Key Stage 3 Programme of Study

Year Group	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
7	Topic/Enquiry: C1.1 Particles **B1.1 Cells** Key knowledge: • Know the three states of matter • Use the particle model to describe and explain the properties of each state. Explain Changes of state in terms of energy and forces of attraction between particles. Apply knowledge of state changes to diffusion and gas pressure. • Describe density. • • **Know that all living things are made of cells** • **Understand the processes that occur within all**	Topic/Enquiry: P1.1 Forces **B1.2 Reproduction** Key Knowledge: • Describe the effect of gravity on objects. • Identify the effects of air resistance, water resistance and friction that act between moving surfaces. • Describe the difference between contact and non-contact forces and the common examples. • Describe balanced and unbalanced forces • Interpret force diagrams • Calculate resultant forces.	Topic/Enquiry: C1.2 Atoms, Elements and compounds Key Knowledge: • Define atoms and elements. • Understand the periodic table • Describe different types of atoms, in particular metals and non-metals and their differing properties. • Describe and explain compounds. • Use chemical symbols to describe compounds. Assessment: Tailor made Banded assessments (F/I/A) Values:	Topic/Enquiry: P1.2 Space Key Knowledge: • Understand the difference between mass and weight using • Calculate force and gravity. • Explain how gravity keeps objects in orbit • Describe our solar system, including using models to represent different phenomena. • Apply knowledge of orbits to learn about natural and artificial satellites. • Describe the movement of the Earth to explain seasons and eclipses.	Topic/Enquiry: B1.3 Interdependence **C1.3 Mixtures** Key Knowledge: • Describe the levels of organisation within an ecosystem • Understand how different sampling techniques can be used to study a place in more detail. • Learn how organisms within an ecosystem rely on each other and their environment for survival. • Consider how different organisms compete for survival. • • **Understand techniques used to separate**	Topic/Enquiry: Cells P1.3 Energy transfers **P1.4 Electric Circuits - Current and Potential Difference** Key Knowledge: • State how energy can be measured in Joules and that 1 joule is a very small amount of energy. • A careful describe energy stores. Understand energy stores in food as an example • Explain energy efficiency and transfer of energy between stores. • • **Describe models of electricity, looking at electrical circuits as a whole, as a pathway by which energy is transferred.** • **Compare two different types of circuit (series and parallel) Explain**

	cells and within specialised cells. • Develop skills in using a microscope • Learn how to calculate magnification using micrographs Assessment: Tailor made Banded assessments (F/I/A) Values:	• Use force metres to measure forces. • • Explain mitosis and meiosis in • Explain evolution of species through natural selection. • Describe competition between species and adaptations to suit their environment. Assessment: Tailor made Banded assessments (F/I/A) Values:		Assessment: Tailor made Banded assessments (F/I/A) Values:	mixtures and solutions. • Carry out investigations using various simple and more complex separation techniques, such as decanting, evaporation and chromatography. Assessment: Tailor made Banded assessments (F/I/A) Values:	and calculate current. • Represent electrical circuits using the correct diagrams and circuit symbols. • Measure and compare current in both series and parallel circuits. • Measure and compare voltage in both series and parallel circuits. Assessment: Tailor made Banded assessments (F/I/A) Values:
8	Topic/Enquiry: B2.1 Tissues and Organs C2.1 Acids and Alkalis Key Knowledge: - Understand how movement is coordinated by the interaction of the muscular and skeletal systems. Describe the structure and function of the skeletal system. - Describe how muscles work in antagonistic	Topic/Enquiry: P2.1 Movement and Pressure B2.2 Respiration and Photosynthesis Key Knowledge: - Calculate speed as a measure of distance is covered in a given time. - Explain changing speeds, including relative motion and acceleration as the rate of change of speed. - Draw and interpret distance-	Topic/Enquiry: C2.2 Changing Substances P2.2 Magnetism Key Knowledge: - Understand the nature of chemical reactions. - interpret chemical equations which use symbols, numbers and chemical formulae - Understand the Law of	Topic/Enquiry: B2.3 Life Diversity C2.3 Earth Systems Key Knowledge: - Describe variation and its causes. - Understand that environments exert different selection pressures that result in diversity. - Understand how organisms are adapted to suit	Topic/Enquiry: P2.3 Electric Circuits - Resistance B2.4 Nutrition Key Knowledge: - Recap current and voltage in series and parallel circuits. - Describe the relationship between current and resistance. - Understand the relationships between current, voltage and resistance and use Ohm's Law to look at	Topic/Enquiry: P2.4 Light Key Knowledge: • Understand how light travels and the effects of refraction and reflection • Interpret simple ray diagrams. • Explain how light reaches the retina, including comparing the shape of the lens and cornea in human eyes. • Compare at the similarities and differences

