in AMPS (A)

Convert mA into A = $\div 1,000$ OR $\times 10^{-3}$
 Convert μA into A = $\div 1,000,000$ OR $\times 10^{-6}$

Resistance must always be in OHMS (R)

Convert K into R = $\times 1,000$ OR $\times 10^3$
 Convert M into R = $\times 1,000,000$ OR $\times 10^6$

Circuit Symbols


Solenoid  	Buzzer  	Loudspeaker  
Piezo sounder  	Lamp  	Light emitting diode (LED)  
NPN transistor  	PNP transistor  	Field effect transistor (FET)  
Thyristor  	Schmitt inverter  	Operational amplifier  
Fuse  	Primary cell  	Battery  
Earth  	a.c. supply  	Transformer  

Etching Process













1. Print the **artwork** for the mask onto acetate sheet using a laser printer.
2. Place the mask and a piece of **photo resist board** in the **UV light box** for 3½ minutes.
3. Place the photo resist board in **developer** solution for around 30 seconds.
4. **Rinse** the photoresist board with cold water to remove developer solution.
5. Place the developed board in the **ferric chloride**. This process will remove any unnecessary copper. It can take up to an hour.
6. **Rinse** the completed board with cold water to remove the ferric chloride.
7. The PCB is now ready to have the **holes drilled**. Remember to use a 1mm drill bit for components and 3mm for any strain relief holes.



Power Sources

	<p>Batteries convert chemical energy into electrical energy. They are available in different sizes and voltages. Some are rechargeable. They must be recycled as they are harmful in landfill.</p> <p>Battery life can be determined by; Expected current draw from component (mA)</p> <p style="text-align: center;">Battery current rating ((mAh)</p>
	<p>Solar cells are commonly used in garden lighting systems and for powering street signs and lights. They use light to produce electricity. They are a renewable source of energy, therefore are good for the environment.</p>
	<p>Mains power uses electricity produced by the national grid. The electricity is produced using oil or coal, therefore typically is non-renewable. Adaptors can be used to provide a range of voltages.</p>
	<p>Capacitors are available in large values, they are called super-capacitors and are measured in farads rather than microfarads.</p> <p>They charge quickly and hold their charge until needed. They can be recharged as many times as needed. However, they do lose their charge quickly.</p>




Input Components

SWITCHES			
 Slide Switch	 PTB and PTM	 Microswitch	 Tilt Switch
 Key Switch	 Toggle Switch	 Reed Switch	 Rotary Switch
SENSORS			
 Light Dependant Resistors (LDR)	 Thermistor	 Microphone	 Passive Infrared Sensor (PIR)

Processing Key Words

- Digital Electronics** Signals with only two states, **on/off** or **high/low** or **1/0**.
- IC** Integrated Circuit, with no external components needed.
- Pull-up Resistor** Digital systems require a signal to be high or low, a resistor can be used to ensure that a signal is always either high or low.
- Monostable** Provides a single pulse that stays switched on for a certain length of time and then stays off until it is switched on again. The output remains in a low stable state until it is switched on, then it remains in a high stable state.
- Bistable flip-flop** A bistable flip-flop or latch is a circuit that has two stable states and can be used to store state information. A flip-flop is a bistable multivibrator. The circuit can be made to change state by signals applied to one or more control inputs and will have one or two outputs.
- Astable** Gives a pulsed digital output, it is a pulse generator. For example, it can be used to cause an LED to flash. Therefore, the output is not stable in either the on or the off state.

Construction Methods

Selection of Components	Mounting Components
<p>A circuit diagram is useful in choosing components, but it is not always specific, such as the type of switch. Sometimes compromises have to be made dependant on availability or price.</p>	<p>Most components will be mounted directly to the PCB. Delicate components should be mounted to using a holder (like a 555 timer).</p> 
Off-board Components	Connection Between Boards
<p>Off-board components should be soldered on to wire. They can then be connected using terminal blocks or soldered directly. They should use strain relief holes.</p> 	<p>The simplest method two connect two or more boards is using ribbon cable. One connector is fixed and the other is plugged in</p> 

Quality Control

A PCB should always be checked for quality. A snag sheet can be used to test for faults. A PCB can be tested with a multimeter which allows current at certain parts of the circuit to be tested, it can help identify faults.






