

		2.	Models for Circuits			5. Using Electricity		
Ke	words	Models	A way of showing or repre- senting something.			Hazard	Something that could cause harm.	
		Advantages of Using	Allow us to help think about complicated ideas in science.	4. (Changing the Current	Risk	The chance that a hazard will cause harm.	
1	Switches and Current	Models Charges	An electric current is a flow of charges carrying energy from the cells to the compo- nents. Charges can move through them easily (a.g. metals)	Voltage Voltmeter Voltage in a Series Cir-	A way of saying how much energy is transferred by elec- tricity. The voltage of the cell helps push the charges around the circuit. Measured in volts (V).	Electricity Risks	Can cause fires, burns to the body and stop the hear from working. Don't touch bare metal	
ompo- ent	Something in a circuit.	Conductors				Reducing	parts of plugs, don't poke things into sockets, keep	
vitch	Closing a switch completes the circuit allowing the current to	Insulators	Charges cannot move		Used to measure voltage.	Risks	ty, don't plug too many	
	flow.		boiler represents the cell		components adds up the		never use a damaged wire.	
ulbs	makes the filament glow. The amount of electricity flow-	Model Ex- ample Ex- planation	Pipes represent the wires The radiator represents a component	cuit Resistance	voltage across the cell. How difficult it is for electrici- ty to flow through some-	Fuse	A wire that melts if the cur- rent is too high, breaking the circuit.	
irrent	ing around a circuit. Measured in amperes (A).		Water represents the current		thing.	Circuit Break-	Cuts off the current if it is	
irrent in Series	Current is not used up as it goes around the circuit, it is the same everywhere	3. Seri Series Cir- cuit	A circuit with all the compo-	Resistor	difficult for electricity to flow - reduces size of current.	Plug Wires	Live and neutral wires make an appliance work;	
nmeter	Used to measure current.	Parallel Cir- cuit	A circuit with branches that				earth wire is for safety.	
		Parallel Cir- cuit Ad- vantages	Each bulb/component can be turned on individually. If one bulb/component breaks the components in other branch- es stay on (unlike a series circuit).				* J # 5	
		Current in a Parallel Cir- cuit	The current splits when it reaches a branch. The cur- rent in all the branches add up to the current in the main part of the circuit.			- 1	H C C C C C C C C C C C C C C C C C C C	
		Adding Bulbs	If you add bulbs into a series circuit the current gets small- er and the bulbs dimmer. In a parallel circuit if you add bulbs on different branches they stay bright.		OF	wand Th	H K CIT	



\frown		2. Тур	es of Reproduction		3. Pollination	Germinate	The seed starts to grow.	
Keywords		Sexual Repro- duction	Two organisms breeding to produce offspring.	Pollen	Male gamete that ripens inside the anthers.	Fruit	The ovary swells up and forms the fruit around the	
		Hybrids	The offspring of two differ- ent species- they are not fertile.	Pollination	The pollen grain carried away and transferred to the stigmas of another plant can	Seed Dis- persal	seed. The spreading of seeds away from the parent plant.	
		Fertile	Can produce offspring.		be by animals/wind/water/	Attracting	Fruits are fleshy, soft, juicy	
1. Classif	ication and Biodiversity	Inherited Vari- ation	Characteristics inherited from parents (due to	Plant Adap- tations for	Brightly coloured petals, nice scent and nectar attract ani- mals (mainly insects). The	Animals	and taste good to attract animals for seed dispersal. Seeds are passed out by ani-	
	Sorting organisms into	Gametes	Sex cells	Animal Polli-	structure also makes it easi-	Egested	mals in their faeces.	
lassification	groups based on their char- acteristics.		The fertilised egg cell	nation	leave pollen grains.	Other Seed	Wind, water and explosions- useful so that new plants	
	The five largest groups (each can be split into smaller	Zygote	formed when the male and female gamete join.	Plant Adap-	Pollen is smooth and light to float through air. large an-	Dispersal Methods	aren't in competition with the parent plant.	
ingdoms	groups)- animals, fungi, pro-	Acovual Po-	Reproduction involving	Wind Polli-	thers and stigmas hang out- side the flower to catch the wind.	5. Ge	rmination and Growth	
	toctists, prokaryotes and plants.	Asexual Re- production	only one parent- produces offspring identical to the	nation		Resources	What a plant needs to grow/germinate	
lants	Members of the plant king- dom have cellulose cell	Runners	parent (clones). An example of asexual reproduction used by strawberry plants. They spread over the ground and sprout roots to grow	Self- Pollina- tion	Pollen grains from a plant land on the stigma of the	Respiration	The process of releasing energy from glucose.	
luites	walls, are multicellular and make their own food.			Cross- Polli-	Pollen transferred from one	Dormant	Slow life processes but stil	
cientific	We give organisms scientific names using the names of			nation 4. Fer	plant to another. tilisation and Dispersal	Photosynthe	- A process that plants use	
lame	the last two groups- the ge-		new identical plants. An example of asexual	Pollen Tube	Formed when a pollen grain	SIS	Glucose is converted to	
	Scientific names are agreed		reproduction used by po-		reaches a stigma of the same species. It grows down to the	Starch	starch to store it. Traps light energy need-	
cientific Iame Ad-	around the world so there is no confusion. Some species	Tubers	derground stems		ovule.	Chloroplasts	ed for photosynthesis.	
antages	have the same common		(potatoes) that contain a store of food that can grow into a new plant.	Fertilisation	gamete from the pollen grain	Interdepend ent	 Organisms that depend on one another. 	
liodiversity	The number of difference				join together to form a zy- gote.			
dvantages	species in an area. Recover faster from disas-	Using Asexual Reproduction	leaves/stems to grow new	Cell Division	The process by which the cell			
f High Bio-	ters and useful substances	Reproduction	plants quickly and cheaply.	<u> </u>	Formed when the cells divide		NCOUE	
versity	can be found (medicines). When an organism dies out			Embryo	again and again.	F	VIDE K K	
ctinct	completely.			Seed	The ovule becomes a seed. Inside the seed is the embryo	[NO	AS Call	
					and a food source.	DEMAIL	For I TI	
					Hart outer coating of seed to	N [*]		



