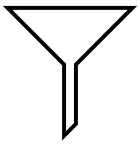
Year 8 Chemical Reactions

Start date:

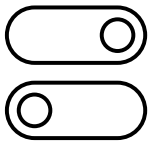
Topic Sequence

Chemical Equations



Separating Techniques

Reactivity



Displacement

Oxidation and Reduction

Extracting Metals

Methods and Processes

Use a range of practical techniques safely

Use scientific terminology to describe chemical methods.

Read and interpret graphs
Use equations to calculate unknowns

Key Words

-Ate
-Ide
Acidic
Alkali
Ammonia
Aqueous
Balanced
Basic
Boiling
Chromatography
Compound
Condensation
Conservation
Crystallisation
Displacement
Dissolved
Distillation
Effervescence
Electrolysis
Element
Equations
Evaporating Basin
Evaporation
Filtration
Gas
Hydrochloric
Liquid
Mass
Metal
Methane
Mixtures
Native
Oxidation
Oxide
Point
Reaction
Reactivity
Reduction
Rf
Salt
Sodium
Solid
Soluble
Solution
State
Symbol
Unbalanced

Extra Support

Further Reading

Careers

Reflection

1) What's the most memorable thing you learnt during this unit?
2) What was your favourite topic in this unit?
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4) What feedback did your teacher give you during this unit?
5) What will you do differently during the next unit?

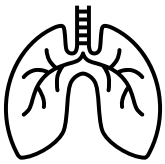
Year 8 Chemical Reactions — Core Knowledge

1	What is the suffix for a compound with 2 elements?	*-ide*
2	What is the suffix for a compound with 3 elements?	*-ate*
3	What is the formula for methane?	*CH_4*
4	What is the formula for ammonia?	*NH_3*
5	Name H_2SO_4, HNO_3, and HCl	*Sulphuric/nitric/hydrochloric acid*
6	Why does the mass not change during a chemical reaction	*The same number of atoms are in both the products and reactants*
7	Why does the mass change in the following reaction? $CuCO_3 \rightarrow CuO + CO_2$	*A gas is given off*
8	Why is mass gained in the following reaction? $Mg + ½\ O_2 \rightarrow MgO$	*The magnesium atoms have bonded to oxygen atoms.*
9	Why do equations need to be balanced?	*Atoms cannot be created or destroyed, just rearranged.*
10	What happens when a formula has brackets?	*Every atom within the brackets is multiplied by the number following it.*
11	How can a insoluble solid be removed from a solution?	*Filtering*
12	How can a soluble substance be removed from a solution?	*Evaporation / crystallisation*
13	What is chromatography used to separate?	*Dissolved substances*
14	Why is the start line drawn in pencil?	*Pencil/graphite is insoluble*
15	Why do substances separate in chromatography?	*They have different solubilities*
16	What is an Rf value?	*A number based on the results of chromatography that helps us identify a substance*
17	What are the 2 physical processes that occur during distillation?	*Evaporation and condensation*
18	Why can ethanol be separated from water using distillation?	*Ethanol has a lower boiling point than water*
19	Why can water be separated from salt solution?	*The water evaporates but the salt stays behind*
20	What properties do Group 1 metals have?	*Very reactive, soft, low density, low melting point*
21	Why are group 1 metals called alkali metals?	*They react with water to from alkaline solutions*
22	What are the products when an acid reacts with a metal	*A salt and water.*
23	How can a reactivity of metals be determined?	*Observing the rate of bubbling when the metal reacts with acid.*
24	Why does copper not react with acid?	*Copper is very unreactive*
25	Why does iron filings react with copper sulphate and displace copper?	*Iron is more reactive than copper*
26	Why doesn't copper react with magnesium sulphate?	*Copper is less reactive than magnesium so cannot displace it*
27	What is oxidation?	*The addition of oxygen to a substance.*
28	Do metals form acidic oxides or basic oxides?	*Basic oxides*
29	What environmental issues can be caused by some non-metal oxides in the atmosphere?	*Acid rain*
30	What is reduction?	*The removal of oxygen*
31	What is a reducing agent?	*A substance that removes oxygen from another substance (and is therefore oxidised)*
32	What is an oxidising agent?	*A substance that donates oxygen to another substance*
33	Why is gold found as the metal in its native state?	*It is too unreactive to react with water and oxygen.*
34	Why is carbon used to extract metals such as iron and lead?	*Carbon is more reactive and is also cheap and plentiful*
35	Why is electrolysis used to extract aluminium?	*Aluminium is more reactive than carbon.*

Year 8 Gas Exchange and Bioenergetics

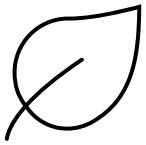
Start date:

Topic Sequence



Ventilation

Respiration



Photosynthesis

Methods and Processes

Carry out investigations to find out the rate of photosynthesis.

