



Year 9 Knowledge Organiser

You will receive a Knowledge Organiser booklet on a termly basis, which includes revision for: English, Maths, Science, MFL, History and Geography

Knowledge Organiser instructions:

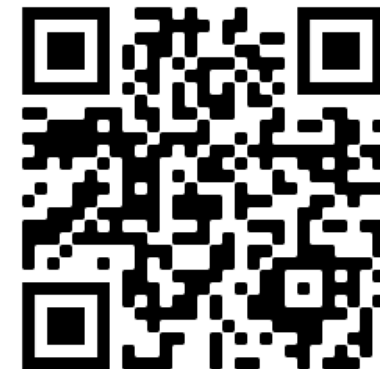
You will be set three pieces of homework per week and you should use the information from each topic to make a poster or a mind map. You will need to bring your work in to school and will be quizzed on each topic in class.

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.

Email address for any queries:

For further support, scan the QR Code and it will take you to the school website:

English: Miss Pett	pettr035@sflt.org.uk
Maths: Mr Huston	hustj008@sflt.org.uk
Science: Mrs Gilbey	gilbl117@sflt.org.uk
History: Miss Gurung	gurua221@sflt.org.uk
Geography: Mr Butters	buttf095@sflt.org.uk
MFL: Miss Lara	larae006@sflt.org.uk



Preparing you for the Future

Homework schedule for the term:

Week	Subject and section	Revision technique
1 (B)	English, MFL and Maths Topic 1	Create a mind map for the information in Topic 1
2 (A)	Science, History and Geography Topic 1	Create a mind map for the information in Topic 1
3 (B)	English, MFL Maths Topic 2	Create a poster using the information in Topic 2
4 (A)	Science, History and Geography Topic 2	Create a poster using the information in Topic 2
5 (B)	English, MFL Maths Topic 3	Create a mind map for the information in Topic 3
6 (A)	Science, History and Geography	Create a mind map for 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 30 minutes on Spell Zone	Thursday	Complete 30 minutes DEAR Time using your library book
Tuesday	Complete 30 minutes on Sparx	Friday	Spend 30 minutes learning the key words from your subjects this week.
Wednesday	Spend 30 minutes completing revision using BBC Bitesize		



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: Quelle est ta fête préférée ? What is your favourite celebration/ festival?

Les nombres. Numbers.

Un, deux, trois, quatre, cinq (1,2,3,4,5)
six, sept, huit, neuf, dix (6,7,8,9,10)
onze, douze, treize, quatorze (11,12,13,14)
quinze, seize, dix-sept, dix-huit (15,16,17,18)
dix-neuf, vingt, vingt-et-un (19,20,21)
vingt-deux, ..., trente, trente-et-un (22, ..., 30,31)

Les mois. Months.

Janvier, février, mars, avril, mai.
January, February, March, April, May.

Juin, juillet, août, septembre.
June, July, August, September.

Octobre, novembre, décembre.
October, November, December.

Les dates. Dates.

- Le premier avril. The first of April
- Le deux août. The second of August.

Unité 0. Quelle est ta fête préférée ?

What's your favourite celebration/festival?

- J'adore I love...
- J'aime ... I like ...
- Je n'aime pas ... I don't like ...
- Je déteste ... I hate ...
- Je préfère ... I prefer ...
- Noël. Christmas.
- Pâques. Easter.
- le 14 juillet. Bastille Day.
- le Nouvel An. New Year.
- la Chandeleur. Pancake Day.
- la Saint-Valentin. Valentine's Day.
- l'Aïd. Eid.
- mon anniversaire. my birthday.
- manger du chocolat. To eat chocolate.
- acheter des cadeaux. To buy presents.
- danser To dance.
- faire une soirée pyjama. To have a sleepover.
- aller chez mes cousins. To go to my cousins' house.

C'est amusant. It is fun. C'est nul. It is rubbish.
C'est commercial. It is commercialised.
C'est sympa. It is nice.

Unité 1: C'est Carnaval! It's Carnival!



- Ma fête préférée, c'est le Carnaval. My favourite festival is Carnival.
- Je retrouve mes copains. I meet my friends.
- Je porte un masque et un déguisement. I wear a mask and a costume.
- Je regarde la parade. I watch the parade.
- J'écoute la musique. I listen to music.
- Je mange une crêpe. I eat a pancake.
- Je partage des photos. I share pictures.
- Sur la photo, il y a ... In the picture there is...
 - un garçon/ homme. a boy/ a man.
 - une femme/ une fille a woman/ a girl.
- Il/Elle est dans... He/She is in...
 - une parade. a parade.
 - un parc. a park.
- Il/Elle...= He/She...
 - danse. is dancing.
 - regarde la parade. is watching the parade.
 - mange une glace. is eating an ice cream
 - chante. is singing.
 - porte un déguisement. is wearing a costume.



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: Qu'est-ce qu'il y a sur la photo ? What is on the picture ?

- **Sur la photo, il y a ...** *In the picture there is...*
 - **un garçon/ homme.** *a boy/ a man.*
 - **une femme/ une fille** *a woman/ a girl.*
- **Il/Elle est dans...** *He/She is in...*
 - **une parade.** *a parade.*
 - **un parc.** *a park.*
- **Il/Elle...= He/She...**
 - **danse.** *is dancing.*
 - **regarde la parade.** *is watching the parade.*
 - **mange une glace.** *is eating an ice cream*
 - **chante.** *is singing.*
 - **porte un déguisement.** *is wearing a costume.*
 - **porte un masque=** *is wearing a mask.*



GRAMMAIRE. -er, -ir and -re verbs in the present tense.

Most French verbs are regular **-er verbs** (*manger, aimer, jouer*).

There are two more types of regular verbs: **-ir** (*choisir*) and **-re** (*attendre*).

To conjugate these verbs in the present tense take **-er, -ir or -re** off the end of the infinitive and add the Present tense endings.

The **il/elle/on** form or **-re** verbs has no ending.

Some forms are spelled differently but sound the same. ex. **choisis/ choisit** or **attends/attend**.

Present tense verbs can be translated in two ways. ex. **J'attends=** *I wait or I am waiting for.*

Regular **-er, -ir** and **-re** verbs follow these patterns **in the present tense**. Try to learn them.

	<i>danser</i> (to dance)	<i>finir</i> (to finish)	<i>vendre</i> (to sell)
Je (I)	danse	finis	vends
Tu (you informal, singular)	dances	finis	vends
il/elle/on (he, she, we)	danse	finit	vend
nous (we)	dansons	finissons	vendons
vous (you plural, polite, formal)	dancez	finissez	vendez
ils/elles (they)	dansent	finissent	vendent

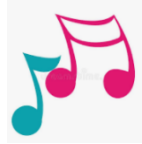


Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 3: La fête de la musique The music festival.

