KS3 Science Knowledge		A. Key Terms:	
Organiser Deing a Scientist		1. Accuracy.	How close a measured value is to the true value of what you are measuring.
B Lab Equipment		2. Categorical data.	Data that has values that are labels rather than numbers e.g. names of plants, types of material.
1. Beaker	2. Bunsen burner.	3. Continuous variable.	Variables that are values that can be given a magnitude either by counting or measurement.
		4. Controlled variable.	A variable that may affect the outcome of the investigation and therefore has to be kept constant.
		5. Data	Information that has been collected in an experiment.
3. Clamp stand and clamp.	4. Conical flask.) (6. Dependent variable.	The variable that is measured during an investigation.
	\square	7. Evaluate.	When you use the information supplied and subject knowledge to consider evidence for and against.
5. Funnel	6. Heat mat.	8. Hypothesis.	A proposal intended to explain certain facts or observations.
		9. Independent variable.	Variables that the values of which are changed or selected by the investigator.
II.		10. Outlier.	A result that is very different from the other measurements in a data set.
7. Measuring cylinder.	8. Microscope.	11. Precise.	Precise measurements are those where there is very little spread around the mean value.
	2	12. Prediction.	A statement suggesting what will happen in the future, based on observation, experience or an hypothesis.
		13. Random error.	An error that causes there to be a random difference between a measurement and the true value.
<u></u>		14. Range	The difference between the lowest and highest values a variable can have.
9. Pipette.	10. Test tube and rack.	15. Repeatable.	When you repeat measurements in an investigation and get similar results.
		16. Reproducible.	When other people carry out an investigation and get similar results to the original investigation.
11. Tonas	12. Tripod	17. Systematic error.	An error that causes there to be the same difference between a measurement and the true value each time you measure it.
13. Wire gauze.		For f	further guidance see pages 2-11 of the Actvivate 1 textbook on Kerboodle.

KS3 Science Knowledge Organiser Cells

B. Animal Cell





The smallest functional unit in an organism – the building block of life.	
The plant cell component that surrounds the cell, providing support.	
The plant cell component where photosynthesis takes place.	
A 'jelly-like' substance found in cells, where all the chemical reactions take place.	
The cell component that controls which substances can move into and out of the cell.	
An optical instrument used to magnify objects so that small details can be seen.	
The cell component where respiration takes place.	
An organism that is made up of many cells.	
The cell component that controls the cell and contains genetic material.	
A group of tissues working together to perform a function.	
A living thing.	
A group of organs working together to perform a function.	
A group of similar cells working together to perform a function.	
An organism that is made up of just one cell.	
The plant cell component that contains cell sap and helps to keep the cell firm.	

E. Specialised cells

D. Light microscope



1. Nerve cell	2. Egg cell (ovum)
3. Sperm cell.	4. Red blood cell.
5. Root hair cell.	6. Palisade cell.

KS3 Science Knowledge Organiser Matter

B. Particle Model



Solid



Liquid



A. Key Terms:		
1. Atom.	The smallest part of an element that can exist.	
2. Boiling.	The change of state from liquid to gas.	
3. Boiling point.	The temperature at which a substance boils.	
4. Compounds.	A substance made up of atoms of two or more elements, strongly joined together.	
5. Condensation.	The change of state from gas to liquid.	
6. Element.	A substance that cannot be broken down into other substances.	
7. Evaporation.	The change of state from liquid to gas.	
8. Freezing.	The change of state from liquid to solid.	
9. Gas.	In a gas state, a substance can flow and can also be compressed.	
10. Latent heat.	The energy given out or taken in during a change of state.	
11. Liquid.	In the liquid state, a substance can flow but cannot be compressed.	
12. Melting.	The change of state from solid to liquid.	
13. Melting point.	The temperature at which a substance melts.	
14. Molecule.	A group of two or more atoms, strongly joined together.	
15. Particle.	A small part of matter.	
16. Property.	A quality of a substance or material that describes its appearance or how it behaves.	
17. Solid.	In the solid state, a substance cannot be compressed and it cannot flow.	
18. Sublimation.	The change of state from solid to gas.	

For further guidance see pages 60-69 & 76-83 of the Actvivate 1 textbook on Kerboodle.



KS3 Science Knowledge
Organiser
Reactions

B. Signs of a chemical reaction

- 1. Change in temperature.
- 2. Light.
- 3. Change in colour.
- 4. Bubbles/fizzing to show a gas is being made.

C. Naming compounds

1. When combining a metal with a non-metal the product will be a **metal -ide** e.g. potassium + oxygen \rightarrow potassium oxide.

2. When combining two elements with oxygen the compound formed will be a **metal –ate**

e.g. Magnesium + nitrogen + oxygen \rightarrow Magnesium nitrate.

3. Mono = one e.g. monoxide = one oxygen. Di = two e.g. dioxide = two oxygens. Tri = three e.g. trioxide = three oxygens.