			2. Oxidation		Water will sink through the		Neutralisation reactions used	
Ko	worde	Oxidation	Reacting with oxygen.	Oil Fire	oil and turn to steam mak- ing the fire spread out. Use	Controlling	chimney smoke. Acidic soil /	
(Ne)	yworus	Oxide	Compound formed by oxida- tion.		foam or a fire blanket to keep oxygen away.		water can be neutralised by adding calcium carbonate.	
			Formed when metals react		Water conducts electricity		5. Global Warming	
		Metal Ox- ides	with oxygen. $metal + oxygen \rightarrow metal ox-$ ide	Electrical Fire	so you may get a serious shock. Turn off the electrici- ty and use a powder or car-	Greenhouse Gases	Trap energy from the Sun in the atmosphere <i>e.g. carbon dioxide</i>	
1	L. Burning Fueis		in a chemical reaction. The		4 Air Pollution		Energy trapped by green-	
Fuel	A chemical substance from which stored energy can be transferred usefully to make	Conserva- tion of Mass	atoms in reactants just rear- range to form the products, no new atoms are made and none disappear.	Complete Combus-	Carbon burns in plenty of air only forming carbon dioxide.	Greenhouse Effect	house gases is transferred back to the Earth's surface causing it to warm up. The temperature of the Earth has fluctuated over time it is	
	things happen. Used in hydrogen-powered			tion Incomplete	Not enough oxygen for all the	Earth's Tem- perature Over Time		
Fuel Cell	from hydrogen.	Heating Zinc	oxide. The mass will appear	Combus- tion	carbon to react with.		rising rapidly now though. Increase in global tempera-	
Fuel Cell Word Equation Hydrogen + oxygen → water		in Air	has combined with the oxy- gen in air.	Products of	carbon dioxide- linked to glob- of al warming	Global Warming	ture due to more green- house gases in the air and the greenhouse effect	
Reactants	left of word equation.	Gas Prod-	If the product is a gas it may escape and make it seem like	Combus- tion	gas		Resulting from global warming- changes to weather patterns, more storms, flood, droughts, etc.	
Products	The new substances made- on right of word equation.	ucts	the mass has decreased.		soot- damage lungs and trig- ger asthma	Climate		
	Burning, usually in air. The reaction gives out energy which is transferred to the surroundings by heating or	Phlogiston	to think explained why things burned that was then	Impurities	Small amounts of other sub- stances in fuels.	Change		
Combustion			proven not to exist.	Sulfur Diox- ide	Formed when hydrocarbons have a sulfur impurity.		There is now lots of evi- dence for global warming.	
	light.		3. Fire Safety	Nitrogen	Formed by high engine tem-	Evidence	average temperatures are	
Fossil Fuels	Fuels formed from living organisms that died millions	Exothermic	ergy that we can feel as	Oxide	peratures causing nitrogen and oxygen in air to react.		melting.	
Hydrocar-	Only contain carbon and hydrogen atoms- <i>petrol</i> ,	Thermome- ter	Used to measure a change in the temperature.	Pollutants	ing things and damage the environment.		Sh!	
bons	diesel The carbon and hydrogen	Putting Out a Fire	You must remove at least one of the three factors.	Catalytic	Found in cars to react carbon		EN CE QUE	
Combustion of Hydrocar- bons	atoms react with oxygen. The carbon reacts to form carbon dioxide.	Fire Extin- guishers	Work by cooling a fire or stopping oxygen getting to the fuel.	Converter	forming carbon dioxide. Also breaks down nitrogen oxides.	ANO	EV IDE AS K AS LEY	
Carbon Diox- ide	Carbon dioxide will turn limewater cloudy.		1	Acid Rain	oxides rise into the air and dissolve in water vapour. The	DEM	NK CT	