Construct equations using scientific words.

Collect and analyse numerical data.

Key Words

Accuracy
Acid
Aerobic
Alveoli
Anaerobic
Asthma
Bronchioles
Bronchus
Carbon
Cells
Concentration
Control
Dependent
Diaphragm
Diffusion
Dioxide
Exchange
Exhale
Factor
Gas
Glucose
Guard
Independent
Inhale
Intercostal
Lactic
Limiting
Muscles
Oxygen
Photosynthesis
Rate
Respiration
Smoking
Stomata
Tidal
Trachea
Valid
Variable
Ventilation
Volume
Water
Yeast

Extra Support

Further Reading

Careers

Reflection

1) What's the most memorable thing you learnt during this unit?
2) What was your favourite topic in this unit?
3) What could have helped you learn better this unit?
4) What feedback did your teacher give you during this unit?
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Year 8 Gas Exchange and Bioenergetics Core Knowledge

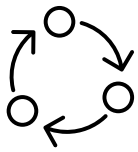
1	State how air moves into the lungs.	*Nasal cavity -> trachea -> bronchi -> bronchioles -> alveoli*	
2	What is the scientific name for the windpipe?	*Trachea*	
3	What are tiny air sacs in the lungs called?	*Alveoli*	
4	State three ways that the lungs are adapted for gas exchange	*1) Thin walls, 2) good blood supply, 3) moist walls*	
5	What two structures change the pressure inside the chest cavity to ventilate lungs?	*Intercostal muscles + Diaphragm*	
6	Describe the state of the diaphragm as we breathe in.	*Contracts and flattens*	
7	What is ventilation?	*Breathing*	
8	What does exercise cause to increase?	*breathing rate and tidal volume*	
9	How does smoking affect the lungs?	*Damages the alveoli*	
10	Which disease destroys the alveoli?	*Emphysema*	
11	How does smoking affect the lungs?	*Damages the alveoli*	
12	Which disease destroys the alveoli?	*Emphysema*	
13	What is asthma?	*A disease that affects the respiratory system*	
14	What happens to the bronchioles during an asthma attack?	*The muscles in the lining of the bronchioles contract. More fluid is produced*	
15	What is aerobic respiration?	*A chemical reaction which uses glucose and oxygen to release energy*	
16	Give the equation for aerobic respiration	*glucose + oxygen -> carbon dioxide + water*	
17	Why is aerobic respiration needed?	*For chemical reactions in the body, movement/muscle contraction*	
18	Where does aerobic respiration take place?	*Mitochondria*	
19	What is anaerobic respiration?	*A chemical reaction only using glucose to release energy*	
20	What is the product of anaerobic respiration in mammals?	*Lactic acid*	
21	Compare aerobic and anaerobic respiration in mammals	*Aerobic* / *Anaerobic* *Needs oxygen* / *Doesn't need oxygen* *Makes more energy* / *Makes less energy* *Makes CO_2 and H_2O* / *Makes lactic acid*	
22	Where does anaerobic respiration occur?	*Cytoplasm*	
23	State the word equation for fermentation	*Glucose --> Ethanol + Carbon dioxide*	
24	Give one use of yeast doing anaerobic respiration.	*Making bread/alcohol*	
25	Is fermentation aerobic or anaerobic?	*Anaerobic*	
26	State an adaptation of the leaf for efficient photosynthesis.	*Broad leaves/Thin/Have chlorophyll/Air spaces/Guard cells to regulate stomata opening*	
27	Give an example of diffusion occurring in a plant	*Gas exchange (oxygen and carbon dioxide)*	
28	What is the function of the palisade cells?	*To absorb light for photosynthesis*	
29	Where does photosynthesis occur in the cell?	*Chloroplast*	
30	What is the word equation for photosynthesis?	*Water + carbon dioxide -> glucose + oxygen*	
31	Name the pigment in chloroplasts that absorbs light.	*Chlorophyll*	
32	What is photosynthesis?	*Building glucose from carbon dioxide and water using light*	
33	How does higher light intensity affect the rate of photosynthesis?	*Increase*	
34	What factors affect the rate of photosynthesis	*Temperature, carbon dioxide level, amount of light chlorophyll levels*	
35	Why would photosynthetic rate decrease at higher temperatures?	*Enzymes become denatured*	
36	What are accurate results?	*Correct results*	
37	What are precise results?	*Results which are close to the true value*	
38	What are valid results?	*Results which are the same when the investigation is repeated*	

