Year 8 Learning Journal – Science 2022

I'm working towards:	Mastery	Secure	Developing	Emerging

	Autumn term				Spring term					Summer term			
	The Periodic Table	Health and Lifestyle	Forces & Magnetism	Autumn Assessment	Separation Techniques	Ecosystem Processes	Energy	Metals and Acis	Spring Assessment	Adaptation and Inheritance	Motion and Pressure	The Earth	Summer assessment
Mastery													
Secure													
Developing													
Emerging													

Term	Knowledge and Working Scientifically
Autumn term	Two areas that I need to work on: • •
Spring term	Two areas that I need to work on: • •
Summer term	Two areas that I need to work on: • •

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	Year 8 Physics		
	Electricity & Magnetism	**Energy**	**Motion and Pressure**
Emerging	**Use** repel and attract to describe magnet action **Recognise** common circuit symbols **Recall** the units of potential difference **Use** a formula to calculate resistance, with support **List** similarities and difference between series and parallel circuits **Give** one difference between an electromagnet and a permanent magnet **Recall** a use of a electromagnet	**Order** foods of how much energy they contain **Define** fossil fuels and give examples **List** different types of energy **Recall** boiling and melting points of water and ice respectively **Define** thermal conductor and insulator with support **Define** emit **Define** work (physics) **Identify** objects that have a variety of power ratings	**Rank** scenarios in order of speed **State** what a straight or curved line on a distance time graph represents, with support **Describe** the factors that affect gas pressure **Define** pressure **Give** examples of pivots
Developing	**State** how objects become charged **Describe** what is meant by current **State** what is meant by potential difference **Use** a formula to calculate resistance **Draw** series and parallel circuits **Describe** how magnets interact **Describe** how to make an electromagnet	**State** the unit of energy content of food **State** the difference between a renewable and non-renewable energy resource **State** what is meant by conservation of energy **State** the different between energy and temperature **Define** thermal conductor and insulator, and give examples **State** some sources of infrared radiation **Calculate** work done, with support **Calculate** the power rating of an appliance using energy and time	**State** and **use** the formula for speed **State** what a straight or curved line on a distance time graph represents **Describe** how fluids exert a pressure in all directions. **State** how liquid pressure changes with depth **Describe** the effect of solid surfaces on each other using ideas about pressure **State** what is meant by "pivot" and "moment"
Secure	**Describe** how charged objects interact **Describe** how to measure current **Draw** circuit diagrams and make circuits that measure potential difference **Explain** how resistance affects the way components work **Change** the subject of an equation **Describe** how current and potential difference vary in series and parallel circuits **Investigate** the magnetic field of a magnet **Use** a diagram to explain how to make and change its strength	**Compare** the energy values of food and fuels **Describe** how electricity is generated in a power station **Describe** energy before and after a change **Describe** what happens when you heat up solids, liquids and gases **Describe** how energy is transferred by particles in conduction and convection **Describe** how energy is transferred by radiation **Calculate** work done independently **Calculate** cost for home energy usage	**Describe** the link between speed and journey time **Calculate** speed using a distance time graph **Calculate** fluid pressure **Explain** why some things float or sink and how area affects upthrust **Explain** the effect of solid surfaces on each other using ideas about pressure **Calculate** the moment of a force
Mastery	**Explain** what is meant by an electric field **Draw** circuit diagrams **Explain** how potential difference affects the way components work **Use** a model or analogy to explain resistance **Apply** changing the subject of an equation to resistance **Create** series and parallel circuits from circuit diagrams **Explain** what magnetic field diagrams show about directions and strength of the field **Describe** how the strength of an electromagnet changes with distance **Explain** how electric bells, circuit breakers and loudspeakers work	**Compare** the energy in foods and fuels with the energy needs for different activities **Evaluate** the use of different energy resource **Calculate** % efficiency and explain how energy is dissipated **Explain** what is meant by equilibrium **Explain** in detail the processes involved during heat transfers **Compare** insulation methods in terms of conduction, convection and radiation **Apply** the conservation of energy to simple machines **Compare** the energy usage and cost of running different home devices	**Describe** how speed of an object depends of the movement of an observer **Illustrate** a journey with changing speed on a distance-time graph, and label changes in motion **Describe** how atmospheric pressure changes with height **Calculate** pressure in liquids in a range of situations **Calculate** pressure and apply ideas of pressure to different situations **Apply** the law of moments to calculations involving clockwise and anti-clockwise moments