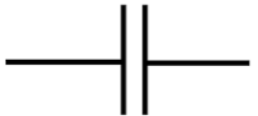

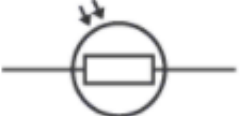





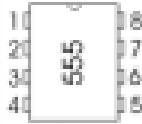


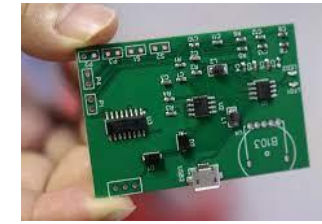
Electronic components Knowledge organiser

There are many electronic components that make up circuits. These are **some** of the components that you may be tested on in your Engineering exam.

When designing and drawing circuits, circuit symbols are used to identify the components.

Useful websites:
[Technology student](#)
[BBC bitesize](#)

Component photo	Component name	Purpose in a circuit	Circuit symbol
	Resistor	To limit the current and to control the flow of current to other components	
	Push switch	To turn a circuit on and off	
	Capacitor	It stores and releases electricity in a circuit.	
	Light dependent resistor (LDR)	The resistance of a LDR depends on light intensity.	
	Lamp	An electrical current heats the filament in a bulb so that it gives out light.	
	Light Emitting Diode (LED)	Produces light when electricity passes through it (in one direction only)	
	Integrated circuit (IC)	performs high-level tasks such as amplification, signal processing, or calculations	

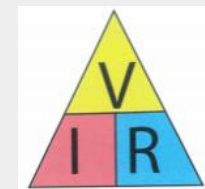


Components are often attached to a **Printed Circuit Board (PCB)** which is made from Epoxy resin, a thermosetting polymer which is a good electrical insulator.

Key words:
Voltage: the power supply of the circuit, the push (e.g 9 volt battery)
Current: The amount of electricity flowing around the circuit
Resistance: How the current is slowed down by econdounering things in the way e.g, wires and components.

Calculations: OHM's law

Voltage (V)= current x resistance
 Current (I) = $\frac{\text{voltage}}{\text{resistance}}$
 Resistance (R) = $\frac{\text{voltage}}{\text{Current}}$



Units of measurement:
 Voltage = volts (V)
 Current = amps (A)
 Resistance =ohms (Ω)

Vocabulary

Connections

LEDS

Resistors

Fuses

Power Supplies

Voltage

Resistance

Current

Motor

Relay

Soldering

Piezo Sounder

Capacitor Supply

Wider Research

<https://technologystudent.com/elec1/elecex.htm>

<https://www.bbc.co.uk/bitesize/guides/zn2w7p3/revision/9>

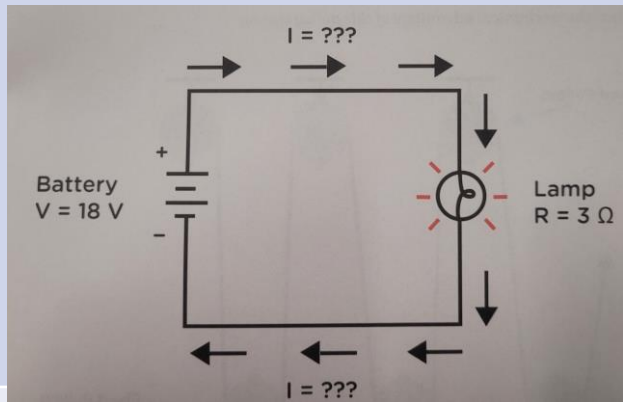
<https://www.bbc.co.uk/bitesize/guides/zcxmfcw/revision/1>

<https://www.bbc.co.uk/bitesize/guides/zk37hyc/revision/1>

<https://learning-center.homesciencetools.com/article/>

<https://www.slideshare.net/electronics/>

<https://www.youtube.com/watch?v=j0zf-otH3cY>



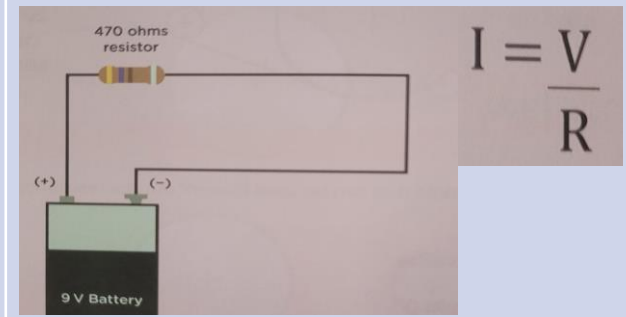
Apply

1. Complete the table below, by giving the correct classification for **each** named material used in the manufacturing of the climbing wall. 3 × [1]
 Note: The first material has been completed.