Unité 2: La fête de la musique The music festival.

- J'attends la fête avec impatience. I am looking forward to the festival.
- Je vends des disques vinyles. I sell records.
- Je finis à midi. I finish at lunchtime.
- Je choisis un groupe de rock. I choose a rock group.
- J'écoute un rappeur. I listen to a rapper.
- Je préfère la fanfare. I prefer the brass band.
- Ma mère chante dans la chorale. My mum sings in the choir.
- Mon frère choisit un groupe folk. My brother chooses a folk group.
- Le matin (in) the morning.
- Le soir (in) the evening.
- L'après-midi (in) the afternoon.



GRAMMAIRE. -er, -ir and -re verbs in the present tense.



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 There are two more types of regular verbs: **-ir** (choisir) and **-re** (attendre).
 To conjugate these verbs in the present tense take **-er, -ir or -re** off the end of the infinitive and add the Present tense endings.
 The **il/elle/on** form of **-re** verbs has no ending.
 Some forms are spelled differently but sound the same. ex. **choisis/ choisit** or **attends/attend**.
 Present tense verbs can be translated in two ways. ex. **J'attends**= I wait or I am waiting for.

Regular **-er, -ir** and **-re** verbs follow these patterns **in the present tense**. Try to learn them.

	<i>danser</i> (to dance)	<i>finir</i> (to finish)	<i>vendre</i> (to sell)
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vous (you plural, polite, formal)	dancez	finissez	vendez
ils/elles (they)	dansent	finissent	vendent



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Topic 1: Dealing with Data

Planning a survey

When planning a survey we need to create multiple choice questions and then tally the responses in a tally chart as shown on the right. Using multiple choice questions makes it easier for us to control the data being recorded. We can also use an 'other' category which caters for any other option that is not available.

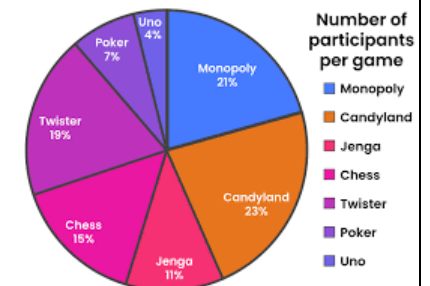
Colour	Tally marks	Frequency
Black		1
Blue		5
Pink		2
White		4
		Total = 12

Collecting Data

To create charts and graphs we need to use a set of data. Data is collected from a survey and is usually stored in a table before being applied to a chart or graph. A common table use is a frequency table. In the first column is used to display the categories which can also be grouped. The second column is for the tally marks and the third column is the frequency column where we can add up the tally marks and write in the corresponding frequencies. This allows us to obtain the data required.

Displaying and analysing data

To display and analyse data we can use a variety of tables, charts and graphs. Sometimes we may even use a bar chart and a pie chart for the same data to make it simple and easy to analyse. Please look at some of the examples of charts and graphs we use:

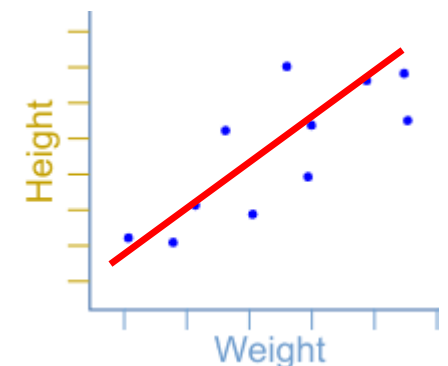


Pie Charts

A pie chart is a way of summarising a set of nominal data or displaying the different values of a given variable (e.g. percentage distribution). This type of chart is a circle divided into a series of segments. Each segment represents a particular category. There is a key attached showing the different categories which match the information displayed on the pie chart. Please see the example on the above.

Scatter Graphs

A scatter graph uses dots to represent values for two different numeric variables. The position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter graphs are used to observe relationships between variables. A simple scatter graph can be used to see the difference in outdoor temperatures compared to ice cream sales. The two variables would be outside temperature and ice cream sales. When looking at the relationship between two variables we look for a type of correlation: positive, negative or no correlation.





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Topic 2: Multiplicative Reasoning

Enlargement

Enlargement is an example of a transformation. A transformation is a way of changing the size or position of a shape. To enlarge a shape, a centre of enlargement is required. When a shape is enlarged from a centre of enlargement, the distances from the centre to each point are multiplied by the scale factor.

Percentage change

To work out the percentage change we need to first find the difference between the original and new amount. We need to divide the change by the original amount and then multiply by 100.

To do this we use the percentage change formula:

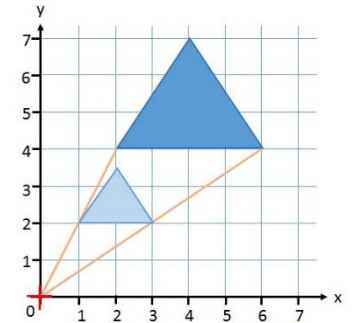
$$\text{Percentage change} = \frac{\text{Change}}{\text{Original}} \times 100$$

Compound measures

A compound measure is a measure that involves two or more different units. Speed, density and pressure are examples of compound measures which means they are made up of two or more other measures. For example, speed is made up of distance and time.

Direct and Inverse proportion

A direct proportion shows the direct relation between two quantities. An inverse proportion shows the inverse or indirect relation between two quantities. An example of direct proportion would be the sales of ice cream increasing when the outside temperature increases. An example of inverse proportion would be as the mileage of a car increases, the price of the car decreases.



Compound Measures

Compound measures are measures which are found from two other measures.

Compound Measure	Formula	Formula Triangle
Speed	$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$	
Density	$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$	
Pressure	$\text{Pressure} = \frac{\text{Force}}{\text{Area}}$	



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Topic 3: Expressions and Formulae

Solving equations

An equation is a mathematical expression that contains an equals sign. There are two sides of an equation, the left is equal to the right. We can solve equations to find out the variables (unknown value) that satisfy the equation. The example on the right shows how to solve an equation with a bracket. First we need to expand the bracket by multiplying. Next we need to subtract the 6 from both sides to leave just the variable on one side, in this case 'x'. As we want to find the value of 'x' we need to divide by 3 on both sides which will give us the value of 4.

$$3(x + 2) = 18$$

$$3x + 6 = 18$$

$$\begin{array}{r} -6 \quad -6 \end{array}$$

$$3x = 12$$

$$\begin{array}{r} \div 3 \quad \div 3 \end{array}$$

$$x = 4$$

Here are some things we can do to solve an equation:

- Add or Subtract the same value from both sides.
- Clear out any fractions by Multiplying every term by the bottom parts.
- Divide every term by the same non-zero value.
- Combine Like Terms.
- Factoring.
- Expanding (the opposite of factoring) may also help.