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	Year 8 Biology		
	Health and Lifestyle	**Ecosystem Processes**	**Adaptation and Inheritance**
Emerging	**State** what is meant by a balanced diet, from a diagram **Recall** the nutrients found in food **Define** malnourishment **Define** digestion **State** why yoghurt is good for digestion **Give** examples of drugs **Recall** any effect of consuming alcohol **State** what is in tobacco smoke, with support	**Define** aerobic **Define** anaerobic **State** where in a plant, photosynthesis takes place **State** the different parts of a leaf, with support **Recall** the resources plants require for growth **Recall** simple food chains **Define** disruption **Define** ecosystem key terminology, with support **State** some resources that plants and animals compete for, from diagrams	**Define** compete **Suggest** reasons for camouflage adaptations **Define** characteristic, giving examples **Define** inherit **Define** "survival of the fittest" **Name** some extinct organisms
Developing	**State** what is meant by a balanced diet **Recall** the nutrients found in food **Describe** how to test food for starch, lipids, sugar and protein, with support **Recall** how you get and use energy **State** what happens during digestion **Describe** the role of enzymes in digestion **State** what is meant by a drug **State** what kind of drug ethanol is **State** what is in tobacco smoke	**State** the equation for aerobic respiration **State** the equation for anaerobic respiration **Define** biotechnology **State** the word equation for photosynthesis **State** the different parts of a leaf **State** the factors that affect the rate of photosynthesis **State** what food chains and food webs are **State** factors that affect the population of a species **Define** ecosystem key terminology **State** some resources that plants and animals compete for	**State** some resources that plants and animals compete for **State** what is meant by interdependence **State** what is meant by variation **Describe** how characteristics are inherited **State** what is meant by evolution **State** some factors that may lead to extinction
Secure	**Describe** the components of a healthy diet **Describe** how to test food for starch, lipids, sugar and protein **Describe** some health issues caused by an unbalanced diet **Describe** the structure of the main parts of the digestive system **Describe** the role of bacteria in digestion **Describe** the difference between recreational and medicinal drugs **Describe** the effect of alcohol on health and behaviour **Describe** the effect of tobacco smoke on health	**Describe** the process of aerobic respiration **Describe** the difference between aerobic and anaerobic respiration **State** the process of fermentation **Describe** the process of photosynthesis **Describe** the structure and function of the main components of a leaf **Describe** how to test a leaf for starch **Describe** what food chains and food webs show **Explain** how toxic materials can accumulate in a food web and the effect on different populations **Describe** how different organisms co-exist with an ecosystem **Describe** how organisms are adapted to survive in their environments	**Describe** how organisms are adapted to survive in their environments **Describe** how organisms adapt to environmental changes **Describe** the difference between environmental and inherited variation **Describe** the relationship between DNA, genes and chromosomes **Describe** the theory of natural selection **Describe** the importance of biodiversity in maintaining plant and animal populations
Mastery	**Explain** the role of each food group in the body **Describe** the positive result for each food test **Calculate** the energy requirements of different people **Describe** how components of the digestive system are adapted to their function **Describe** all the events that take place in turning a meal into simple food molecules **Describe** the effects of drugs on health and behaviour **Describe** the effect alcohol has on conception and pregnancy **Explain** how smoking can cause disease	**Explain** the effect of exercise on our breathing rate **Explain** the process of fermentation **Describe** how bread, beer and wine are made **Explain** how reactants enter and products leave the plant **Explain** how a leaf is adapted for photosynthesis **Represent** graphically how different factors affect the rate of photosynthesis **Combine** food chains to form a food web **Explain** the importance of insect pollinators to food supplies **Identify** niches with an ecosystem **Explain** the interaction between predator and prey populations	**Explain** the interaction between predator and prey populations **Explain** how competition can lead to adaptation **Explain** how variation occur in species **Explain** how a DNA mutation may affect an organism and its future offspring **Explain** why species evolve over time **Explain** why a species has becomes extinct