Material	Classification
Mild steel	Ferrous
Acrylic
Polyester resin
Aluminium

2. The climbing walls are assembled using nuts and bolts. Explain, using **notes and diagrams**, how you would cut an external M8 thread on an 8mm diameter mild steel bar. [6]

3. Here is a simple circuit that has a 9 volt battery and a 470 ohm resistor. Use Ohms law to calculate the current.

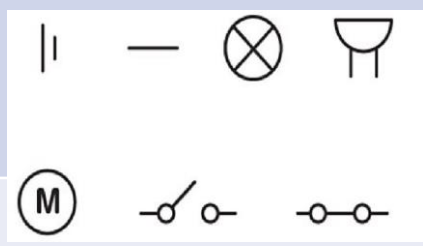


4. Left is a simple circuit diagram. What is the current (I) value?

5. What is the role of a resistor?

6. How has the use of surface mount technology changed electronic products?

5. Label these circuit components.





KS4 Knowledge Organiser
Subject: Engineering WJEC
Term 4

Mrs Allen Raising Standards Leader for KS4	sterm029@sflt.org.uk
Mr Wells Head of Year 11	wellj253@sflt.org.uk
Mr Akehurst Head of Department	akehr005@sflt.org.uk

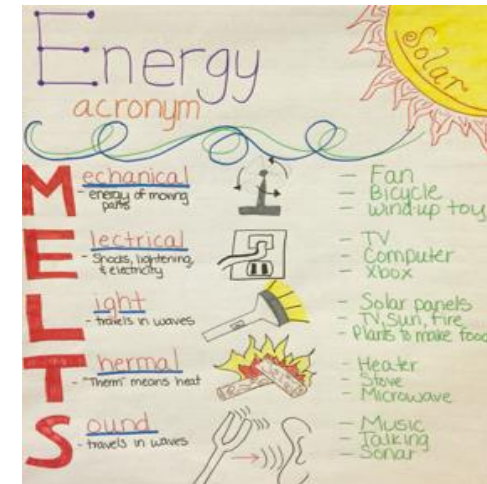
How to use the Knowledge Organiser:

- Your teacher will direct you to what topics to revise for each week
- You will be expected to revise for at least 30 minutes each evening
- Ask someone to quiz you on the key information
- Remember to APPLY the information using the tasks included in each Knowledge Organiser

Also, please remember, you should spend 20 minutes on the following apps and websites:

- GCSE Pod
- PIXL Lit
- PIXL Maths App
- Tassomai
- BBC Bitesize
- Onmaths
- Corbett Maths
- English Instagram @greenacreenglish
- Quizlit

If you would like support with any of the apps, please email
akehr005@sflt.org.uk



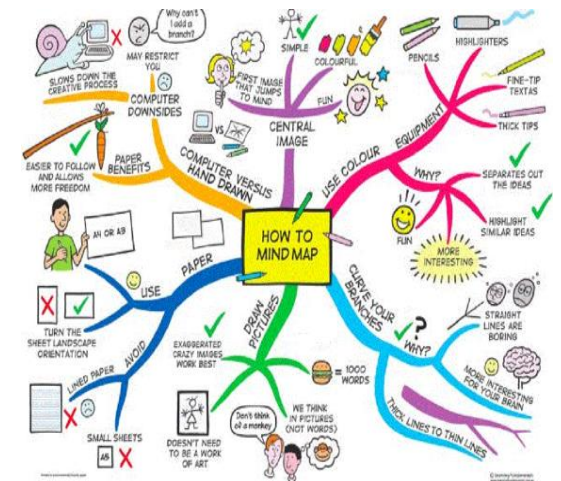
Revision techniques and strategies

Revision tips

- Make sure you get some sleep – cognition (acquiring and understanding information) and ability to recall learned facts is limited when you are sleep deprived.
- Eat a healthy, balanced diet - lots of fruit and veg, meats for protein, limit sugary fatty foods.
- Switch off social media/distractions - ignore your phone for a few hours! It will help you keep focused. Social networking, while it's fun, is a big distraction from your revision.