Substituting in expressions

Substitution means replacing variables in an algebraic expressions with numerical or algebraic values. An example of this can be seen on the right, we are given an expression and a value for 'b'. An expression is a mathematical statement which consists of numbers, variables and an operation. When we substitute b with 10 this now becomes the equation $3 \times 10 + 4 = 30$.

Example

Find the value of $3b + 4$ when $b = 10$

$$3b \text{ means } 3 \times b = 3 \times 10 = 30$$

$$\text{So } 3b + 4 = 30 + 4 = 34$$

Index laws and brackets

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$a^0 = 1$$

$$(a^m)^n = a^{m \times n} = a^{mn}$$

Index laws are the rules for simplifying calculations or expressions involving powers of the same base number. When multiplying two powers of the same base number we add the two indices together. When dividing two powers of the same base together we subtract the indices. When a power of a base number is within a bracket and the bracket has a power, the two indices are multiplied together. See the example on the left.

Expanding double brackets

Writing two brackets next to each other means that they need to be multiplied. A method to expand double brackets is called FOIL, which stands for first, outer, inner and last. This is the order that will be used when multiplying the terms. The first term in each bracket is multiplied together then the two outer terms are multiplied. This is followed by multiplying the two inner terms and finally the two last terms. Please see an example below:

$$(a + 2)(a + 3) \text{ First - } a \times a = a^2 \quad \text{Outer - } a \times 3 = 3a \quad \text{Inner - } 2 \times a = 2a \quad \text{Last - } 2 \times 3 = 6$$

Answer

$$= a^2 + 3a + 2a + 6$$

$$= a^2 + 5a + 6$$



Vocabulary	Wider Research	Apply
<p>Index Power Notation Multiply Divide Variable Equation Substitution Formulae Subject Expand Product Term Inverse Increase Decrease Percentage Proportion Enlargement Compound measure Scale factor</p>	<p><u>Topic 1</u></p> <ul style="list-style-type: none"> https://corbettmaths.com/2013/03/13/laws-of-indices-algebra/ https://corbettmaths.com/2012/08/21/approximation-to-calculations/ https://corbettmaths.com/2018/09/20/standard-form-videos/ <p><u>Topic 2</u></p> <ul style="list-style-type: none"> https://corbettmaths.com/2012/08/19/enlargements/ https://corbettmaths.com/2013/03/31/percentage-change/ <p><u>Topic 3</u></p> <ul style="list-style-type: none"> https://corbettmaths.com/2012/08/24/solving-equations/ https://corbettmaths.com/2012/08/20/substitution-into-expressions/ https://corbettmaths.com/2013/12/23/changing-the-subject-video-7/ https://corbettmaths.com/2013/12/23/expanding-two-brackets-video-14/ 	<p><u>Topic 1</u></p> <ul style="list-style-type: none"> https://corbettmaths.com/2013/03/13/laws-of-indices-algebra/https://corbettmaths.com/wp-content/uploads/2013/02/laws-of-indices-pdf.pdf https://corbettmaths.com/wp-content/uploads/2018/10/Estimation-pdf.pdf https://corbettmaths.com/wp-content/uploads/2021/11/Standard-Form-Textbook.pdf <p><u>Topic 2</u></p> <ul style="list-style-type: none"> https://corbettmaths.com/wp-content/uploads/2019/03/Enlargements-with-Centre-of-Enlargement-pdf.pdf https://corbettmaths.com/wp-content/uploads/2020/03/Percentage-Change-Text.pdf <p><u>Topic 3</u></p> <ul style="list-style-type: none"> https://corbettmaths.com/wp-content/uploads/2020/10/Equations-pdf.pdf https://corbettmaths.com/wp-content/uploads/2013/02/substitution-pdf2.pdf https://corbettmaths.com/wp-content/uploads/2013/02/changing-the-subject-pdf1.pdf https://corbettmaths.com/wp-content/uploads/2013/02/expanding-two-brackets-pdf2.pdf



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Topic 1: Nazi Beliefs

Key Nazi beliefs:

- A strong Germany - the Treaty of Versailles should be abolished and all German-speaking people united in one country.
- Führer - the idea that there should be a single leader with complete power rather than a democracy.
- Social Darwinism - the idea that the Aryan race was superior and Jews were 'subhuman'.
- Autarky - the idea that Germany should be economically self-sufficient.
- That Germany was in danger - from communists and Jews, who had to be destroyed.
- Lebensraum - the need for 'living space' for the German nation to expand.

Membership and growth

When Hitler joined the German Workers' Party he became its 55th member. By the end of 1920 the newly named Nazi Party recorded a membership of 2,000 and during the upheaval of the hyperinflation crisis its membership grew rapidly, to 20,000 by the time of the Munich Putsch in November 1923.





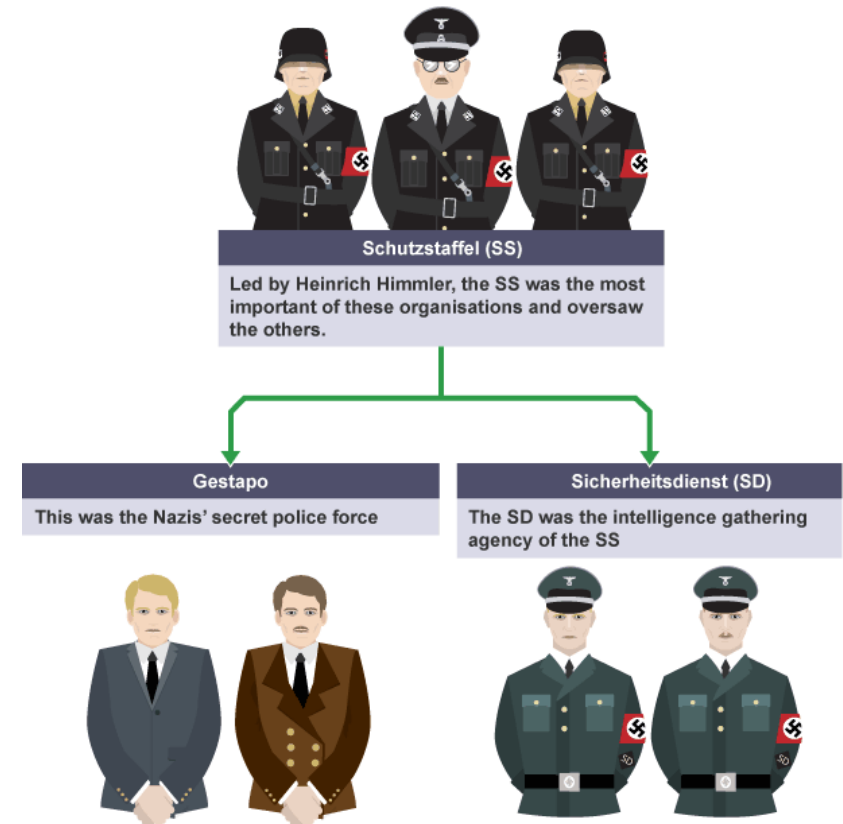
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Topic 2: The Police State