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	Year 8 Chemistry			
	The Periodic Table	**Separation Techniques**	**Metals and Acids**	**The Earth**
Emerging	**State** properties of metals and non metals **State** why Group 1 elements are called "alkali metals" **State** why chlorine might be added to water **Recall** the name of any Group 0 element	**Define** mixture **Describ**e solutions using key words, with support **State** the use of a sieve **Label** the apparatus involved evaporation and distillation **State** what happens to mixtures when they undergo chromatography	**Give** risks and precautions to using acids in the lab **Recall** observations of burning magnesium **Define** reactivity **Define** displacement with support **Identify** the most and least reactive metals in the reactivity series **Identify** ceramics from diagrams **State** what a polymer is, with support **Suggest** properties of materials used for building	**Define** global warming **Recall** the word equations of photosynthesis and respiration with support Define recycling
Developing	**State** what the groups and periods of the Periodic Table suggest about elements **State** the properties and reactivity of the Group 1 elements **State** the properties and reactivity of the Group 7 elements **State** the properties and reactivity of the Group 7 elements	**State** the properties of a pure substance **Describe** solutions using key words **State** why it is possible to separate mixtures **State** the apparatus involved evaporation and distillation **Describe** the method of chromatography	**State** what is formed with metals react with acids **Name** the substances formed when metals react with oxygen **State** what reactivity is and what it shows **Define** displacement **State** what is meant by an ore **State** some uses of ceramics **State** what a polymer is **State** what a composite is	**Describe** how human activities affect the carbon cycle **List** the processes that recycle carbon naturally **State** why certain natural resources will run out
Secure	**Use** data to describe a trend in physical properties **Use** data and observations to describe trends and predict properties of Group 1 elements **Use** data and observations to describe trends and predict properties of Group 7 elements **Use** data and observations to describe trends and predict properties of Group 0 elements	**Describe** the composition of mixtures **Explain** how substances dissolve using the particle model **Describe** how filtration works **Investigate** how evaporation makes crystals from solutions **Explain** how chromatography separates mixtures	**Compare** the reactions of different metals with dilute acids **Compare** the reactions of different metals with oxygen **Write** word equations for the reactions of metals with water **Predict** pairs of substances that react in displacement reactions **Describe** how metals are extracted from ores **Describe** the properties of ceramics **Describe** the properties of a polymer **Describe** the properties of composites	**Describe** the impacts of global warming **Use** the carbon cycle to identify carbon sinks **Explain** why recycling some material is particularly important
Mastery	**Use** patterns in data for physical properties to estimate a missing value for an element **Describe** the reactions of any Group 1 element **Describe** the reactions of any Group 7 element **Describe** the reactions of any Group 0 element	**Explain** how to use melting temperature to identify pure substance **Explain** the meaning of solubility **Investigate** the use of filtration in separating mixtures **Investigate** how distillation separates two substances with different properties **Analyse** chromatograms to identify substances in mixtures	**Describe** a metal acid reaction with a word equation and a particle diagram **Describe** an oxidation reaction with a word equation **Compare** the reactions of different metals with water, oxygen and acid **Use** the reactivity series to explain displacement reactions **Explain** which metal oxides react with carbon **Explain** why the properties of ceramic make them suitable for their uses **Explain** how polymer properties make them suitable for their uses **Explain** how composite properties make them suitable for their uses	**Explain** why global warming happens **Use** the carbon cycle to explain how carbon is recycled **Describ**e how Earth's resources are recycled

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