D. Common formulae

- 1. Hydroxide = OH
- 2. Nitrate = NO_3
- 3. Sulfate = SO_4
- 4. Carbonate = CO_3

A. Key Terms:	
1. Catalyst.	A substance that increases the rate of a chemical reaction without itself undergoing any permanent chemical change.
2. Chemical change.	A change in which atoms are rearranged to create new substances.
3. Combustion.	A chemical reaction in which a substance reacts quickly with oxygen and gives out light and heat.
4. Conservation of mass.	In a chemical reaction, the total mass of reactants is equal to the total mass of products.
5. Endothermic.	A transfer of energy from the surroundings.
6. Exothermic.	A transfer of energy to the surroundings.
7. Fuel.	A material that burns to transfer useful energy.
8. Oxidation.	A chemical reaction in which substances react with oxygen to form oxides.
9. Physical change.	A change that is reversible, in which new substances are made.
10. Product.	A substance that is made in a chemical reaction.
11. Reactant.	A starting substance in a chemical reaction.
12. Reversible.	Something that is capable of being changed back to its original state/form.

E. Representing reactions Word equations: Potassium + oxygen \rightarrow Potassium oxide Reactants Products Symbol equations: $4 + 0_2 \rightarrow 2 \times 20$ Balanced equations

KS3 Science Knowledge Organiser Separating Mixtures

B. Filtration apparatus



C. Chromatography apparatus



A. Key Terms:	
1. Chromatogram.	An image obtained from chromatography.
2. Chromatography.	A technique used to separate mixtures of liquids that are soluble in the same solvent.
3. Dissolving.	The mixing of a substance (the solute) with a liquid (the solvent) to make a solution.
4. Distillation.	A technique that uses evaporation and condensation to obtain a solvent from a solution.
5. Evaporate.	The change of state from liquid to gas.
6. Filtrate.	The liquid or solution that collects in the container after the mixture has passed through the filter paper.
7. Filtration.	A way pf separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper.
8. Impure.	A substance is impure if it has different substances mixed with it.
9. Insoluble.	A substance that cannot dissolve in a certain solvent is insoluble in that solvent.
10. Mixture.	A mixture is made up of substances that are not chemically joined together.
11. Pure.	A substance is pure if it has no other substances mixed with it.
12. Residue.	The solid that collects in the filter paper during filtration.
13. Saturated.	A saturate solution is one which no more solute can dissolve.
14. Solubility.	The solubility of a substance is the mass that dissolves in 100g of water.
15. Solution.	A mixture of a liquid with a solid or a gas. All parts of the mixture are the same.
16. Solute.	The solid or gas that dissolves in a liquid.
17. Solvent.	The liquid in which a solid or gas dissolves.



For further guidance see **pages 72-83** of the **Actvivate 2** textbook on Kerboodle.



A. Key Terms:	
1. Chemical store.	Energy stored in food and fuels.
2. Conduction.	The way in which energy is transferred through solids and to a much lesser extent in liquids and gases.
3. Conductor.	A material that conducts charge or energy well.
4. Convection.	The transfer of energy by the movement of gases or liquids.
5. Convection current.	The movement of heated liquids or gases.
6. Dissipated.	Energy that has become spread out and transferred by heating the environment.
7. Elastic store.	Energy stored when objects change shape.
8. Energy resource.	Materials or mechanisms for heating or generating electricity.
9. Equilibrium.	Objects are at thermal equilibrium when they are at the same temperature.
10. Fossil fuel.	Coal, oil and gas made from the remains of trees and sea creatures over millions of years.
11. Gravitational potential.	Energy due to the position of an object in a gravitational field.
12. Insulator.	A material that does not conduct electricity or transfer energy well.
13. Joule.	The unit of energy, symbol J.
14. Kilowatt hour.	The unit of energy used by electricity companies, symbol kWh.
15. Kinetic energy.	Energy of moving objects.
16. Non renewable.	Energy resources that have a limited supply.
17. Power.	The rate of doing work.
18. Radiation.	The transfer of energy as a wave.
19. Renewable.	Energy resources whose supply will not run out.
20. Temperature.	A measure of how hot or cold something is.
21. Thermal energy.	Energy in objects as a result of the motion of their particles.
22. Thermometer.	An instrument used to measure temperature.
23. Watt.	The unit of power, symbol W.
24. Work.	A way of transferring energy that does not involve heating.

KS3 Science Knowledge Organiser Earth & Beyond

B. The Rock Cycle



C. The Solar System



For further guidance see pages 148-155 of the Activate 1 textbook & 104-111 of the Actvivate 2 textbook on Kerboodle.



