Year 8 Science

	Periodic Table	Health & Lifestyle	Electricity & Magnetism	Separation Techniques	Energy	Ecosystem Processes	Metals and Materials	Adaptation	End of Year Target
Mastery									**Mastery**
%									
Secure									**Secure**
%									
Developing									**Developing**
%									
Emerging									**Emerging**
%									

Term	Progress	Topic	Experiment Skills
Autumn	**What are you most confident with?**		☐ Predicting ☐ Listing equipment ☐ Writing a method ☐ Results Table
	What do you need to develop?		☐ Predicting ☐ Listing equipment ☐ Writing a method ☐ Showing results in a table or graph ☐ Describing results ☐ Writing a conclusion ☐ Suggesting improvements (Evaluation)
Spring	**What are you most confident with?**		☐ Predicting ☐ Listing equipment ☐ Writing a method ☐ Showing results in a table or graph ☐ Describing results ☐ Writing a conclusion ☐ Suggesting improvements (Evaluation)
	What do you need to develop?		☐ Predicting ☐ Listing equipment ☐ Writing a method ☐ Showing results in a table or graph ☐ Describing results ☐ Writing a conclusion ☐ Suggesting improvements (Evaluation)
Summer	**What are you most confident with?**		☐ Predicting ☐ Listing equipment ☐ Writing a method ☐ Showing results in a table or graph ☐ Describing results ☐ Writing a conclusion ☐ Suggesting improvements (Evaluation)
	What do you need to develop?		☐ Predicting ☐ Listing equipment ☐ Writing a method ☐ Showing results in a table or graph ☐ Describing results ☐ Writing a conclusion ☐ Suggesting improvements (Evaluation)

