KS3 Science Curriculum Coverage: 2025 – 2026

Year 8

Sequenced	Practical Skills and Safety (Autumn term)	Forces (Autumn term)	Keeping Healthy (Autumn/Spring term)	Chemical Reactions (Spring term)	Electricity and Magnetism (Spring/Summer term)
Key Knowledge	**To know:** ● Typical apparatus used in investigations and how to draw them. ● The meaning of independent, dependent and control variables when investigating how concentration, temperature and surface area affect the rate of a reaction. ● The meaning of categoric and continuous data. ● The terms accurate, precise, reliable, valid, resolution. ● The terms random error and zero error.	**To know:** ● Forces are measured in Newtons and can be either a push or a pull. ● Forces can be represented by an arrow with size and direction. ● The difference between balanced and unbalanced forces. ● A force is needed to cause an object to change its speed or direction. ● Examples of non-contact forces such as gravitational, magnetic and electrostatic forces. ● What is meant by work done. ● Hooke's law in terms of force being directly proportional to extension in elastic objects. ● The relationship between average speed, distance and time. ● That atmospheric pressure changes with height and that pressure in liquids changes with depth. ● A moment is a turning effect. ● That weight = mass x gravitational field strength ● That the earth's tilt leads to seasons and different day lengths. ● A light year is an astronomical unit of distance.	**To know:** ● The word equations for aerobic and anaerobic respiration. ● How respiration is linked to mitochondria in animal and plant cells. ● The definition of diffusion. ● The function of the lungs and how the alveoli are adapted for gas exchange. ● What impact smoking and asthma have on exercise. ● The function of the blood vessels - arteries, veins, and capillaries. ● How the body responds the exercise (breathing rate and heart rate) ● How the structures of bacteria, euglena & a yeast cell differ. ● How the body can protect itself from becoming ill. ● The function of the skeleton and muscles. ● The function and names of antagonistic muscles.	**To know:** ● What the reactants are and what the products are when given a word equation. ● That we can use chemical symbols to represent elements and formula to represent compounds. ● How to use chemical formula in symbol equations. ● The difference between chemical and physical changes. ● That the total mass is conserved in chemical reactions due to a rearrangement of atoms. ● That oxidation reactions appear to increase the mass of a reaction and thermal decomposition reactions appear to decrease the mass of a chemical reaction. ● The difference between incomplete and complete combustion. ● How carbon fits into the reactivity series and how it can be used to extract metals from metal oxides. ● That acids and metals react to form a salt and hydrogen ● The tests for gases (chlorine, oxygen, hydrogen, and carbon dioxide) ● The difference between exothermic and endothermic reactions in terms of energy changes including changes of state. How a catalyst works and how it is linked to exothermic and endothermic reactions.	**To know:** ● Examples of conductors and insulators including differences in resistance (quantitative). ● Electrical symbols (cell, battery, filament lamp, open switch, closed switch, voltmeter, ammeter, resistor). ● How increasing the number of cells or number of bulbs will affect the brightness of an individual bulb. ● The definitions of current and potential difference, the units and the equipment needed to measure them. ● The difference between a series and a parallel circuit. ● What resistance is and the ohms law equation. ● The 4 magnetic materials (cobalt, iron, nickel & steel). ● What is meant by magnetic poles (north and south) and how they interact – attract and repel. ● What field lines are and how they are linked to the earth's magnetic field, compasses and navigation. ● The magnetic effects of a current, electromagnets and D.C. motors (principles only). ● What static electricity is in terms of the separation of positive and negative charges when different materials are rubbed together and electrons are transferred. ● That electric fields are forces acting across a space and as such are an example of a non-contact force.
Key Skills	**To be able to:** ● Identify the variables of a rates investigation. ● Draw a line graph including the labelling and scaling of axes. This includes drawing a line of best fit. ● Explain how you can improve accuracy of an investigation. ● Identify anomalous results and calculate a mean.	**To be able to:** ● Identify the forces in various systems such as stretching a spring, friction between surfaces, pushing objects and air and water resistance. ● Describe the method and variables during the Hooke's law practical. ● Calculate the speed of an object ● Describe the journey shown by a distance-time graph. ● Calculate the pressure on an object (force/area). ● Calculate the weight of an object on different planets.	**To be able to:** ● Compare aerobic and anaerobic respiration. ● Describe how a model represents the movements of gases into and out of the lungs and in turn how a red blood cell moves through the circulatory system. ● Carry out a dissection of an organ safely (lungs and/or heart, chicken wing for muscles). ● Analyse a graph of breathing rate and/or heart rate during exercise. ● Draw a results table and a graph relating to lung volume.	**To be able to:** ● Identify the number of atoms and number of elements in a molecule when given the chemical formula. ● Identify elements/compounds/mixtures using ball and stick diagrams. ● Record observations of physical and chemical reactions (practicals throughout the unit). ● Draw the electronic structures of atoms and write the electron configuration. ● Identify the independent, dependent and control variables of an investigation (heat of neutralisation) ● Measure a temperature change (heat of neutralisation) Drawing a line graph including the labelling and scaling of axes. This includes drawing a line of best fit (heat of neutralisation).	**To be able to:** ● Draw/make electrical circuits using circuit symbols. ● Measure the current using an ammeter, and the potential difference using a voltmeter ● Identify the resolution of an ammeter & voltmeter. ● Calculate the resistance using ohms law. ● Identify the independent, dependent and control variables of an investigation (resistance of bulbs). ● Draw field lines using a magnet and a compass. ● Drawing a line graph including the labelling and scaling of axes. This includes drawing a line of best fit (making a magnet practical and/or electromagnets). ● Identify anomalous results and calculate a mean (making a magnet practical and/or electromagnets).
	Tier 3 key vocabulary		**Tier 3 key vocabulary**	**Tier 3 key vocabulary**	**Tier 3 key vocabulary**
Subject specific	independent, dependent, control, line of best fit, anomalous, categoric, continuous, accurate, precise, reliable, valid, rate of reaction, temperature, concentration, surface area, collisions.	Force, newtons, balanced, unbalanced, contact, non-contact, gravitational, magnetic, electrostatic, friction, reaction, upthrust, air resistance, tension, work done, elastic, extension, spring constant, speed, distance, time, weight, mass.	Cell, tissue, organ, organ system, organism, mitochondria, respiration, aerobic, anaerobic, oxygen, carbon dioxide, heart, circulatory, veins, arteries, capillaries, red blood cell, white blood cell, plasma, platelets, microorganism, virus, bacteria, fungi, antibodies, antibiotics, vaccination, Immunity.	Atom, element, compound, mixture, molecule, chemical, physical, reactant, product, proton, neutron, electron, ionic, covalent, conservation of mass, exothermic, endothermic, neutralisation, catalyst.	Conductor, insulator, circuit, cell, battery, open switch, closed switch, filament lamp, voltmeter, ammeter, resistor, potential difference, current, resistance, series, parallel, magnetic, attract, repel, magnetic field, electromagnet, coil, iron core.