A. Key Terms:	
1. Comet.	Dust particles frozen in ice that orbit the sun.
2. Constellations.	A collection of stars that make a pattern in the sky.
3. Crust.	The rocky outer layer of the Earth.
4. Day.	The time it takes a planet to make one full spin on its axis.
5. Erosion.	The breaking of a rock into sediments and their movement away from the original rock.
6. Galaxy.	A number of stars and the solar systems around them grouped together.
7. Igneous.	Rock made when liquid rock (magma or lava) cools and freezes.
8. Lava.	Liquid rock that is above the Earth's surface.
9. Lunar eclipse.	An eclipse that happens when the Earth comes between the Sun and the Moon.
10. Magma.	Liquid rock that is below the Earth's surface.
11. Mantle.	The layer of the Earth that is below the crust. It is solid but can flow very slowly.
12. Metamorphic.	Rock formed by the action of heating and/or pressure on sedimentary or igneous rock.
13. Meteor.	A piece of rock or dust that makes a streak of light in the night sky.
14. Planet.	Any large body that orbits a star in a Solar System.
15. Porous.	A porous material has small gaps that may contain substances in their liquid or gas states.
16. Season.	Changes in the temperature during the year as the Earth moves around its orbit.
17. Sedimentary.	Rock made from sediments.
18. Solar eclipse.	An eclipse where the moon comes between the Sun and the Earth.
19. Solar system.	The Sun and the planets and other bodies in orbit around it.
20. Star.	A body in space that gives out its own light.
21. Universe.	Everything that exists.
22. Weathering.	Weathering breaks up all types of rock into smaller pieces, called sediments.

KS3 Science Knowledge Organiser Ecology

B. Natural selection

1. Organisms in a species show variations which is caused by differences in their genes.

2. The organisms with the characteristics that are best adapted to the environment survive and reproduce. Less well adapted organisms die.

3. Genes from successful organisms are passed to the offspring in the next generation. This means the offspring are likely to possess the characteristics that made their parents successful.

4. This process is then repeated many times. Over a period of time this can lead to the development of a new species.

For further guidance see **pages 34-39, 42-45** & **52-55** of the **Actvivate 2** textbook on Kerboodle.



A. Key Terms:	
1. Adaptation.	Characteristic that helps an organism to survive in its environment.
2. Bioaccumulation.	The build up of toxic chemicals inside organisms in a food chain.
3. Biodiversity.	The range of organisms living in an area.
4. Community.	The collection of different types of organism present in an ecosystem.
5. Competition.	The process of striving to win or gain a resource over another organism.
6. Consumer.	Organisms that eat other organisms as food.
7. Ecosystem.	The name given to the interaction between plants, animals and their habitat in a particular location.
8. Evolution.	The development of a species over time.
9. Extinction.	When there are no more individuals of a species left anywhere in the world.
10. Food chain.	A diagram that shows the transfer of energy between organisms.
11. Food webs.	A diagram showing a set of linked food chains.
12. Gene bank.	A store of genetic samples used for research and to try and prevent extinction.
13. Habitat.	The area in which an organism lives.
14. Interdependence.	The way in which living organisms depend on each other to survive, grow and reproduce.
15. Keystone species.	A species that has a disproportionately large effect on its environment compared to its population size.
16. Natural selection.	Process by which organisms with the characteristics that are most suited to the environment survive and reproduce, passing on their genes.
17. Niche.	A particular place or role that an organism has in an ecosystem.
18. Population.	The number of plants or animals of the same type that live in the same area.
19. Predator.	An animal that eats other animals.
20. Prey.	An animal that is eaten by other animals.
21. Producer.	An organism that makes its own food using photosynthesis.

KS3 Science Knowledge Organiser Reproduction



C. Female reproductive system.





stamen anther stigma petal corola peduncle (pedicel in an inflorescence)

A. Key Terms:	
1. Adolescence.	The period of time when a child changes into an adult.
2. Carpel.	The female reproductive part of a plant.
3. Cervix.	The ring of muscle at the entrance to the uterus. It keeps the baby in place while the woman is pregnant.
4. Contraception.	A method of preventing pregnancy.
5. Fertilisation.	The process where the nucleus of a sperm cell joins with the nucleus of an egg cell.
6. Gamete.	Reproductive cells. The male gamete is a sperm cell and the female gamete is an egg cell.
7. Germination.	The period of time when a seed starts to grow.
8. Implantation.	The process where an embryo attaches to the lining of the uterus.
10. Menstrual cycle	The monthly cycle during which the uterus lining thickens and then breaks down and leaves the body if an egg is not fertilised.
11. Ovary.	In a human contains the egg cells. In a plant it contains the ovules.
12. Oviduct.	Tube that carries an egg to the uterus.
13. Ovulation.	The release of an egg from an vary.
14. Placenta.	The organ where substances pass between the mother's and the fetus's blood. It acts as a barrier, stopping infections and harmful substances reaching the fetus.
15. Pollination.	The transfer of pollen from the anther to the stigma.
16. Puberty.	The physical changes that take place in adolescence.
17. Sperm duct.	Tube that carries sperm from the testes to the penis.
18. Stamen.	The male reproductive part of the plant.
19. Testes.	The testes produce sperm and the male sex hormones.
20. Umbilical cord.	Connects the fetus to the placenta.
21. Urethra.	Tube that carries urine or sperm out of the body.

For further guidance see pages 40-55 of the Actvivate 1 textbook on Kerboodle.

