Science Curriculum Intent

At the Kingsway School, we believe that the study of science is important because science allows us to develop new technologies, solve practical problems, and make informed decisions

The foundations of science are built on an understanding of:

- cells and systems, plants and the environment, and variation and inheritance in biology
- particles and matter, chemical reactions, and earth and atmosphere in chemistry
- forces and motion, energy, and waves in physics.

The core knowledge is science is both deep and broad, it more than covers the national curriculum. They will apply this when completing practical science safely, collecting data, making predictions, drawing conclusions, applying concepts and ideas in different contexts or when they draw links across different years and subjects.

Our classrooms support our learners to achieve by fostering high academic aspiration, nurturing curiosity, and encouraging critical thinking.

As part of the science curriculum, learners are provided with a range of high quality academic texts with the aim of explicitly teaching scientific vocabulary, modelling fluent reading, encouraging reading of scientific articles, and encouraging a culture of reading.

We support pupils to be compassionate and keep each other safe by modelling safe and compassionate behaviours, explicitly teaching pupils how to stay safe in a science lab and how to keep others safe by reducing risk.

Through the science curriculum will run a golden thread of wellbeing where we teach the pupils about their body and how to stay safe, that could be reproduction and relationship, disease or drugs.

During their time in science the pupils will collect and reflect on experimental data; they analyse, interpret and evaluate. By doing this, we encourage our students to think critically, morally and ethically about science, understand the world that they live in, and to develop skills that will support them for their futures.

Our curriculum creates young people who have a deep understanding of the world around them, are compassionate, can keep themselves safe, hold themselves to a high moral standard, respect and celebrate differences and can engage with big issues in our society.

Subject: **Year 8 Science**

Year 8 Curriculum Intent: The intent of the Year 8 curriculum is to build on knowledge acquired in Year 7 and both broaden and deepen pupil knowledge in the different areas of science at the Kingsway school:

- in Biology - Cells and Systems, Plants and the Environment, and Variation and Inheritance.
- in Chemistry - Particles and Matter, Chemical reactions, and Earth and Atmosphere.
- in Physics - Forces and Motion, Energy, and Waves.
- and across all three sciences - how to Work Scientifically.

Pupils will be taught key knowledge and skills in both theory and practical science. They will learn about the scientific method, how to keep safe and how to draw valid conclusions from data.

	Year 8, Term 1, Biology Scheme 1a: Cells and Systems	**Year 8, Term 1, Chemistry** Scheme 1b: Earth and Atmosphere	**Year 8, Term 1, Physics** Scheme 1c: Energy
Acquire	Components of a balanced diet, healthy lifestyles. The anatomy of the digestive system,the role of bacteria and enzymes in the digestive system. Recall the components that make up a balanced diet. Unhealthy eating habits which include eating disorders.	the composition of the Earth the composition of the atmosphere the rock cycle and the formation of igneous, sedimentary and metamorphic rocks the carbon cycle the production of carbon dioxide by human activity and the impact on climate. properties of ceramics, polymers and composites (qualitative)..	Name / draw circuit symbols. Define current and state how to measure it. Define potential difference and state how to measure it. State the difference between series and parallel circuits.
Apply	Calculate food requirements for a healthy diet, using information provided. Describe the events that take place in order to turn a meal into simple food molecules inside a cell.	Compare the different layers of the Earth in terms of their properties Testing the properties of all three types of rock Testing the properties of ceramics, polymers and composites Investigating crystal formation of igneous rocks	Measure current and potential difference. Calculate resistance. Predict the current in a circuit. Predict the potential difference in a circuit
Vocabulary	Enzymes Dietary fibre Lipids Protein Stomach Carbohydrates Gut bacteria	Crust Mantle Core Sediments Compaction Cementation Pressure Respiration Photosynthesis Greenhouse effect Climate change Polymer Composite materials	Cell Potential difference Volts Voltmeter Current Amps Ammeter Resistance Ohms Series circuit Parallel circuit
Assessment	Blue Sheet Assessment of biology Cells & Systems topics taught in Year 7 & Year 8 and working scientifically.	Blue Sheet Assessment of chemistry Earth and Atmosphere and working scientifically.	Blue Sheet Assessment of physics Energy topics taught in Year 7 & Year 8 and working scientifically.
	Year 8, Term 2, Biology	**Year 8, Term 2, Chemistry**	**Year 8, Term 2, Physics**