- Turn your huge amount of revision notes into small and easy to handle
 - Put a question on the front of your flash cards and write the answer on the reverse – then ask someone to quiz you
 - Mind map – what is the topic and what are the key points you need to remember? You could use different colours for different ideas/characters
 - A question a day – complete an exam question, under timed conditions, each day
 - Record yourself reading your notes and listen back to yourself
 - BUG the question – write out exam questions, examine the key words and plan an answer
 - Use of post-it notes – place post-it notes in key places so you are constantly reading key information
 - Make lists of important facts and figures
 - Draw diagrams to help you visually remember your notes
10. 'Look, cover, say, write, check' – use this method to make sure that you are remembering key information



- Give yourself a nice space to work in - have a nice, organised study space with lots of stationary to help you make quality notes/highlight.
- Make a plan - schedule dedicated study time into your daily schedule. Be organised with your time. Stick to your plan. Sacrifice some of your social time for study time. No pain, no gain!
- Start your revision early - start now, if you have not already done so, not days before your exam.
- Do small chunks of revision. Your brain is not capable of mass storing information in a short space of time. Digesting small chunks of information, over a longer period of time, means you are more likely to remember it

Click on the QR code below which will take you to the revision support page on our website:



Nuts, bolts and screws

The sizes for these are **metric** e.g. M8 which means 8mm

Machine screws are used in pre-threaded metal holes and have a flat bottom, unlike wood screws.

Bolts are used on drilled holes. They pass all the way through and are secured with nuts.

Hex bolts are the most common

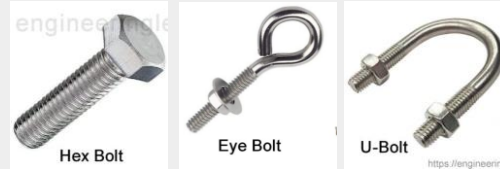
Washers are used to distribute the load/ pressure applied on a material from a nut and bolt.

Nuts are used to secure a bolt or machine screw in place. Nylon lock nuts have piece of nylon in to prevent them from vibrating loose

TYPES OF SCREWS



TYPES OF BOLTS



TYPES OF WASHERS



TYPES OF NUTS



Temporary vs permanent joining methods

Temporary joints:

- ✓ Can be **dismantled** without breaking the assembled parts.
- ✓ Is useful when frequent **assembly** and **disassembly** is required.
- ✓ Often easier and more cost-effective to carry out **inspection, maintenance** and **repair** as parts can be disassembled without breaking.
- ✗ Lower strength joint
- ✗ Often not a leak proof joint

Permanent joints:

- ✗ Cannot be **dismantled** without breaking the assembled parts.
- ✓ Is useful when the joint is intended to stay fixed for **longer**.
- ✗ **Maintenance** and **repair** as more difficult as parts cannot be disassembled without breaking.
- ✓ Stronger joint
- ✓ Mostly create a leak proof joint

Clips

There are lots of different clip fastenings. These are used to temporarily hold parts together for easy disassembly without tools. Eg. road works signs



Riveting

Riveting (e.g. pop-riveting) is often a permanent method, but as they are made of a softer metal and can be drill out, they are referred to as temporary too.



Key words:

Fabrication= joining materials together

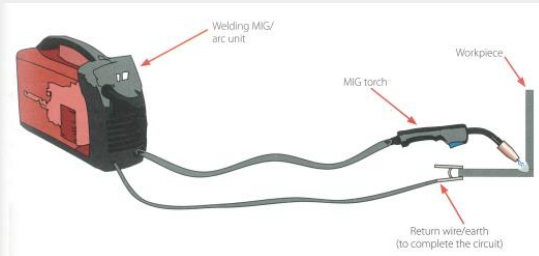
Assembly: Putting things together

Disassembly: Taking things apart

Dismantle: take apart into separate pieces.

