## KS3 Science Curriculum Audit – YEAR 7 : 2024 – 2025

**Year 7**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sequenced | **Practical Skills & Safety**  **(Year 7 throughout)** | **Cells & Reproduction**  **(Autumn term)** | **Particles**  **(Spring term)** | **Energy**  **(Spring term)** | **Separation techniques**  **(Summer term)** | **Fast & Furious**  **(Summer term)** |
| **Key Knowledge** | **To know:**   * Identify and describe the use of:   beaker, Bunsen burner, gauze, measuring cylinder, thermometer, ruler, top pan balance, timer.   * The hazard symbols:   Corrosive, flammable, irritant,  toxic   * The metric units of length, mass, volume, time and temperature. * The meaning of independent, dependent and control variables. | **To know:**   * How to label an animal and plant cell. * The functions of the different sub cellular structures. * The different specialised cells and how they are adapted to carry out their function. * How organisms are made up… cells → tissues → Organs → Organ systems * The male and female gametes, where they are produced and their function. | **To know:**   * The differences between atoms, elements and compounds. * The arrangement and movement of particles in solids, liquids and gases. * The changes of state - melting, freezing, evaporating, condensing, sublimating. * The meaning of density and how to calculate it. * How particles move via diffusion. | **To know:**   * The energy stores and energy pathways. * How to calculate the efficiency of devices. * The processes of conduction, convection and radiation and examples. * The difference between a thermal conductor and insulator. * The different renewable and non-renewable energy resources, including advantages and disadvantages. | **To know:**   * To define solute, solvent, solution, soluble and insoluble. * The separation processes of filtering, evaporation, distillation and chromatography and examples * Examples of acids, alkalis and neutral substances. * An indicator can be used to identify the pH of a substance. * The process of neutralisation. * The 4 layers that make up the earth’s structure. * The three types of rocks and how they are formed. * The problems with climate change. | **To know:**   * Where metals and non-metals are positioned on a periodic table. * The columns and called groups and the rows are called periods on the periodic table. * The sub-atomic particles that make up an atom and their relative mass and relative charge. * Group 1 elements are known as the alkali metals and they get more reactive as you go down the group. * Group 7 elements are known as the halogens and they get less reactive as you go down the group. * Why the noble gases are unreactive. * A more reactive metal can displace a less reactive metal. * The factors that affect the rate of a reaction. |
| **Key Skills** | **To be able to:**   * Convert between different units. * Identify the variables of an investigation. * Set up and use a Bunsen burner safely identifying safety flame. * Write a logically sequenced method. | **To be able to:**   * Use a microscope to observe cells and identify sub cellular stuctures. * Compare similarities and differences between animal and plant cells. * Convert between measurements of length. * Calculate magnification of a cell using the length of image and length of real object. | **To be able to:**   * Measure the temperature of a substance using a thermometer at regular intervals. (stearic acid practical) * Draw and enter data into a results table. * Measure the density of an object by: measuring the mass of an object using a balance; and measuring the volume using either formula or displacement method. * Explain zero error using a balance, and random error using a thermometer as well as the resolution of both pieces of equipment. | **To be able to:**   * Describe the changes in energy stores of different scenarios (energy circus) * Draw and entering data into a results table. * Identify the variables of an investigation. * Draw a bar chart and label axis * Compare renewable and non-renewable energy resources. | **To be able to:**   * Set up a funnel and filter a mixture (e.g. sand and water and/or copper sulfate) * Produce and analyse a Chromatogram to identify different colours within a dye. * Identify the pH of chemicals using Universal indicator and the pH Scale. * Compare different types of rocks and their formation. * Analyse pie charts showing the composition of gases in the earth’s early atmosphere and the earth today. | **To be able to:**   * Identify the numbers of protons, neutrons and electrons in an atom given the atomic number and mass number of an element. * Write word equations for displacement reactions using the reactivity series of metals. * Record observations of a chemical reaction (e.g. fizzing, temperature change, colour change) * Identify the independent, dependent and control variables of an investigation (rates of reaction) * Explain why temperature, concentration and surface area will affect the rate of a reaction. |
|  | **Tier 3 key vocabulary** | **Tier 3 key vocabulary** | **Tier 3 key vocabulary** | **Tier 3 key vocabulary** | **Tier 3 key vocabulary** | **Tier 3 key vocabulary** |
| **Subject specific** | Beaker, conical flask, thermometer, balance, Bunsen burner, flammable, corrosive, toxic, independent, dependent, control, line of best fit. | Nucleus, cell membrane, cytoplasm, mitochondria, ribosomes, cell wall, chloroplast, vacuole, specialised, adaptation, function, gamete, fertilisation | Atom, element, compound, particles, melting, freezing, evaporating, condensation, temperature, density, mass, volume | Chemical, thermal, kinetic, gravitational potential, elastic potential, vibrational, efficiency, useful output, wasted output, conduction, convection, radiation, renewable, non-renewable, fossil fuel. | Solute, solvent, solution, soluble, insoluble, dissolve, filtration, evaporation, distillation, chromatography, acid, alkali, neutral, neutralisation, indictor, pH, core, mantle, crust, sedimentary, igneous, metamorphic | Element, atom, nucleus, proton, neutron, electron, groups, periods, alkali metals, halogens, noble gases, reactivity, displacement, rate of reaction, temperature, concentration, surface area, collisions. |