	Scheme 2a: Cells and Systems		Scheme 2b: Particles and Matter	Scheme 2c: Forces & Motion
Acquire	The parts of the skeletal system. The role of joints and muscles. The gas exchanges, aerobic and anaerobic respiration, antagonistic muscles.		Differences between atoms, elements and compounds chemical symbols and formulae for elements and compounds the varying physical and chemical properties of different elements the Periodic Table: periods and groups; metals and non-metals how patterns in reactions can be predicted with reference to the Periodic Table the principles underpinning the Mendeleev Periodic Table	Draw magnetic fields. Identify magnetic materials. State useful features of an electromagnet. Define pressure. Describe the motion of particles in solids, liquids, and gases. State the equation for density.
Apply	Use word equations to describe aerobic and anaerobic respiration. Explain how specific activities involve aerobic or anaerobic respiration.		Demo of alkali metal reactions Investigating properties of elements, mixtures and compounds	Describe how to change the strength of an electromagnet. Describe how magnets and magnetic materials interact. Calculate pressure. Describe how the motion and energy of particles changes during changes of state. Compare the density of different materials.
Vocabulary	Aerobic Respiration Anaerobic Respiration Fermentation Lactic Acid		Atom Element Compound Symbols Formula Chemical properties Physical properties Periodic Table Mendeleev's periodic table Alkali metals	Magnetic field Permanent magnet Magnetic material Temporary magnet Solenoid Electromagnet Pressure Fluid Incompressible Upthrust Density
Assessment	Blue Sheet Assessment of biology Cells & Systems topics taught in Year 7 & Year 8 and working scientifically.		Blue Sheet Assessment of chemistry Particles and matter topics taught in Year 7 & Year 8 and working scientifically.	Blue Sheet Assessment of physics Forces & Motion topics taught in Year 7 & Year 8 and working scientifically.
	Year 8, Term 3, Biology	**Year 8, Term 3, Biology**	**Year 8, Term 3, Chemistry**	**Year 8, Term 3, Physics**

	Scheme 3ai: Plants and the Environment	Scheme 3aii: Cells and Systems	Scheme 3b: Earth and Atmosphere	Scheme 3c: Waves
Acquire	Photosynthesis, the anatomy of a leaf, minerals and their importance in the healthy growth of a plant.	Pathogens; what they are and how they can enter the body. Antibiotics, immunisations and antibiotic resistance. Sexually transmitted diseases. Drug classification, Effects of drugs, alcohol, tobacco and vaping on the body.	properties of ceramics, properties of polymers Properties of composites (qualitative). Recall the 8 planets in the solar system Recall objects and entities found in the solar system Recall the seasons on earth Name the phases of the moon	Label a ray diagram. Measure angles with a protractor. State the law of reflection. Define the terms: 'transparent', 'translucent' & 'opaque'. State the seven colours of the visible spectrum. State the three primary colours of light. State the three secondary colours of light.
Apply	Sketching a line graph to show how the rate of photosynthesis is affected by changing conditions, including limiting factors. Use a word equation to describe photosynthesis in plants and algae. Investigate plant mass and gas exchange in a plant. Investigating photosynthesis: Comparing different	Fermentation of yeast investigating the production of alcohol. Describe the effect of alcohol, vaping and smoking on behaviour, health and the effect on conception and pregnancy. Describe how communicable diseases can be spread.Explain how microbes cause illness.	Testing the properties of ceramics, polymers and composites Explaining how we get summer and winter on earth Ordering the size of objects in the universe Describing night and day	Draw ray diagrams to show reflection and refraction. Use ray diagrams to show how images are formed. Explain why objects appear a particular colour in white light, in coloured light or when using a filter.

	sizes of leaves and the production of oxygen.	Describe how the immune system and medical treatments prevent disease.		
Vocabulary	Fertilisers Photosynthesis Chlorophyll Stomata	Pathogen Transmission Immunisation Antibiotics Communicable	ceramics clay brittle insulator melting point natural resources mineral ore displacement extraction recycling electrolysis galaxy orbit light year exo planet stars season moon phase satellite solar system	Reflect Absorb Transmit Transparent Translucent Opaque Image Spectrum Angle of incidence Incident ray Angle of reflection Reflected ray Normal Scattered Specular Reflection Diffuse scattering Refraction Angle of refraction Refracted ray Converging / Convex Diverging / Concave
Assessment	Blue Sheet Assessment of biology Plants and the Environment topics taught in Year 7 & Year 8 and working scientifically.	Blue Sheet Assessment of biology Cells & Systems topics taught in Year 7 & Year 8 and working scientifically.	Blue Sheet Assessment of chemistry Earth and Atmosphere topics taught in Year 7 & Year 8 and working scientifically.	Blue Sheet Assessment of physics Waves topics taught in Year 7 & Year 8 and working scientifically.