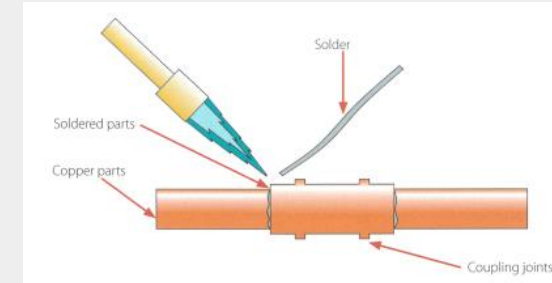
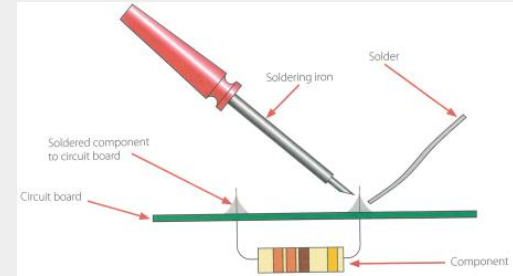
MIG Welding

Metal Inert Gas welding for joining smaller, thinner pieces of steel.



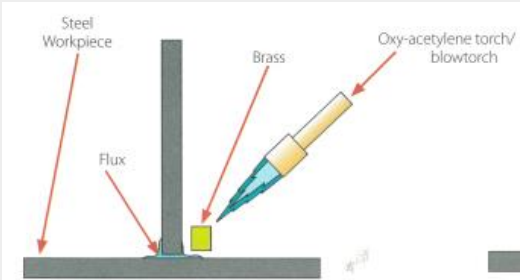
Soldering

Uses a tin alloy to solder wither electronic components to a PCB (*printed circuit board*) or soldering copper pipe together



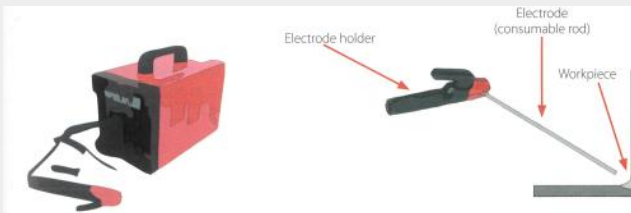
Brazing

Joining steel to steel or other metals. Uses a brass filler metal called a **brazing rod**



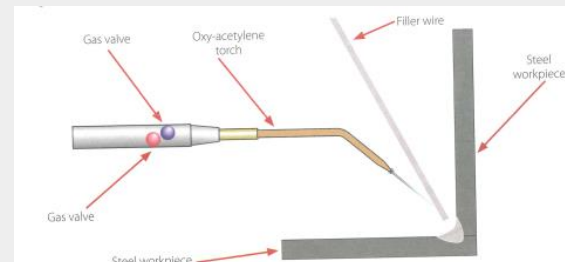
Arc Welding

Used to join steel in medium to large projects, with thicker material. The consumable electrode is pushed against the joint and creates a current to join the metals.



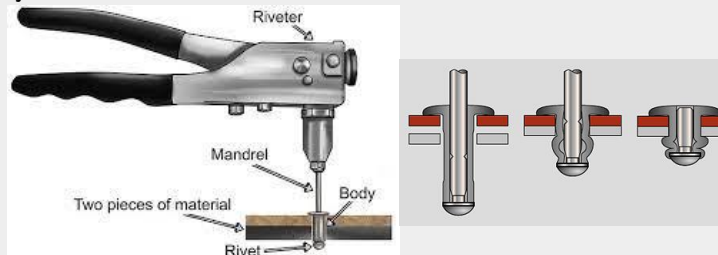
Oxy-Acetylene Welding

A high temperature welding process used to join steel by melting the two pieces together and pushing in a filler wire to the joint.



Pop riveting

Thinner metals can be joined using this process where a rivet is pushed through a hole in both materials then squeezed to expand and hold the joint

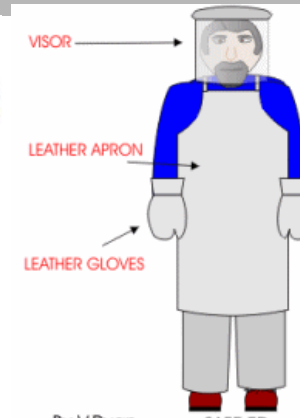


Key words:

Capillary action= Where solder flows into gaps when heated

Filler metal: the metal used to fill the joint between two materials, e.g. solder

Flux= Applied to a joint prior to welding or soldering. It chemically cleans the joint as it melts and helps the filler material to flow into the joint.



