KS3 Curriculum Map – Science:

Topic	Knowledge *Substantive knowledge*: This is the specific, factual content for the topic, which should be connected into a careful sequence of learning.	Skills *Disciplinary knowledge*: This is the action taken within a particular topic in order to gain substantive knowledge.	Assessment Opportunities What assessments will be used to measure student progress?
Lab Safety	• Expectations within the science department. • Lab safety rules. • Hazard symbols • Equipment • Bunsen burner	• To provide a safe learning environment. • To identify any risks in the laboratory. • Describe lab safety rules. • Design a Risk Assessment. • To light a Bunsen burner safely • Draw accurate 2D diagrams of equipment	• Correct use of keywords. • Create a lab safety poster. • Write a risk assessment for a simple practical. • To label and describe parts of the Bunsen burner • Drawing 2D diagrams of equipment
Cells-The Building Blocks of Life	• Plant and animal cell theory. • Specialised cells. • Unicellular organisms and their functions. • Movement of substances. • Adolescence. • Reproductive System Structure. • Fertilisation and implantation. • Development of Foetus. • The menstrual cycle. • Pollination and germination. • Seed dispersal.	• Label plant and animal cells. • Describe the functions of organelles. • Identify specialised cells and explain their adaptations. • Use a microscope to observe the above and draw a scientific diagram. • Investigate diffusion. • Describe changes that take place during puberty. • Label images of the male and the female reproductive systems. • Describe the structure and function of gametes. • Use diagrams to show the stages of the development of the foetus.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk1 Ch1 Cells topic test linked with ARE

		• Describe the main stages of the menstrual cycle. • To understand how contraception and fertility treatments work. • Compare and contrast wind and insect pollinated plants. • Explain how seed are formed through the process of fertilisation. • Describe how seeds are adapted for dispersal.	
Mixing, Dissolving and Separating	• Elements, Mixtures and Compounds • Distillation • Solubility • Chromatography	• Identify elements, compounds and mixtures based on definitions • Draw particle diagrams • Model diffusion using a variety of methods • Explain the terms solvent, solution, solute and soluble • Identify factors affecting dissolving • Separate soluble substances form water • Use distillation to separate substances and explain it's use • Use Chromatography to separate substances and draw conclusions from the evidence.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • Bk 1 Ch3 Mixing, Dissolving and separating topic test linked with ARE
Forces and Their Effects	• Introduction • Squashing and stretching • Drag forces and friction • Forces at a distance • Balanced and unbalanced forces	• Explain what forces do, interaction pairs, differences between contact and non-contact. • Use Hooke's Law to identify proportional stretching of a spring and describe in terms of bonds why solid surfaces provide a support force. • Explain why drag forces and friction arise. • Describe the effect of a field and link features to weight on different planets. • Present force arrow drawings to show and explain the speed or direction of motion of objects.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • Bk1 Ch5 Forces and their effects topic test linked with ARE

Eating, Drinking and Breathing	• Understanding body organisation. • Knowledge of the respiratory system and gas exchange. • Components of a healthy diet. • Food tests. • Health issues caused by an unhealthy diet. • The structure and function of the digestive system. • The role of enzymes and bacteria in digestion.	Link cells to organisation of body systems • Carry out a practical to demonstrate how the body responds to exercise. • To explain the role of each food group in the body. • To carry out each food test and describe the positive result. • Using data to describe the consequences of an unhealthy diet. • To be able to calculate the energy requirements of different people. • Correctly label the digestive system and describe the events. • To explain the roles of enzymes and bacteria and their roles in digestion.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets In class questioning • Practical Work • Bk1 Ch2 Eating, drinking and breathing topic test linked with ARE
Energy Transfers and Sound	• Waves • Sound and energy transfer • Loudness and pitch • Detecting sound • Echoes and ultrasound • Energy in fuels • Conservation of energy • Temperature linked to energy • Work, energy and machines	Compare the different types of wave and • their features. • Describe sound travel in terms of energy transfer in different media and contrast speed with the speed of light. • Comparative evaluation • Create relationship of energy stores and transfer • Describe how temperature differences lead to energy transfer • Manipulate formulaic relationship of work done and relate to levers and gears	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets In class questioning • Practical Work • Bk1 Ch6 Energy Transfers and Sound topic test linked with ARE
Elements Compounds and Reactions	• Elements and atoms • The periodic Table • Using Simple Models • Reactions	• Draw particle diagrams • Classify substances according to definitions learned • Compare the origin of different element names • To know what the Periodic table shows us and where to find metals and non-metals	Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work