	Emerging	Developing	Secure	Mastery
Periodic Table	1. **State** properties of metals and non metals 2. **Describe** the reaction of a Group 1 metal and water	1. **Identify** the groups and periods of the Periodic Table 2. **State** the properties and reactivity of the Group 1, 7 and 0 elements	1. **Use** data to describe a trend in physical properties 2. **Use** data and observations to describe trends and predict properties of Group 1, 7 and 0 elements	1. **Use** patterns in data for physical properties to estimate a missing value for an element 2. **Describe** the reactions of any Group 1, 7 or 0 element
Health and Lifestyle	1. **State** what is meant by a balanced diet, from a diagram 2. **Recall** the nutrients found in food 3. **Define** malnourishment and digestion 4. **Recall** any effect of consuming alcohol or drug	1. **State** what is meant by a balanced diet and **recall** the nutrients needed 2. **Describe** how to test food for starch, lipids, sugar and protein, with support 3. **Describe** the role of enzymes in digestion 4. **State** what is meant by a drug	1. **Describe** the components of a healthy diet 2. **Describe** how to test food for starch, lipids, sugar and protein 3. **Describe** some health issues caused by an unbalanced diet 4. **Describe** the difference between recreational and medicinal drugs 5. **Describe** the effect of alcohol on health and behaviour	1. **Explain** the role of each food group in the body 2. **Describe** the positive result for each food test 3. **Describe** the effects of drugs on health and behaviour 4. **Describe** the effect alcohol has on conception and pregnancy 5. **Explain** how smoking can cause disease
Electricity & Magnetism	1. **Use** repel and attract to describe magnet action 2. **Recognise** common circuit symbols 3. **List** similarities and difference between series and parallel circuits **4.** **Recall** a use of a electromagnet	1. **Describe** what is meant by current 2. **Draw** series and parallel circuits 3. **Describe** how magnets interact **4.** **Describe** how to make an electromagnet	1. **Describe** how to measure current 2. **Draw** circuit diagrams and make circuits that measure potential difference 3. **Describe** how current and potential difference vary in series and parallel circuits 4. **Use** a diagram to explain how to make an electromagnet and change its strength	1. **Explain** how potential difference affects the way components work 2. **Create** series and parallel circuits from circuit diagrams 3. **Explain** what magnetic field diagrams show about directions and strength of the field 4. **Explain** how electric bells, circuit breakers and loudspeakers work
Separation Techniques	1. **Define** mixture 2. **Describe** solutions using key words, with support 3. **Label** the apparatus involved evaporation & distillation 4. **State** what happens to mixtures when they undergo chromatography	1. **State** the properties of a pure substance 2. **Describe** solutions using key words 3. **State** the apparatus involved evaporation and distillation 4. **Describe** the method of chromatography	1. **Explain** how substances dissolve using the particle model 2. **Describe** how filtration works 3. **Describe** how distillation works 4. **Explain** how chromatography separates mixtures	1. **Explain** how to use melting temperature to identify pure substance 2. **Explain** the use of filtration in separating mixtures 3. **Explain** how distillation separates two substances with different properties 4. **Analyse** chromatograms to identify substances in mixtures
Energy	1. **Define** fossil fuels and give examples 2. **List** different types of energy 3. **Recall** boiling and melting points of water and ice respectively 4. **Define** thermal conductor and insulator with support	1. **State** the difference between a renewable and non-renewable energy resource 2. **State** the different between energy and temperature 3. **Define** thermal conductor and insulator, and give examples 4. **State** some sources of infrared radiation	1. **Describe** how electricity is generated in a power station 2. **Describe** what happens when you heat up solids, liquids and gases 3. **Describe** how energy is transferred by particles in conduction and convection 4. **Describe** how energy is transferred by radiation	1. **Evaluate** the use of different energy resource 2. **Explain** what is meant by equilibrium 3. **Explain** in detail the processes involved during heat transfers 4. **Compare** insulation methods in terms of conduction, convection and radiation
Ecosystem Processes	1. **Define** aerobic and anaerobic 2. **State** where in a plant, photosynthesis takes place 3. **State** the different parts of a leaf, with support 4. **Recall** simple food chains 5. **State** some resources that plants and animals compete for, from diagrams	1. **State** the equation for aerobic & anaerobic respiration 2. **Recall** the word equation for photosynthesis 3. **Identify** the different parts of a leaf 4. **Describe** what food chains and food webs are 5. **State** some resources that plants and animals compete for	1. **Distinguish** between aerobic & anaerobic respiration 2. **Describe** the process of photosynthesis 3. **Describe** the function of the main components of a leaf 4. **Describe** what food chains and webs show 5. **Explain** how toxic materials can accumulate in a food web	1. **Relate** fermentation to how bread, beer and wine are made 2. **Explain** how a leaf is adapted for photosynthesis 3. **Combine** food chains to form a food web 4. **Explain** the importance of insect pollinators 5. **Explain** the interaction between predator and prey populations
Metals and Materials	1. **Recall** observations of burning magnesium 2. **Identify** ceramics from diagrams 3. **State** what a polymer is, with support	1. **State** what is formed with metals react with acids 2. **Name** the substances formed when metals react with oxygen 3. **State** what is meant by an ore 4. **State** some uses of ceramics 5. **State** what a polymer is	1. **Compare** the reactions of different metals with dilute acids or oxygen 2. **Describe** reactions of metals & water 3. **Describe** the properties of ceramics and polymers 4. **Describe** the properties of composites	1. **Describe** a metal acid reaction with a word equation 2. **Compare** the reactions of different metals with water, oxygen and acid 3. **Explain** why the properties of ceramics, polymers and composites make them suitable for their uses
Adaptations	1. **Define** compete 2. **Suggest** reasons for camouflage adaptations 3. **Define** characteristic, giving examples 4. **Define** inherit 5. **Define** "survival of the fittest" 6. **Name** some extinct organisms	1. **State** what is meant by interdependence 2. **State** what is meant by variation 3. **Describe** how characteristics are inherited 4. **State** what is meant by evolution 5. **State** some factors that may lead to extinction	1. **Describe** how organisms are adapted to survive in their environments 2. **Describe** the difference between environmental and inherited variation 3. **Describe** the relationship between DNA, genes and chromosomes 4. **Describe** the theory of natural selection	1. **Explain** the interaction between predator and prey populations 2. **Explain** how competition can lead to adaptation 3. **Explain** how a DNA mutation may affect an organism and its future offspring 4. **Explain** why species evolve over time 5. **Explain** why a species has becomes extinct

KS3 Science – Year 8

Summer 2

- Adaptation
- DNA Discovery
- Natural Selection
- Forensics: Blood Spatter
- Forensics: Hair and Fiber Analysis
- Floating Garden
- STEM Challenge
- Onwards to High School
- Competition & Adaptation
- Inheritance
- Extinction
- Forensics: Urine Analysis
- Moja Island

Summer 1

- Metals & Materials
- Extended Homework Earth
- Composites
- Ceramics
- Metals and water
- Metals & Acids
- Polymers
- Metal displacement reactions
- Metals & Oxygen

Spring 2

- Ecosystem Processes
- Leaves
- Anaerobic Respiration
- Disruption to food webs
- Photosynthesis
- Aerobic Respiration
- Food Chains and Webs

Spring 1

- Separation Techniques
- Chromatography
- Filtration
- Evaporation & Distillation
- Solutions
- Energy
- Energy Resources
- Particles
- Energy Transfer
- Radiation
- Temperature
- Food & fuels

Autumn 2

- Electricity & Magnetism
- Charging Up
- Potential Difference
- Resistance
- Electromagnets
- Current
- Series & Parallel
- Magnets & Magnetic Fields
- Using Electromagnets

Autumn 1

- Periodic Table
- Digestive System
- Unhealthy Diet
- Health & Lifestyle
- Extended Homework
- Substance Abuse
- Food Tests
- Nutrients
- Group 1
- Metals and Non-Metals
- Chemical Reactions
- Group 7
- Groups & Periods
- Exothermic & Endothermic
- Word Equations

= Chemistry
= Biology
= Physics

YEAR 8