Year 7 Science Curriculum Maps

Year 7	Theme	Key themes	I will be able to ...	I will also be developing my investigative skills
HT1	Introduction to science	Safety and the lab Scientific apparatus Using a Bunsen burner	Identify how to work safely in a lab and to create some basic risk assessments Know the function of some basic equipment and know where it is kept.	Drawing accurate scientific diagrams and naming key scientific apparatus Practical skills by identifying key variables
	Particles	States of matter Changes of state Diffusion Density	Explain the properties of solids, liquids and gases based on the arrangement and movement of their particles. Explain changes in states in terms of changes to the energy of particles.	Relate the features of the particle model to the properties of materials in different states Draw before and after diagrams of particles to explain observations.
Assessment: Introduction to Science/Particles				
HT2	Cells/organs/organ systems	Cells and specialised cells Viewing cells Plant cells Musculoskeletal system Human reproductive systems Fertilisation Gestation Puberty	Explain why multi-cellular organisms need organ systems to keep their cells alive. Explain how uni-cellular organisms are adapted to carry out functions that in multi-cellular organisms are done by different types of cell. Suggest what kind of tissue or organism a cell is part of, based on its features. Explain how a physical property of part of the skeleton relates to its function. Explain why some organs contain muscle tissue. Explain how antagonistic muscles produce movement around a joint.	Explain how to use a microscope to identify and compare different types of cells. Identify the principal features of an onion cell and describe their functions Explore how the skeletal system and muscular system in a chicken wing work together to cause movement Relate advice to pregnant women to ideas about transfer of substances to the embryo

			Use a diagram to predict the result of a muscle contraction or relaxation. Use a diagram to show stages in development of a foetus from the production of sex cells to birth. Explain whether substances are passed from the mother to the foetus or not. Identify key events on a diagram of the menstrual cycle	
Assessment: Cells/organs/organ systems				
HT3	Separating mixtures	Dissolving Separating techniques	Explain how substances dissolve using the particle model. Choose the most suitable technique to separate out a mixture of substances. Use evidence from chromatography to identify unknown substances in mixtures. Use the solubility curve of a solute to explain observations about solutions.	Devise ways to separate mixtures, based on their properties
	**** Assessment: Introduction to Science/Particles/ Cells/organs/organ systems/ Separating mixtures/ Acid reactions****			
	Chemical Reactions – Acid reactions	Acids and Alkalis Neutralisations	Identify the best indicator to distinguish between solutions of different pH, using data provided. Use data and observations to determine the pH of a solution and explain what this shows. Explain how neutralisation reactions are used in a range of situations.	Devise an enquiry to compare how well indigestion remedies work

			Describe a method for how to make a neutral solution from an acid and alkali	
HT4	Energy	Energy Stores Energy Transfers Efficiency Heat Transfers Insulators Energy Resources	Show how energy is transferred between energy stores in a range of real-life examples. Calculate the useful energy and the amount dissipated, given values of input and output energy. Explain observations about changing temperature in terms of energy transfer. Explain how a method of thermal insulation works in terms of conduction, convection and radiation. Compare the amounts of energy transferred by different foods and activities. Compare the energy usage and cost of running different home devices. Explain the advantages and disadvantages of different energy resources.	Compare the amounts of energy transferred by different foods and activities.
Assessment: Acids and Alkalis/Energy				
HT5	Forces and speed	Forces Speeds and Graphs	Know if the overall, resultant force on an object is non-zero, its motion changes and it slows down, speeds up or changes direction. Illustrate a journey with changing speed on a distance-time graph, and label changes in motion.	speed = distance (m)/time (s) or distance-time graphs, to calculate speed.
	Earth and Space	Weight and Mass Solar System	Draw a force diagram for a problem involving gravity.	weight (N) = mass (kg) x gravitational field strength (N/kg).

		The moon Stars Origins of The Universe	Deduce how gravity varies for different masses and distances. Compare weight on Earth with weight on different planets using the formula. Describe the appearance of planets showing their position in relation to the Earth and Sun. Explain why places on the Earth experience different daylight hours and amounts of sunlight during the year. Describe how space exploration and observations of stars are affected by the scale of the universe. Explain the choice of particular units for measuring distance.	Explain the way in which an astronaut's weight varies on a journey to the moon
**** Assessment: Introduction to Science/Particles/ Cells/organs/organ systems/ Separating mixtures/ Acid reactions/Energy/Forces and speed/Earth and Space ****				
HT6	Electricity	Static Electricity Circuit diagrams Electric circuits Parallel circuits Resistance	Describe what happens when charged objects are placed near to each other or touching. Draw a circuit diagram to show how voltage can be measured in a simple circuit. Describe how current changes in series and parallel circuits when components are changed. Use the idea of energy to explain how voltage and resistance affect the way components work.	Compare the voltage drop across resistors connected in series in a circuit

			Use the ratio of voltage to current to determine the resistance. Use an analogy like water in pipes to explain why part of a circuit has higher resistance.	
	Assessment: Electricity			
	Interdependence	Food chains Food webs Food production Plant reproduction	Combine food chains to form a food web. Describe how a species' population changes as its predator or prey population changes. Explain effects of environmental changes and toxic materials on a species' population. Describe the main steps that take place when a plant reproduces successfully. Identify parts of the flower and link their structure to their function. Suggest how a plant carried out seed dispersal based on the features of its fruit or seed. Explain why seed dispersal is important to survival of the parent plant and its offspring. Explain issues with human food supplies in terms of insect pollinators.	Use a model to investigate the impact of changes in a population of one organism on others in the ecosystem Use models to evaluate the features of various types of seed dispersal