The Police State

By August 1934 Hitler was a dictator with absolute power. In order to maintain this power he needed organisations that could control the population to ensure absolute loyalty to the Führer. After the demise of the SA on the Night of the Long Knives, there were three main interlinked organisations (in addition to the regular German police force) involved in controlling the German people through spying, intimidation and if necessary, imprisonment:

- **Schutzstaffel (SS)** - led by Heinrich Himmler, the SS was the most important of these organisations and oversaw the others. Initially set up as Hitler's personal bodyguard service, the SS was fanatically loyal to the Führer. It later set up concentration camps where 'enemies of the state' were sent.
- **Gestapo** - this was the Nazis' secret police force. Its job was to monitor the German population for signs of opposition or resistance to Nazi rule. It was greatly helped by ordinary German people informing on their fellow citizens.
- **Sicherheitsdienst (SD)** - this was the intelligence gathering agency of the SS. It was responsible for the security of Hitler and other top Nazis and was led by Himmler's right hand man, Reinhard Heydrich.





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Topic 3: Propaganda and Indoctrination

Controlling and influencing attitudes

Goebbels and the Ministry of Propaganda

Hitler and the Nazi Party were a constant presence in the life of the German people, with:

- the infamous Swastika symbol appearing on every government uniform and public building
- pictures of Hitler displayed everywhere
- Germans having to greet each other with a 'Heil Hitler' raised arm salute

The government department responsible for all of this was the Ministry of Enlightenment and Propaganda, headed by Dr Joseph Goebbels. It aimed to brainwash people into obeying the Nazis and idolising Hitler. Its methods included:

- Censorship of the press. All newspapers were controlled by the government and could only print stories favourable to the Nazi regime.
- Control of radio broadcasts. People's radios were sold very cheaply so that most Germans could afford one. All radio output was controlled by Goebbels' ministry through the Reich Broadcasting Corporation.
- Mass rallies. These public displays of support for Nazism involved music, speeches and demonstrations of German strength. The biggest one was held each year in August at Nuremberg.
- Use of sports events. Berlin hosted the Olympics of 1936, which the Nazis used as an opportunity to showcase the success of the regime and to demonstrate the superiority of the Aryan race. The victories of the African-American athlete Jesse Owens for the USA infuriated the Nazi leadership.

Loudspeakers in public places also blared out Nazi propaganda. Much of the information Germans received reinforced the message of Aryan racial superiority whilst demonising the Jews and other 'enemies' of the regime.



Vocabulary	Wider Research	Apply		
1) Hitler 2) Beliefs 3) Ideals 4) Ideology 5) Nazi 6) Party 7) Politics 8) Treaty of Versailles 9) Lebensraum 10) Dictatorship 11) Führer 12) Autarky 13) Lebensraum 14) Membership 15) Schutzstaffel 16) Gestapo 17) Sicherheitsdienst 18) Police State 19) Propaganda 20) Ministry 21) Swastika 22) Enlightenment 23) Fascism 24) Loudspeaker 25) Media	<h3 data-bbox="465 331 900 379">Hitler's rise to power</h3> <p data-bbox="465 448 1182 480">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/1</p> <p data-bbox="465 555 1182 587">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/2</p> <p data-bbox="465 662 1182 694">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/3</p> <p data-bbox="465 769 1182 801">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/4</p> <p data-bbox="465 876 1182 908">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/5</p> <p data-bbox="465 983 1182 1015">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/6</p> <p data-bbox="465 1090 1182 1121">https://www.bbc.co.uk/bitesize/guides/z3bp82p/revision/7</p>	1. Create a dictionary for this topic. Include all the key vocabulary, definition and use the word in a sentence.		
		Key Word	Definition	Use the word in a sentence
		Empty table for key word, definition, and sentence		
		1. Write a newspaper article/blog about what the Nazi party beliefs were. 2. Write a fact-file about the different branches of the police in Nazi Germany. 3. Write a newspaper article/blog criticising Nazi propaganda. 4. Explain how the Nazis tried to spread fear. 5. Create a mind map summarising key events		





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 Mississippi

The **Mississippi** is North America's largest river. Its source is 446 metres above sea level at Lake Itasca in Minnesota – here the river is just over a metre wide and half a metre deep.

The river flows through a series of lakes and rapids and has a 20 metre waterfall at the Falls of St Anthony in Minneapolis. The river ends at its mouth at the Gulf of Mexico in the **Atlantic Ocean**.

Different types of rock mean that in some sections, the river is channelled through 60-metre deep gorges while in other areas it meanders out over a wide flood plain.

The economic opportunities provided by the river have helped the USA to develop. As the river floods onto the flood plain it leaves behind deposits of silt – this helps the soil to become very fertile and, in the 19th century, helped to support the sugar cane, rice, cotton and tobacco plantations in operation in the southern states of the USA.

- The total area covered by the river and its tributaries is the fifth largest in the world.
- The river carries 13% of all freight traffic in the USA. That is a lot!
- 100 million tonnes of commodities are transported down the river each year including 56% of the nation's corn and 41% of the USA's soybean exports.
- 11 million tourists visit each year, which brings in \$1.2 billion in revenue.
- 29 power plants that supply energy to factories and homes use the Mississippi river for cooling purposes.
- The river regularly floods over onto its floodplain – although this is natural it has to be managed to try and stop flooding as lots of people live on the floodplain.





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Topic 2: Hurricane Irma

Hurricane Irma struck the Caribbean and the east coast of the United States in September 2017. It was one of the most powerful hurricanes ever recorded over the Atlantic Ocean.

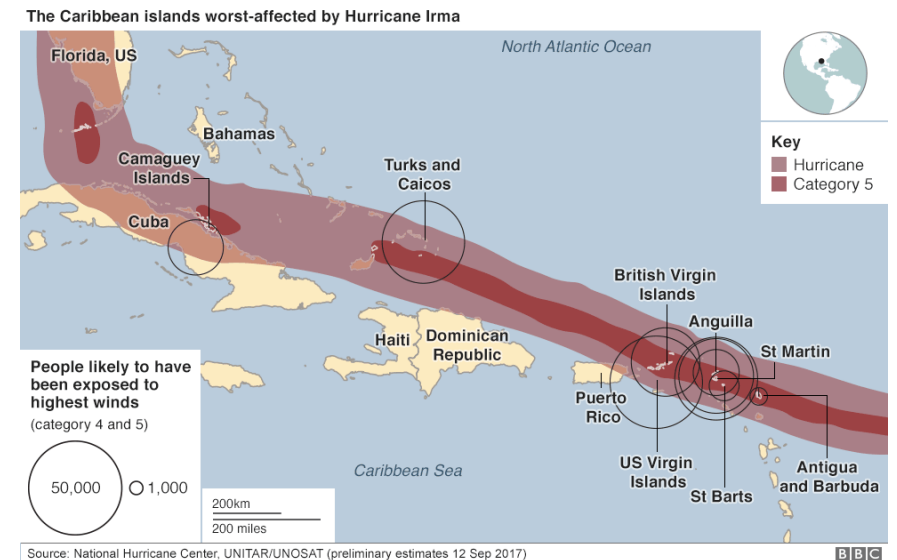
How did it happen?