Energy from Food (Summer Term)	**Current Year 8 Cohort**
To know: ● The 7 food groups that make up a balanced diet and give examples for each food group. ● The food tests for starch and sugar. ● The function of enzymes within the digestive system. ● The function of the mouth, oesophagus, stomach, liver, pancreas, small intestine, large intestine, rectum, and anus within the digestive system. ● The importance of bacteria in the human digestive system. ● The word equation for photosynthesis. ● The features of a root hair cell. ● Explain how the leaves and the roots are adapted for photosynthesis. ● What stomata are and that they are closed during the night and open during the day. ● The parts of the flower and their function (anther, filament, stigma, style, ovary) and the two types of pollination. ● The importance of fertilisation, seed & fruit formation and dispersal in plant reproduction.	**Topics already studied in Year 7:** ● Particles ● Separation Techniques ● Cells & Reproduction ● Energy ● Fast & Furious **Topics to study in 9:** ● Ecology, Inheritance & Evolution ● Waves ● Atomic Structure & Periodic Table ● Cellular Biology ● Energy & resources
To be able to: ● Record observations of the food tests. ● Analysing food labels for nutrients. ● Test a leaf and a variegated leaf for starch. ● Identify the independent, dependent and control variables of an investigation (pondweed practical) ● Identify anomalous results and calculate a mean (pondweed practical) ● Plot a suitable graph using data from photosynthesis. ● Label the reproductive parts of a flower.	
Tier 3 key vocabulary	
Carbohydrate, protein, fats, vitamins, minerals, fibre, water, iodine, benedict's solution, digestion, absorption, enzymes, active site, oesophagus, stomach, liver, pancreas, intestine, rectum, anus, photosynthesis, variegated, palisade mesophyll, spongy mesophyll, chloroplasts, stomata, guard cells, waxy cuticle, anther, filament, stigma, style, ovary, pollination, fertilisation, dispersal.	