Sci	ence	8G M	etals and T	heir Uses	DEMA	EUIDE	N Ce As K Q	U E S		NS
Lesson			particles moved into new positions	888998				Y		
1. Metal Properties	large		33333333	3563365			Peastion		1	
3. Metals and Water		0000000	00000000			Metal	with	Reaction with cold		
4. Metals and Acids	Met	al atoms are ged in layers.	A large force will move the layers.	In an alloy, the differ atoms jam up the	rent B		air	water		
5. Pure Metals and Alloys		5.4 KB	84. 	structure so the lay cannot slide so eas	ily.	potassium	<u> </u>	<u> </u>		
				0		sodium	<u> </u>	555		
C	\sim	. 4	P 👝 🏷 🛛			lithium	<u></u>			
		•				calcium	<u></u>	11		
		-				magnesium	<u></u>	<i>✓</i>	<u>z</u>	
						aluminium	111	•••	activ	
Word equation:	titanium	+	oxygen	→ titaniu	im oxide	zinc	11	•••	jg re	
Symbol equation:	Ti	+	O_2	→ T	iO ₂	iron	11	•••	easir	
			L		2	tin	1	•••	Incre	
			25.13		11000111	lead	1	•••		
		2.03				copper	1	×		
		5.16			1391/1	mercury	•••	×		
						silver	•••	×		
		and a	1			gold	X	×		
			Tarrey			platinum	×	×		
	Sadd	Constant of		CONTENT OF	and and a	Key				
			- Start			b can cato fire	^{ch}	eacts very uickly	VV qu	acts iickly

zinc + acid + copper catalyst

zinc + sulfuric

acid alone

slow or partial reaction

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🗸 reacts

no

reaction

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K C	www.	Corrosion	Any reaction with oxygen at the surface of a metal.	Potassium - Lithium	React explosively with dilute acids.	Pure	Substance made up of one type of atom.	
IVC	y woulds	Rusting	The corrosion of iron.	Calcium -	React very quickly with di-	Alloys	Mixtures of metals.	
			Word Equation for Corrosion of Titanium titanium + oxygen → titanium oxide Symbol Equation for Corrosion of Titani- um		lute acids. React slowly with dilute ac-	Solder	Lead mixed with tin- lower melting point than lead used	
					Do not appear to react with dilute acids at all.	Joidei	for fixing pipes / electrical equipment.	
Physical	1. Metal Properties The properties that describe a	Formula	Used to represent the products and reactants in a symbol	Efferves- cence	The production of a gas. Occurs when metals react with an acid	Duralu- min	and magnesium making it light- er and stronger. Used in air-	
Properties Chemical	<i>(colour, strength, density, etc.)</i> How a substance reacts with	Datia	equation. Comparison of the proportion of two quantities <i>e.g. in</i> TiO_2	Metals & Acids	Metals react with acids to form hydrogen and a salt.	Stainless	craft. Iron mixed with carbon, chro- mium and nickel making it stronger and more resistant to corrosion. Used in cutlery. Melting and boiling points for pure substances are fixed and	
Properties Properties	other substances. High melting points, strong,	Ratio	there are two oxygen atoms for every titanium- the ratio is 1:2	Metals & Acid metal + acid –	s Word Equation salt + hydrogen m t sulfuria goid > magnosi	Steel		
of Metals	flexible, malleable, shiny, good conductors.	Rusting of	More complex than general corrosion- requires water as	e.g. magnesiu um sulfate + h	$m + surjuric acta \rightarrow magnesi-ydrogen$	Melting /		
	Used in electrical circuits be- cause it is a good conductor of electricity and unreactive	well. Rusting of Iron Word Equation		Naming Salts	the metal the second de- pends on the acid used.	Boiling Points	Alloys melt and boil over a	
Copper	Used in water pipes because it is unreactive, non-poisonous	Pre- venting	Use a barrier such as paint/ plastic/oil to keep away air/	Hydrochloric Acid	HCl – forms salts ending in chloride		Trange of temperatures.	
Alumini- um	and malleable. Used in window frames be- cause it is strong and light	Rust	water 3. Metals and Water	Sulfuric Acid	H ₂ SO ₄ – forms salts ending in sulfate HNO ₂ – forms salts ending in			
Metals &	Most metals react with oxygen. metal + oxygen \rightarrow metal oxide	Reactivi- ty	How quickly / vigorously some- thing reacts.	Nitric Acid	nitrate Mix the acid and the metal.			
Oxygen	e.g. zinc + oxygen \rightarrow zinc oxide Metals react with halogens and	Reactivi- ty Series	A list of metals in the order of their reactivity.	Obtaining Salts	Filter the solution to remove any excess metal. Heat the		~ 4 9	
Metals & Halogens	other non-metals. e.g. zinc + fluorine \rightarrow zinc fluo- ride	- Metals produce metal hydrox- ides and hydrogen when re- acting with water.		solution to evaporate water leaving just the solid salt.		NO O I		
Catalysts	Speed up chemical reactions without being permanently changed themselves	water	(sodium + water \rightarrow sodium hy- droxide + hydrogen)			k.	JIDE AS COL	
Catalytic Converter	Found in cars to help convert dangerous gases into harmless ones- often contain platinum,				5	EMANO E	t or m	