High ocean temperatures and extremely low pressures over the **Atlantic** fuelled the storm's intensity. The hurricane first made landfall on 6th September along the northern coast of Barbuda with wind speeds of up to 175mph. It travelled north along the east coast of the Caribbean as a category five hurricane. The hurricane reached Florida on 10th September.

Schools were closed, government buildings were boarded up and shelters were opened. Officials spread warnings to residents in a range of languages via social media, radio, SMS text, and WhatsApp.

Aftermath:

- The hurricane resulted in 134 deaths and caused over \$65 billion in damage, this makes it the **second-costliest Caribbean hurricane on record**. The north-eastern Caribbean and Florida were the worst hit. On the Caribbean island of Barbuda, 90% of all structures were damaged or destroyed. On Saint Martin, 95% of the houses there had been damaged, and 60% had been left uninhabitable. In the Florida Keys, the hurricane caused major damage to homes, buildings, trailer parks, boats, roads, the electricity supply, mobile phone coverage, internet access, sanitation, the water supply, and the fuel supply.
- The French and UK governments sent aid workers, food and medical equipment to their overseas territories to start the long process of reconstruction there. £57 million of funding along with 120 tonnes of aid was provided by the UK Government.
- As well as the initial impact of a hurricane, there are many secondary effects that can sometimes last for many years. A secondary effect of this hurricane was that many Caribbean islands suffered from income loss as they are strongly reliant on tourism. Not only were beaches and hotels destroyed but infrastructure such as roads, airports and shipping ports were impacted or completely destroyed.





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 3: The Amazon Rainforest

The **Amazon** is the largest tropical rainforest on Earth. It sits within the Amazon River basin and covers around 40% of the South American continent. It includes parts of eight South American countries: **Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname.**

Amazon facts:

- Home to 1000 species of bird and 60,000 species of plants.
- 10 million species of insects live in the Amazon.
- It is home to 20 million people, who use the wood, cut down trees for farms and for raising cattle.
- It covers 2.1 million square miles of land.
- The Amazon is home to almost 20% of species on Earth.
- The UK and Ireland would fit into the Amazon 17 times!

What is causing deforestation in the Amazon?

- Subsistence and commercial farming – poor farmers use the land to grow crops and then move on. Commercial companies replace the trees with cattle or crops that are used to make huge profits.
- Logging – Trees are cut down for timber for paper, furniture and building homes.
- Road building – Trees are also cleared for roads so that trucks can get further and further into the rainforest.
- Mineral extraction – Forests are cleared to make way for huge mines for minerals such as iron, copper, zinc and even gold.
- Energy development – Development of hydroelectricity means building dams which displaces people and floods the surrounding land.
- Settlement & population growth – Many people move to the settlements in the rainforest for work, as the population increases this adds to the strain on the environment.





Vocabulary	Wider Research	Apply
<ol style="list-style-type: none">1. Agriculture2. Amazon3. Atlantic4. Caribbean5. Commercial farming6. Commodities7. Deforestation8. Economic9. Energy10. Environmental11. Export12. Flooding13. Floodplain14. Freight15. Grand Canyon16. Hurricane17. Import18. Low pressure19. Mississippi20. Physical21. Rainforest22. Sediment23. Silt24. Social25. Species26. Subsistence farming27. Tourism28. Tributaries29. Tropical30. Uninhabitable	<p>The Mississippi: https://www.nps.gov/miss/riverfacts.htm https://www.youtube.com/watch?v=YgwGk1wfFx4</p> <p>Why is the Mississippi river so dangerous? https://www.youtube.com/watch?v=U5lwcVlb3B8</p> <p>US population: https://worldpopulationreview.com/countries/united-states-population</p> <p>Hurricane Irma: https://edition.cnn.com/specials/hurricane-irma https://earthobservatory.nasa.gov/images/event/90902/hurricane-irma</p> <p>Responsible tourism in the Caribbean: https://www.responsibletravel.com/holidays/caribbean/travel-guide/responsible-tourism-in-the-caribbean</p> <p>Amazon rainforest: https://www.panda.org/discover/knowledge_hub/where_we_work/amazon/about_the_amazon/</p> <p>Amazon river: https://www.livescience.com/57266-amazon-river.html</p>	<ol style="list-style-type: none">1. Create a fact-file to show why the Mississippi is important to the USA.2. Where and what was the Wild West? Why was it important in US history? Conduct your own internet research to find out.3. Research the impacts of Hurricane Irma – which country do you think was the most affected by the disaster? Write a short paragraph to explain your answer.4. What are the areas that were affected by Hurricane Irma in 2017 like now? Have they fully recovered? Have there been any other hurricanes since?5. Create a poster to raise awareness about deforestation in the Amazon rainforest. Which of the reasons on the page above do you think is causing the most damage?6. Why do so many people live in poor quality housing (shanty towns) in some countries in the Americas? Conduct your own internet research to find out why.



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 Ghost of Christmas Present in Stave 3



In **stave** three Scrooge meets the second of the three spirits, the ghost of Christmas present. He awakens to find the figure who is a giant dressed in green robes. The spirit is sitting on top of a throne made of a Christmas feast, this spirit is warm and **welcoming**. He orders Scrooge to touch his robe and immediately Scrooge finds himself alongside the spirit in the middle of a busy city on Christmas morning. It is a wonderful sight and everyone is cheerful and happily wishes everyone 'Merry Christmas!'

The spirit then takes Scrooge to the small home of Bob **Cratchit**, where Mrs. Cratchit and her children prepare a Christmas goose and enjoy the few Christmas treats they can afford. Bob comes in carrying his crippled son, Tiny Tim, on his shoulders. The family seem extremely happy despite not having a lot of money for their Christmas feast and Bob even toasts to Scrooge as the 'founder of the feast'. Scrooge begs to know whether Tiny Tim will survive. The spirit replies that given the current **conditions** in the Cratchit house, there will inevitably be an empty chair at next year's Christmas dinner.

