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

**Year 7**

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| 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.
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| **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.
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|  | **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. |