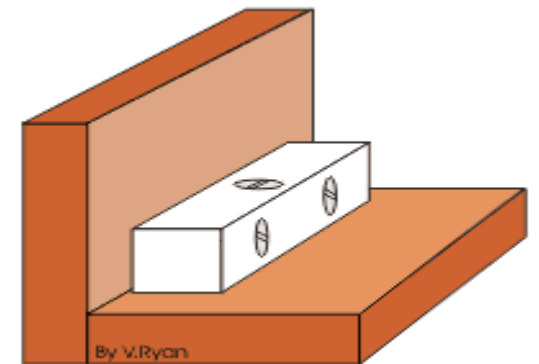
By V.Ryan

SAFE ED

What are Joining methods?

Find images of the following Temporary joining methods and explain what they are used for?

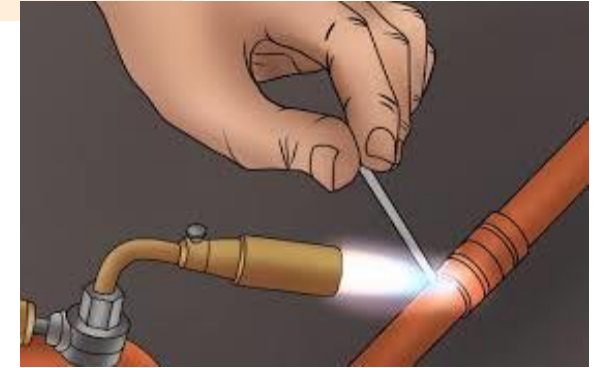
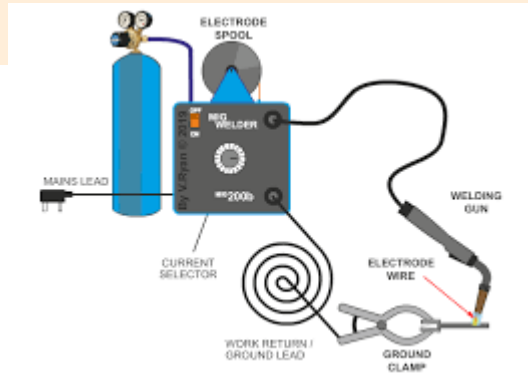
1. Corner blocks
2. Cam locks
3. Bolt and barrel
4. Pop Rivets
5. Half round rivets
6. Flat head rivets
7. Countersunk rivet heads
8. Pan head rivet
9. Self tapper screws
10. Nuts
11. Bolts
12. Machine screws



What are Joining methods?

Find a image of the following
Permanent fixing methods?

1. Lock tight engineering glues for metals
2. Soft soldering
3. Silver soldering
4. Brazing
5. Plastic welding
6. Mig Welding
7. Arc Welding
8. Tig Welding
9. Gas Welding



Vocabulary	Wider Research	Apply
<p>1 Joining method</p> <p>2. Fixing</p> <p>3. Permanent joining method</p> <p>4. Temporary fixing method</p> <p>5.Welding</p> <p>6. Brazing</p> <p>7. Riveting</p> <p>8. Nuts and bolts</p> <p>9. Machine screws</p> <p>10.Self tapping screws</p>	<p>https://technologystudent.com/joints/matprop1.htm</p> <p>https://technologystudent.com/designpro/matintro1.htm</p> <p>https://www.bbc.co.uk/bitesize/guides/zcxmfcw/revision/1</p> <p>https://learning-center.homesciencetools.com/article/metals-101/</p> <p>https://www.vedantu.com/chemistry/properties-of-metals-and-nonmetals</p> <p>https://www.morecambemetals.co.uk/different-metals-and-their-properties/</p>	<ol style="list-style-type: none"> 1. Describe what a permanent joining method is? 2. Explain why a permanent joining is used? 3. Describe what a temporary joining method is? 4. Explain why you might used a temporary joining method 5. Describe the soldering process and what it is used for? 6. Explain what are the differences between soft soldering and brazing. 7. Explain what Mig welding involves? 8. Explain what a internal thread is? 9. Explain what a external thread is? 10. Describe what a machine screw is? 11. Explain why Nuts and bolts are used to hold a children's climbing frame together? 12. Why are self tapping screws used to hold the back on a washing machine? 13. Why are Pop rivets used to hold a Aeroplane together? 14. What is a Nylon lock nut and why might it be used? 15. What is thread lock glue used for? 16. Could you give an everyday use for thread lock? 17. What is plastic welding? 18. Give an everyday use for plastic welding? 19. What is a knock down fitting? 20. What is the purpose of a washer?