The spirit takes Scrooge to lots of other Christmas gatherings, including the **festivities** of an **isolated** community of miners and a party aboard a ship. He also takes Scrooge to Fred's Christmas party, where Scrooge starts get involved in the party games despite none of the guests actually being able to see him. As the night unfolds, the ghost grows older. The ghost shows Scrooge a pair of starving children who travel with him beneath his robes--their names are **Ignorance** and **Want**. Scrooge asks if nothing can be done to help them. The ghost quotes Scrooge's earlier retort, "Are there no prisons? Are there no **workhouses**?"

Key quotations:

"The Spirit's eyes were clear and kind."

"If these shadows remain **unaltered** by the Future, the child will die"

"The boy is Ignorance. This girl is Want. **Beware** them both and all of their degree"

"Much they saw, and far they went, and many homes they visited, but always with a happy end."



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: The Ghost of Christmas Yet to Come in Stave 4



Stave 4: The Ghost of Christmas Yet to Come:

The last spirit approaches Scrooge and it is wearing a black **hooded** cloak. Scrooge kneels before him and asks if he is the Ghost of Christmas Yet to Come. The **phantom** does not answer, and Scrooge is extremely afraid. Scrooge begs the ghost to talk to him and share the lesson that he has to teach Scrooge so that he might not end up like Jacob Marley.

The ghost takes Scrooge to a series of strange places: the London Stock Exchange, where a group of **businessmen** discuss the death of a rich man; a pawn shop in a London slum, where a group of strange people and petty criminals sell some personal items stolen from a dead man; the dinner table of a poor family, where a husband-and-wife are talking about how relieved they are that a man they owed money has died; and the Cratchit household, where the family struggles to cope with the death of Tiny Tim. Scrooge begs to know the **identity** of the dead man, but still the ghost says nothing. Suddenly, he finds himself in a churchyard where the spirit points him toward a freshly dug **grave**. Scrooge approaches the grave and reads the inscription on the headstone: EBENEZER SCROOGE

Terrified, Scrooge begs the Spirit to undo the events of this vision. He promises to **honour** Christmas from deep within his heart and to live by the lessons of Past, Present, and Future. The spirit's hand begins to **tremble**, and, as Scrooge continues to cry out for mercy, the phantom's robe shrinks and collapses. Scrooge, again, finds himself returned to the relative **safety** of his own bed.

Key quotes:

“Slowly, gravely, **silently**, approached.”

“Scrooge feared the silent shape”

“I will honour Christmas in my heart, and try to keep it all the year. I will live in the Past, the Present, and the Future.”



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 3: How has Scrooge changed since Stave 1



Stave 5: Scrooge's redemption

By the end of the **novella**, Scrooge is a completely **different** man to the way he was at the beginning. He wakes up on Christmas morning and begins shouting at the top of his lungs 'Merry Christmas!', he is full of excitement for the day ahead. In a rush, he runs down not fully dressed and pays the first boy he sees to buy the largest turkey in the shop and deliver it to Bob Cratchit.

He then meets the portly **gentleman** who came round at the beginning of the novel and apologises for his **rudeness**. He then offers to give a large sum of money to the poor which completely shocks the men! He then goes to visit Fred and enjoys a lovely Christmas day with family and friends. The following morning, Scrooge arrives at the office early and assumes a very stern **expression** when Bob Cratchit enters late. Scrooge, pretends to be angry and begins to shout at Bob before suddenly **announcing** his plans to increase Cratchit's money. Bob is shocked, but Scrooge promises to stay true to his word.

As time passes, Scrooge is as good as his word: He helps the Cratchits and becomes a second father to Tiny Tim who does not die as predicted in the ghost's vision. Many people in London are **puzzled** by Scrooge's behaviour, but Scrooge laughs off their suspicions and doubts. Scrooge brings a little of the Christmas spirit into every day, respecting the lessons of Christmas more than any man alive. The narrator concludes the story by saying that Scrooge's words and thoughts should be shared by of all of us ... "and so, as Tiny Tim observed, God bless us, Every one!"

<u>Stave 1</u>	<u>Stave 5</u>	In this Stave we see that Scrooge experiences redemption , he has changed completely since the beginning and has taken on board the lessons from the ghosts. They have saved him from ending up like Jacob Marley.
'hard and sharp as flint' 'solitary as an oyster' 'Bah Humbug!'	'merry as a school boy' 'light as a feather' 'happy as an angel'	

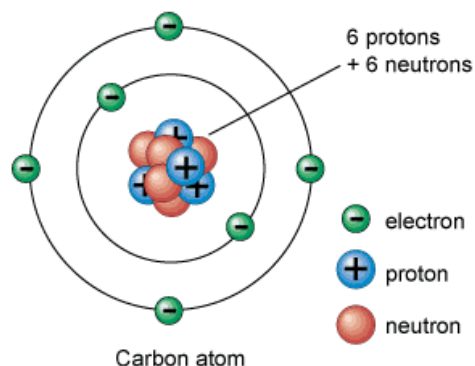


Vocabulary	Wider Research	Apply
Revisit Contextual Relationship Emotion Stave Extract Contrast Microcosm Argue Ignorance Advise Extend Supernatural Opinion Presented Connotes Emotions Falling action Epiphany Comparison Symbolism Reader Christmas Watching Profile Poetry	Study guide for Stave 3: https://www.sparknotes.com/lit/christmascarol/section3/ Study guide for Stave 4: https://www.sparknotes.com/lit/christmascarol/section4/ Study guide for Stave 5: https://www.sparknotes.com/lit/christmascarol/section5/ The three ghosts analysis: https://www.youtube.com/watch?v=YW6Qo3TB39o Key themes: https://www.litcharts.com/lit/a-christmas-carol/themes	<ol style="list-style-type: none"> 1. Design your own Victorian London street on Christmas day, compare a Victorian Christmas to a modern day Christmas 2. Describe the emotions felt by Scrooge when he sees Bob Cratchit's family Christmas 3. How is Fred's home described? Find evidence from the novella and complete 'explode the quote' task. 4. Create flash cards of the three ghosts. 5. Research Victorian Christmas games, create a poster about them 6. Why do you think Scrooge changes his ways? 7. Create a mind map comparing Scrooge at the beginning of the novella to him at the end 8. Writing task: Diary entry as Bob Cratchit when Scrooge offers him a raise in his salary 9. Writing task: Describe the Ghost of Christmas past 10. Writing task: Write a letter as Scrooge to Fred apologising for how he'd treated him over the years



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: Atomic Structure



Structure of an Atom

The current model to demonstrate atomic structure is the '**Nuclear Model**' represented by the diagram to the left. The model contains a central **positively charged nucleus** containing **protons** and **neutrons** and surrounding the **nucleus, electron shells** that contain **negatively charged electrons**. **Protons, neutrons** and **electrons** are **subatomic** (smaller than an atom) **particles**. **Protons** are **positively charged** and **electrons negatively charged**, while **neutrons** have no charge. Both **protons** and **neutrons** have a relative **mass** of 1 whereas electrons have a miniscule **mass** of 1/1840 which is **negligible** to the total **mass** of the atom.