		• To know the properties of metals and describe their uses • Compare compounds with the properties of its constituent elements • Classify reactions as oxidation/ combustion	• 3D cell project • Bk1 Ch4 Elements, Compounds and Reactions topic test linked with ARE
Getting the Energy your body needs	• Knowledge of the respiratory system, muscular system and gas exchange. • Describe the difference between aerobic and anaerobic respiration and explain when and why each is needed. • Investigating Fermentation	• Recall equations for respiration. • Identify links between photosynthesis and respiration • Identify links between diffusion and body systems e.g., gas exchange. • Describe some applications of fermentation	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk2 Ch1 Getting the Energy the Body Needs topic test linked with ARE
Explaining Physical Changes	• Using the Particle model to explain the states of matter • Using the particle model to explain properties • Particles in physical and chemical changes	• Compare physical properties of metals and non-metals through experiment • To know and explain the he properties of solids, liquids and gases. • Use experimental work to demonstrate examples physical changes • Explain change of state using particle model • Evaluate the strengths and weaknesses of the particle model. • Draw particle diagrams • Use data to draw a cooling curve	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk2 Ch3 Explaining physical Changes topic test linked with ARE

Exploring Magnetism and Electricity	• How magnets work • Electromagnets • Explaining Electric circuits • Series and parallel circuits	• Explain how objects can become charged and what is meant by an electric field. • Describe what is meant and how we measure current, potential difference and calculate resistance in series and parallel circuits. • Draw field lines round a magnet in detail. • Predict and test the effect of changes to an electromagnet.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk2 Ch6 Exploring Magnetism and Electricity topic test linked with ARE
Our Health and the Effect of Drugs	• Preventing and treating infection • Disease	• Describe how diseases are spread • Consider ways of reducing the spread of specific diseases • Identify how they affect body systems.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk3 Ch2 Our Health and the effect of Drugs topic test linked with ARE
Variation for Survival	• Variation and Species. • Differences between continuous and discontinuous variation.	• To be able to use classification keys to sort living organisms into groups. • Explain how variation occurs. • Explain whether characteristics are inherited, environmental or both. • Be able to use graphical data to see the relationship between continuous and discontinuous variation. • Create and use simple classification key. • Describe the difference between environmental and inherited variation. • Investigate variation and analyse data.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk3 Ch1 Variation for Survival topic test linked with ARE

Motion on Earth and in Space	• Speed • Motion graphs • Pressure in gases linked to atmospheric • Pressure in liquids • Pressure in solids • Turning forces	• Compare instantaneous and average speed, measurement and calculation • Interpret, construct and calculate speed • Describe factors that affect gas pressure and interpret observations • Describe how liquid pressure changes with depth and apply to real life examples and how it relates to floating and sinking. • Describe the factors that affect the pressure on a solid and apply the equation to real life scenarios • Manipulate formulaic relationship of moments and relate to situations	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk3 Ch5 Motion on Earth and in Space topic test linked with ARE
Explaining Chemical Changes	• Acids, alkalis and indicators • Reactions of Acids and alkalis • Combustions	• Use experimental work to demonstrate examples of chemical and changes. • Compare chemical properties of metals and non-metals through experiment (pH of oxides) • What conditions are needed for combustion to occur. • How we can make things fire proof. • How we test for pH using a range of methods • The reactions acids and alkalis undergo.	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk2 Ch4 Explaining Chemical Changes topic test linked with ARE
Looking at Plants and Ecosystems	• Describe photosynthesis and respiration. • Structure of the leaf. • Limiting factors of photosynthesis. • Describe the role of plant minerals. • Food chains and food webs. • Disruption to food webs and food chains. • Adaptations. • Predator/Prey relationships. • Ecosystems. • Competition.	• Recall equations for photosynthesis and respiration. • Identify links between photosynthesis, respiration and food chains. • Label the structure and recall functions of specialised cells in the leaf. • Describe how the rate of photosynthesis is affected by changing conditions. • To be able to explain what food chains and food webs show. • To be able to combine food chains to form a	• Collins Connect Quizzes with mid topic feedback. • Appropriate use of keywords. • Writing tasks- using both textbook and worksheets • In class questioning • Practical Work • 3D cell project • Bk2 Ch2 Looking at plants and ecosystems topic test linked with ARE

		food web. • To explain the importance of interdependence and the effects that environmental changes can have on it. • To explain the process of bioaccumulation. • To describe and explain how species adapt to their environments. • To be able to describe how different organisms co-exist within an ecosystem. • Explain different types of competition and the effect it has on population numbers.	