

GRADE 9 STANDARDS OF GENERAL SCIENCE REQUIRED

A. BIOLOGY

TOPIC	CONTENT
Cells and Organisms	<ul style="list-style-type: none"> Investigate the characteristics of living organisms; Investigate animal and plant cells and understand the functions of the main components; Define what is meant by a tissue, an organ and an organ system.
Humans as Organisms	<ul style="list-style-type: none"> Recognize the positions and know the functions of the major organ systems; Understand the relationship between diet, fitness and circulatory disorders; Learn about respiration, including a definition and word equation; Learn about the organs and basic functions of the alimentary canal; Learn about the components and basic functions of the circulatory system. Appreciate the role of the skeleton, joints and muscles in movement; Investigate nutrition, including balanced diets and the effects of deficiencies.
Plants	<ul style="list-style-type: none"> Recognize the positions and functions of the major organs in flowering plants; Learn about photosynthesis, including a word equation for the process; Learn about the mineral requirements and the transport of water in flowering plants; Understand sexual reproduction in flowering plants including pollination, fertilization, seed formation and dispersal
Variation and Classification	<ul style="list-style-type: none"> Consider examples of variation within and between species; Use keys to identify plants and animals; Classify living organisms into major groups; Understand that selective breeding can lead to new varieties.
Ecosystems	<ul style="list-style-type: none"> Investigate adaptations of living things to their habitat or daily and seasonal changes; Understand energy flow, food chains and food webs and use appropriate terminology; Appreciate human influences on ecosystems.



CHEMISTRY A.

TOPIC	CONTENT
Materials	<ul style="list-style-type: none">• Become familiar with the symbols of common elements and understand that elements are made of atoms;• Understand the idea of compounds and be able to name some common compounds including oxides, hydroxides, chlorides, sulphates and carbonates;• Understand the differences between elements, mixtures and compounds;• Understand the distinction between metals and non - metals;• Investigate everyday materials and their physical properties.
State of Matter and Physical Change	<ul style="list-style-type: none">• Investigate solids, liquids and gases and their inter - conversion;• Use simple kinetic particle theory to explain changes of state, dissolving and diffusion;• Distinguish the differences between solutes, solvents and solutions;• Meet a variety of methods of obtaining pure substances from different mixtures;• Understand the distinction between physical and chemical• Learn about the structure of atoms and relate this to the first twenty elements of the periodic table;• Learn about trends in groups and periods;• Appreciate the main trends in physical and chemical properties of the first twenty elements in the periodic table.

A. PHYSICS

TOPIC	CONTENT
Measurement and Properties of Matter	<ul style="list-style-type: none"> • Use appropriate apparatus for measurements; • Understand the way that particles are arranged and move in solids, liquids and gases and be able to apply this for example, to changes of state and gas pressure; • Understand the expansion of solids, liquids and gases; • Determine the density of solids and liquids.
Forces and Motion	<ul style="list-style-type: none"> • Calculate average speed and interpret simple distance/time graphs; • Investigate the effect of forces on the motion and shape of objects; • Understand that the turning moment of a force depends on its size and where it is applied; • Appreciate the effect of a force on an area resulting in a pressure (qualitative treatment only); • Explain pressure in gases and fluids (qualitative treatment only).
Energy	<ul style="list-style-type: none"> • Recognize the major sources of energy and alternative sources of energy such as solar and wind; • Become familiar with energy as the ability to make things happen (do work) and its conversion and conservation; • Learn about the thermal energy transfer processes of conduction, convection and radiation.
Magnetism	<ul style="list-style-type: none"> • Investigate the properties of magnets; • Investigate magnetic field patterns produced by a bar magnet; • Construct and use an electromagnet.
Electricity	<ul style="list-style-type: none"> • Investigate conductors and insulators; • Learn about electrostatics and the concept of charge; • Interpret and draw circuit diagrams and design simple series and parallel circuits; • Understand how the number and common types of component, including cells, affect current; • Understand how current divides in parallel circuits; • Measure current in circuits; • Appreciate the uses and dangers of electricity.
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