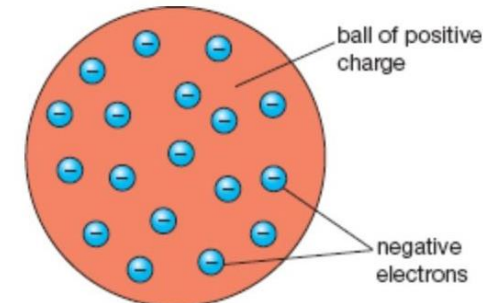
Structures for Different Elements and Isotopes

Each **element** on the periodic table has a unique structure of **protons, neutrons** and **electrons**. The **proton number** is what determines the type of **element** an atom is, for example, Carbon has 6 **protons** and all other atoms with 6 **protons** will be Carbon. The **proton number** and **mass number** for each element is provided on the Periodic Table. The larger number is the **mass number**, made up of the **protons** and **neutrons**. The smaller number is the **proton number** which is also equal to the **electron number**. The equal number of **protons** and **electrons** causes an atom to be **electrostatically neutral**. **Isotopes** are

atoms of the same **element** (same proton number) but have a different **mass number** due to a variation in the number of **neutrons** in the **nucleus**. The **neutron number** of an atom is calculated using: **Neutron number = Mass – Proton Number**.

Development of the Atomic Model

The development of atomic models started in 465BC, with Greek philosopher Democritus hypothesising matter was made from atoms. Democritus described atoms as solid and invisible with varying shapes and sizes. In 1804, John Dalton built upon this idea, suggesting particles were spherical, with each element having unique atoms. In 1897, J.J. Thomson discovered the electron which was used to produce the 'Plum Pudding Model' of atomic structure shown to the right. As the mass of electrons was much smaller than that of an atom and atoms were known to be electrostatically neutral, Thomson suggested atoms were spheres of positive charge containing negatively charged electrons. In 1911, Ernest Rutherford suggested an early form of the 'Nuclear Model' accepted today. Rutherford's team emitted alpha particles (radiation) at atoms in gold foil and identified many alpha particles passed through the atoms of the foil, with a few alpha particles being 'reflected' back. In Rutherford's model it was proposed that mass is concentrated in the central nucleus of the atom and much of an atom is empty space. The use of this 'Nuclear Model' eventually led to the discovery of positively charged protons and in 1932, the discovery of neutrons by Chadwick.



Standard Form and Conversions

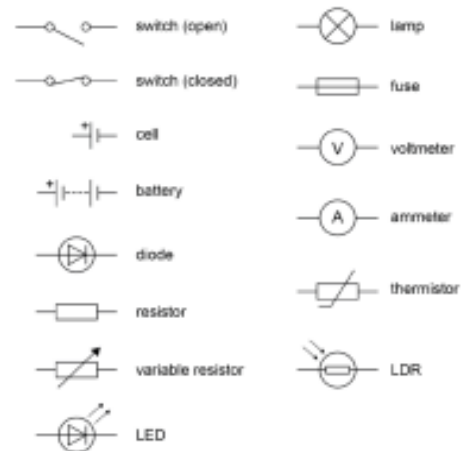
Atoms have a **diameter** within the range of 0.1 to 0.5 nanometres depending on the **element**. 1 nanometre is equal to 0.00000001 metres which can make calculations involving these small figures complicated. In order to simply these equations standard form is used. Standard form is used to represent incredibly large or incredibly small numbers to a power of 10. If 1,000,000 was to be **converted** to standard form, the number of figures between 1 and the decimal point would be counted, in this case 6. As there are 6 figures between 1 and the decimal point, the power used is 10^6 . To finalise this standard form the first digit, 1, will be taken and multiplied by 10^6 resulting in 1×10^6 . When applying this to numbers such as 0.00000001, the power becomes negative, in this case becoming 1×10^{-9} .



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: Electrical Charges & circuits

1. Circuit Diagram Symbols



2. Charge & Current

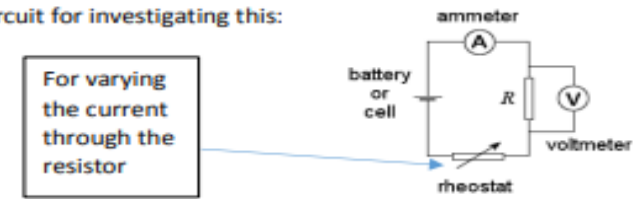
- **Charge:** e.g. electrons – SI unit is **coulombs (C)**
- **Current:** (rate of) flow of charge – SI unit is **amps (A)**
- $Q = I t$
 charge (C) current (A) time (s)

4. Resistors

- **Ohmic conductor** (e.g. fixed resistor):
Current directly proportional to PD (resistance does not change)
- **Bulb:** resistance increases as the temperature of the filament increases
- **Diode:** current only flows in one direction; it has a v. high resistance in reverse direction
- **Thermistor:** resistance decreases as temperature increases (used in thermostats)
- **LDR:** (light dependent resistor) - resistance decreases as light intensity increases (used to switch lights on when it gets dark)

3. Current, Resistance & PD

- **PD: potential difference** (voltage) – the energy gained or lost by each coulomb of charge – needed for a current - SI unit is **volts (V)**
- **Resistance:** how difficult it is for the electricity to pass – SI unit is **ohms (Ω)**
- Higher resistance means lower current for a given PD
- $V = I R$
 PD (V) current (A) resistance (Ω)
- Circuit for investigating this:



5. Series & Parallel

- Series:** one loop
- Same current all the way round
 - Power supply PD shared between components
 - Total resistance = add them up
 - Adding resistors → higher resistance as all the current has to go through all the resistors
- Parallel:** more than one loop
- PD across components all the same
 - Total current = add up currents through separate components
 - Total resistance = smaller than the smallest resistor
 - Adding resistors → lower resistance as current has more paths to go through

8. Energy Transfers in Everyday Appliances

- Work is done when charge flows in a circuit
- $E = P t$
 energy transferred (J) power (W) time (s)
- $E = Q V$
 energy transferred (J) charge (C) PD (V)



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 3: Power & Electrical safety

Power

You should recall that power is the **rate of energy transfer**, or the rate at which work is done. In electrical components, including any electrical appliance, the power relates to the potential difference across the component and the current through it. If either p.d. or current increases, the power increases. In other words, the rate of energy transfer increases. This should be clear from the first equation.

The second equation also finds the power. The equation comes from substituting in $V = IR$. The second equation is useful if you don't know the p.d. across a component.

Energy transfers in electrical appliances

The whole point of electrical appliances is to transfer energy. The electrical potential energy from the supply is transferred to something useful – such as light and sound in your TV. The other way of saying this is that **work is done** when **charge flows** in a circuit.

Some examples of energy transfers in electrical appliances:

- In your mobile phone, electrical potential energy from the dc supply (the battery) is transferred to light, sound and thermal energy. This means the energy from the battery is **dissipated** to the surroundings.
- A washing machine transfers electrical potential energy from the ac mains supply to kinetic energy in the electric motor (that's why it spins), along with heat. Eventually, all the energy of the input is dissipated to the surroundings.
- An electric heater transfers the electrical potential energy of the supply to thermal energy. The energy stored in the supply ends up stored in the air, the walls, the floor and so on around the heater: stored in the heat of the materials.

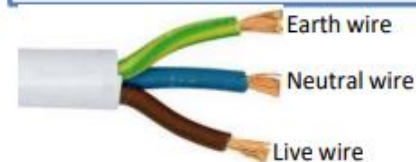


The amount of energy transferred by an appliance depends on the **power** of the appliance and the **time** it is switched on for. To find the amount of energy transferred, simply multiply the power of the appliance by the time it is on for (see third equation).

Furthermore, since p.d. is a measure of how much work is done per coulomb of charge, you can find out how much work is done (aka energy transferred) by a circuit by multiplying the charge flow by the p.d. (see fourth equation).

Three-core cables

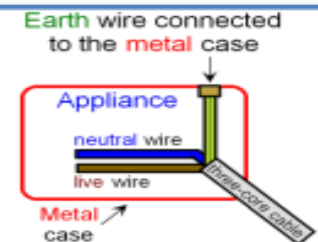
We connect most electrical appliances to the mains with a three-core cable. The three pins on a plug are just the three ends, or terminals, of the three wires in the cable. Each wire is insulated in a different colour.



Wire in three-core cable	Colour code of the insulation	Function
Live wire	Brown	Carries the alternating p.d. from the supply to the appliance
Neutral wire	Blue	Completes the circuit. The neutral wire is at 0 V (earth potential).
Earth wire	Yellow and green stripes	Earth wires are at 0 V. They are safety wires, and only carry a current if there is a fault and the appliance has become live (electrified).

DANGER (and safety)

The earth wire carries current to the ground (literally, earth). This makes circuits safer because if there is a fault, it conducts the current to the ground rather than making the appliance 'live'. Appliances become live if the live wire touches the case. This is particularly a problem with metal-cased appliances, like cookers or toasters.



The live wire is the most dangerous one, since it is at 230 V. It should never touch the earth wire (unless the insulation is between them, of course!), because this would make a complete circuit from your mains supply to the ground (earth). A shock or fire would be highly likely.

Even if a circuit is switched off (i.e. the switch is **open**), the live wire can still be dangerous. If you touch it, you may complete a circuit between the live wire and the earth (because you'll be standing on the floor), so you get a shock.



Vocabulary	Wider Research	Apply										
1. Element 2. Proton 3. Neutron 4. Electron 5. Subatomic 6. Nucleus 7. Charged 8. Negligible 9. Particle 10. Kinetic 11. Circuit 12. Potential difference (V) 13. Current- Ampere (I) 14. Resistance- Ohms 15. Series circuit 16. Parallel circuit 17. Power – watts (W) 18. Work done 19. Diode 20. Thermistor 21. Coulombs (C) 22. resistor	<p>Build an Atom– https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_en.html</p> <p>The Atomic Model– https://www.youtube.com/watch?v=xazQRcSCRaY</p> <p>The Particle Model– https://www.bbc.co.uk/bitesize/topics/z3ybb82</p> <p>How electricity works https://www.youtube.com/watch?v=mc979OhitAg</p> <p>Electrical current explained https://www.youtube.com/watch?v=kcl2_D33k3o</p> <p>Electricity https://www.bbc.co.uk/bitesize/topics/zcg44qt</p> <table border="1"> <thead> <tr> <th>Equation</th> <th>Meanings of terms in equation</th> </tr> </thead> <tbody> <tr> <td>* $P = V I$</td> <td><i>P = power (watts, W)</i> <i>V = potential difference (volts, V)</i> <i>I = current (amps, A)</i></td> </tr> <tr> <td>* $P = I^2 R$</td> <td><i>P = power (watts, W)</i> <i>I = current (amps, A)</i> <i>R = resistance (ohms, Ω)</i></td> </tr> <tr> <td>* $E = P t$</td> <td><i>E = energy transferred (joules, J)</i> <i>P = power (watts, W)</i> <i>t = time (seconds, s)</i></td> </tr> <tr> <td>* $E = Q V$</td> <td><i>E = energy transferred (joules, J)</i> <i>Q = charge flow (coulombs, C)</i> <i>V = potential difference (volts, V)</i></td> </tr> </tbody> </table>	Equation	Meanings of terms in equation	* $P = V I$	<i>P = power (watts, W)</i> <i>V = potential difference (volts, V)</i> <i>I = current (amps, A)</i>	* $P = I^2 R$	<i>P = power (watts, W)</i> <i>I = current (amps, A)</i> <i>R = resistance (ohms, Ω)</i>	* $E = P t$	<i>E = energy transferred (joules, J)</i> <i>P = power (watts, W)</i> <i>t = time (seconds, s)</i>	* $E = Q V$	<i>E = energy transferred (joules, J)</i> <i>Q = charge flow (coulombs, C)</i> <i>V = potential difference (volts, V)</i>	<p>Chemistry:</p> <ol style="list-style-type: none"> Construct a table to represent the three subatomic particles of an atom, their masses as well as their charges. Compare the ‘Nuclear Model’ of atomic structure to the ‘Plum Pudding Model’. Consider mass and charge in your answer. Convert the following to standard form: <ul style="list-style-type: none"> 15,000 2,539,000 0.0058 0.00002687 <p>Physics: Topic 2</p> <ol style="list-style-type: none"> If a device has a current 5amps (A) and is switched on for 60 seconds (s) what would its charge (C) be? What would its charge be for 5 minutes? Why does the resistance increase in a filament bulb the longer the light is on? What is the main difference between a series and parallel circuit? Why are diodes used in most modern electrical devices? Calculate the PD (Voltage) of a series circuit running 6amps and a resistance of 2 Ohms? Is this likely to be a DC or AC circuit, justify your answer. <p>Physics: Topic 3 (use the equations on the left).</p> <ol style="list-style-type: none"> Calculate how much energy is transferred (j) by an electric kettle with a power of 2000W (2Kw) switched on for 4 minutes. Calculate the power of a device with a current of 8.7 amps and a resistance of 26.4 ohms. What appliance is this likely to be based on its power rating? Why is the earth wire attached to the casing of the appliance? Where does all energy transferred to appliances eventually go? Why is main electricity rated at 230v so much more dangerous than a battery rated at 6v?
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