Year 8 Electricity

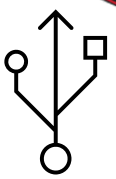
Start date:

Topic Sequence

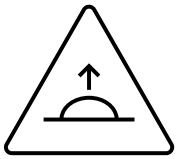
Circuit Diagrams



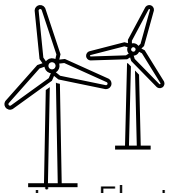
Electric Circuits



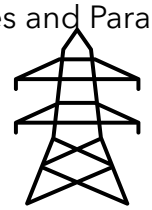
Series and Parallel



Resistance



Generating Electricity



Transporting Electricity

Methods and Processes

To build working circuits.
To take measurements from working circuits.

Use new scientific words accurately

Use equations to calculate unknown variables.

Key Words

Ammeter	Difference	Ohms	Resistance
Amps	Directly	Parallel	Resources
Battery	Domestic	Potential	Series
Bulbs	Energy	Polluting	Symbols
Cables	Global Warming	Proportional	Voltmeter
Conductors	Length	Pylons	Wire
Current	Light	Renewable	

Extra Support

Further Reading

Careers

Reflection

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Year 8 Electricity — Core Knowledge

1	What is meant by a current loop	*A circuit in which there is a complete uninterrupted loop for the current to flow from and back to the battery.*	
2	Define series circuits	*A type of circuit which only contains one current loop*	
3	Define parallel circuits	*A type of circuit which contains multiple current loops*	
4	Define current	*The movement of charged particles around a circuit.*	
5	Define series circuits	*A type of circuit which only contains one current loop*	
6	What does an ammeter do?	*Measures the size of the current in a circuit*	
7	Define potential difference	*The difference in energy between two points in a circuit*	
8	What is a voltmeter used for?	*Measures the potential difference in a circuit*	
9	Where are voltmeters placed in circuits?	*In parallel to the component your looking at*	
10	Define parallel circuits	*A type of circuit which contains multiple current loops*	
11	What happens to current in a parallel circuit?	*Current is split between the loops of a parallel circuit*	
12	How does potential difference move around a parallel circuit?	*The potential difference is the same in each current loop.*	
13	Define resistance	*The property of a substance that is preventing electricity flowing.*	
14	What happens when resistance is increased?	*Current decreases*	
15	Why do filament bulbs release light?	*High resistance causes the wires to get hot and glow*	
16	What is the equation to calculate resistance?	*Resistance = potential difference ÷ current*	
17	What is Ohm's law?	*That resistance is constant in a component.*	
18	How does length of wire affect resistance?	*The longer the wire the more resistance there is.*	
19	Independent variable	*Is the cause. The variable that is altered during a scientific experiment.*	
20	Dependent variable	*Is the effect. The variable being tested or measured during a scientific experiment*	
21	Control variable	*A variable that is kept the same during a scientific experiment.*	
22	Define an energy resource	*Something that can be used to create electricity*	
23	What are the advantages of renewable energy resources?	*They are not going to run out*	
24	Which energy resources do not contribute to global warming?	*Wind power, solar power, wave power*	
25	Define carbon neutral	*A process that emits the same amount of carbon dioxide as it takes in*	
26	Define the national grid	*A series of wires that connect power stations to homes and businesses.*	
27	Why do cables have outer coatings?	*Metal cables are covered in rubber as rubber does not conduct electricity making it safe.*	
28