	pairs to exert force on the skeletal system. - Understand the structure and function of the breathing system. - Understand how drugs affect organ systems. - Describe a range of recreational drugs and understand the impact they have on our bodies as systems. - Investigate how different muscles exert different forces. - - **Learn about common acids and alkalis around the home and the use of indicators to assess the pH of a substance. Describe reactions of acids, including neutralisation, reaction of acids, with metals and metal carbonates.**	time graphs and calculate speed from these. - Understand the fundamental ideas of pressure. - **Understand basic processes of aerobic and anaerobic respiration and the role they play in releasing energy for organisms to use.** - **Understand the relationship between respiration and breathing.** - **Describe how fermentation is used in the production of bread and alcoholic drinks.** - **Review the organs of a plant and consider how they aid the process of photosynthesis. Study nonphotosynthetic plants and investigate photosynthesis in more detail.** Assessment: Banded assessments (F/I/A) Values:	Conservation of Mass. - Balance equations for reactions learnt in this unit. - **Understand the fundamentals of magnetism as a non-contact force.** - **Learn the different magnetic materials and the rules of attraction and repulsion.** - **Draw and interpret magnetic fields and their properties.** - **Explain the differences between permanent magnets and electromagnets** - **Describe the factors that affect the strength of an electromagnet.** - **Describe how the Earth's magnetic field functions.** Assessment: Banded assessments (F/I/A)	the environment in which they live in order to survive and reproduce. - State features of selective breeding. - Describe evolution. - Explain extinction and the effect of human behaviour on the rates of extinction. - **Describe the water cycle and the rock cycle.** - **Describe different types of rock and how they are cycled.** - **Explain the processes involved in the water cycle** - **Understand why water is so important to processes such as respiration and photosynthesis explain pollution and its effects.** Assessment: Banded assessments (F/I/A)	resistance quantitatively. - Measure and calculate the resistance of a wire, linking back to of different lengths of wire and explaining this relationship. - Describe resistance in series and parallel. - **Describe a balanced diet and the importance of different nutrients.** - **Investigate how to test for some of nutrients,** - **Understand how nutrients are broken down and used by the body.** - **Describe the function of enzymes in the digestive system** - **Investigate enzyme action.** Assessment: Banded assessments (F/I/A) Values:	between the eye and a camera. • Understand the relationship between primary colours of light and white light. • Assessment: Banded assessments (F/I/A) Values:

	- **Represent chemical reactions using word equations.** Assessment: Banded assessments (F/I/A) Values:		Values:	Values:		
9	Topic/Enquiry: Cell Biology Key Knowledge: • The subcellular structures of a cell and their functions • The evolution and development of cells. • The use of scientific equipment to develop knowledge and understanding • Use prior knowledge to develop structure and function of various parts of a cell Assessment: Assessment: Banded assessments (F/I/A) Values:	Topic/Enquiry: Organisation Key Knowledge: • Describe the different systems in the human body • Explain how variety of cells is crucial for complicated large organisms to survive • Describe the conditions that are vital for life to survive and chemical process to occur. • Describe and explain the role of some of the organs in our bodies • Describe and explain how lifestyle can have both positive and negative effects on our health Assessment: Assessment:	Topic/Enquiry: Atomic Structure and the Periodic Table Key Knowledge: • Describe the differences between atoms, elements, compounds, mixtures • Understand the history of the atom and how it has developed • Investigate separation techniques • Practice balancing equations for various reactions • Understand how the periodic table has developed over time and describe patterns within it Assessment: Assessment:	Topic/Enquiry: Bonding, structure and properties of matter Key Knowledge: • How ions are formed • What type of ion is formed based on the atom and where in the periodic table it is • How ionic bonding happens • Properties of ionic compounds • How covalent bonding happens • Properties of covalent compounds • How metallic bonding happens • Properties of each state of matter • How a change of state occurs Organisation	Topic/Enquiry: 1) Energy 2) **Particle Model of Matter** Key Knowledge: • Describe the different energy stores and how they are transferred from one store to another efficiently • Understand that energy is never lost or gained, merely changes stores. • Investigate the specific heat capacity of different materials • Discuss advantages and disadvantages of renewable and non-renewable energy resources and justify	Topic/Enquiry: 1) Electricity 2) **Organic Chemistry** Key Knowledge: • Current, Potential Difference and Resistance • Circuit devices and I-V characteristics • Series and Parallel circuits • Electricity in the home • Energy, Power and the National Grid • **What are hydrocarbons?** • **Products and separation techniques for crude oil?** • **Environmental factors of crude oil**

		Banded assessments (F/I/A) Values: Atomic Structure and the Periodic Table Key Knowledge: • Describe the differences between atoms, elements, compounds, mixtures • Understand the history of the atom and how it has developed • Investigate separation techniques • Practice balancing equations for various reactions • Understand how the periodic table has developed over time and describe patterns within it Assessment: Assessment: Banded assessments (F/I/A) Values:	Banded assessments (F/I/A) Values: Energy Key Knowledge: • Describe the different energy stores and how they are transferred from one store to another efficiently • Understand that energy is never lost or gained, merely changes stores. • Investigate the specific heat capacity of different materials • Discuss advantages and disadvantages of renewable and non-renewable energy resources and justify reasons for their use in a given area Assessment: Assessment: Banded assessments (F/I/A) Values:	Key Knowledge: • Describe the different systems in the human body • Explain how variety of cells is crucial for complicated large organisms to survive • Describe the conditions that are vital for life to survive and chemical process to occur. • Describe and explain the role of some of the organs in our bodies • Describe and explain how lifestyle can have both positive and negative effects on our health Assessment: Assessment: Banded assessments (F/I/A) Values:	reasons for their use in a given area • **The particle model and motion in gas** • **Density, Internal Energy and states** • **Changes in state** • **Heating and Cooling** • **Specific Heat Capacity** Assessment: Assessment: Banded assessments (F/I/A) Values:	Assessment: Assessment: Banded assessments (F/I/A) Values: