

## Grade 7 Integrated Science New 20-Week Scheme of Work

Week	TOPIC	GENERAL OBJECTIVE	CONTENT	ACTIVITIES	RESOURCES	EVALUATION STRATEGIES
1	How a Scientist Works: Looking at things in the laboratory	Willingness to observe safety rules.  Show due care of handling apparatus/materials before use	Safety rules  Looking at things in the laboratory  Types of equipment found in the laboratory include: beakers, measuring cylinders, Bunsen burners  The function of each type of equipment. How various laboratory equipment are used.  Equipment is made of various materials e.g. glass, metal, plastic, wood, rubber etc.	Observe the features of laboratory equipment  Draw equipment found in the laboratory  Classify equipment according to the materials from which they are made	Chart of safety rules  Apparatus from laboratory  Science in Daily Life, Book 1, Chapter 1  Week 1, Lessons 1 and 2 worksheets found at <a href="https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Identification of laboratory equipment  Matching of equipment and function  Exhibition of science equipment
2	Measurement in Science: Measurement of length, height, and mass	Appreciate that it is worthwhile to acquire for everyday use, the skills of estimation and accurate measurement of length/height in mm, cm, m, and km  Appreciate that accurate measurement of mass (mg, g, kg) is very important in our daily lives	Understand why there are standardized units of measurement  Conversion of units of measurement within the metric system  Conversion of units of measurement in the metric system to and from the imperial system  Measurement of mass by estimation  Conversion of appropriate units	Estimate the length/height of objects  Measuring length using a ruler/tape measure  Record measurements accurately using appropriate units  Measuring mass using various balances – triple beam, electronic, lever, spring	Chart on the metric system  Ruler/tape measure  Activity  Discussion  Balances: triple beam, lever, electronic, spring  Science in Daily Life, Book 1, Chapter 2  Weeks 2, 3, and 4, Lessons 1 and 2 worksheets found at <a href="https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Problem solving on measuring length and conversion of units of length  Problem solving on measuring length and conversion of units of mass  Making accurate measurements  Make accurate conversions.

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					<a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	
<b>3</b>	Measurement in Science:  Measurement of Area of shapes and Volumes of Solids and Liquids	Appreciate the importance of areas in our everyday life    Appreciate the importance of volumes in daily life	Use formulae for area of regular shapes (squares, rectangles, triangles, circles) to calculate area.  Measure areas of regular and irregular shapes (i.e. hibiscus leaf) using metric ruler or tape measure.  Volume of regular solids e.g. cubes ( $V = l \times w \times h$ ), cuboids ( $V = l \times w \times h$ ), cylinders ( $V = \pi r^2 h$ )  Volume of irregular solids e.g. stone  Be able to calculate surface area to volume ratio  Understand the importance of the surface area to volume ratio to living organisms	Using formulae, determination of the area of squares ( $A = l \times w$ ), rectangles ( $A = l \times w$ ), triangles ( $A = \frac{bh}{2}$ ) and circles ( $A = \pi r^2$ ).  Measurement of the area of irregular shapes e.g. leaves  Problem solving: determination of volume of regular solids  Practical: measurement of irregular objects by displacement method  Discussion  Problem solving: calculating the surface area to volume ratio	Different shapes (squares, rectangles, triangles, circles)  Leaves  Regular solids (cubes, cuboids, cylinders)  Measuring cylinder, water, stone  Science in Daily Life, Book 1, Chapter 2  Week 5, First Part of Lessons 1 and 2 worksheets found at <a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Quiz  Grading of worksheets
<b>4</b>	Measurement in Science: Measurement of temperature	Appreciate that the thermometer is a very useful invention	The parts of the thermometer  The names of liquid substances used in thermometers (The common name for mercury in Guyana is quick silver).  The principles of operation of a thermometer; Caring of a thermometer  The units of temperature	Making of a model of thermometer  Practical: measuring the temperature of liquids <ul style="list-style-type: none"> <li>- Boiling point of H<sub>2</sub>O</li> <li>- Melting point of ice</li> <li>- Average temperature of the human body</li> </ul> Problem solving: conversion of °C to K and vice versa (Kelvin (K) is the SI unit for temperature)	Materials to make model  Water, Bunsen burner, tripod stand, thermometer  Science in Daily Life, Book 1, Chapter 2  Worksheets  Week 5, Second part of Lessons 1 and 2 worksheets found at <a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Grading of lab reports  Grading of worksheets

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			Melting and boiling points of substances  Comparing the properties of the alcohol and mercury in thermometers.	Research and presentation	<a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	
<b>5</b>	Life: Characteristics of living things  Classification of animals	Demonstrate awareness that there are similarities and differences among the living things  Develop the skill in arranging animals into groups of vertebrates and invertebrates  Develop the skill in classifying animals into the classes of vertebrates and invertebrates	The characteristics of living things  Classification of living things into two kingdoms: Plants and Animals  Classification of Animals into Vertebrates and Invertebrates  Classes of Vertebrates and Invertebrates  Naming organisms belonging to the main group of invertebrates (insects, spiders, segmented worms, slugs, crabs, jelly fish)  Name some cold blooded and warm blooded animals  Name some of the animals in the community	Field trip in the school's compound  Observation and tabulation of similarities and differences among living things  Problem solving: classification of living things into the two phylum and classes of vertebrates and invertebrates  Designing of posters of organisms to show their characteristics	Hand lens  Apparatus for collecting organisms  Science in Daily Life, Book 1, Chapter 3  Worksheets  Week 7, Lessons 1 and 2 worksheets found at <a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Quiz  Grading of portfolio  Grading of posters
<b>6</b>	Life: Classification of plants	Appreciate that there are variations of plants and demonstrate an awareness of their similarities and differences	Types of flowering and non – flowering plants  Similarities and differences between flowering and non – flowering plants and the reasons for these similarities and differences  Features of leaves for	Field trip in the school's compound  Designing of posters showing classification of plants	Hand lens  Materials for creating posters  Science in Daily Life, Book 1, Chapter 3  Week 6, Lessons 1 and 2 worksheets found at <a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Grading of posters  Quiz

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			Monocotyledons and dicotyledonous plants		<a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	
			Name some of the plants in the community			
7	Life: Adaptation of structures in animals	Appreciate the value of specialization to the animal's survival	The features of animals in relation to the specific characteristics of living organisms  External features in animals related to (i) Nutrition, (ii) Movement, (iii) Reproduction, as in <u>hatching and giving birth</u>	Field trip  Displaying and discussing exhibits of adaptation in animals	Camera, sketchpad  Materials to create posters and exhibits	Grading of posters and exhibits  Quiz
7	Life: Adaptation of structures in plants	Appreciate the value of specialization to the plant's survival	External features in relation to (i) Nutrition as in plants (roots and leaves) and (ii) Reproduction as in (a) flowers and seeds and (b) parts of plant	Field trip  Presentation and discussing field trip report  Displaying and discussing exhibits of adaptation in plants	Camera, sketchpad  Materials to create posters and exhibits  Week 9, Lessons 1 and 2 worksheets found at <a href="https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://www.education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Grading of posters  Quiz
8	Structure of flowers	Appreciate the value of plants to the environment	Structure of a complete flower  The male and female parts of a flower  Functions of each part of the flower and how the structure relates to its function  Reasons for flowers being in the environment	Practical: - dissection of a flower; - identification of the parts of the flower - identify the male and female parts of the flower - label a diagram of a longitudinal section of a flower	Flowers  Materials for dissection of the flower	Grading of lab report  Quiz
9	Structure of a Seed	Appreciate that each part of a seed has a particular role or function	The parts of a dicotyledonous seed  The function of each part of a seed as it relates to its structure	Practical: dissecting a dicotyledonous seed  Creating of a colour coded chart of the part of a seed	Dicotyledonous seed  Materials for dissection  Materials for creation of poster	Grading of lab reports  Grading of posters

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					Week 11, Lessons 1 and 2 worksheets found at <a href="https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	
9	Germination of a seed	Willingness to suggest conditions necessary for germination based on results from experiment	Definition of germination  The conditions necessary for germination  Functions of the major parts of seedlings	Practical: investigating the conditions necessary for germination  Discussion of results from experiments	Materials needed for practical  Week 10, Lessons 1 and 2 worksheets found at <a href="https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Grading of lab reports  Quiz
10	Properties of Change: Physical and chemical changes	Willingness to carefully observe materials and identify physical properties  Use relevant materials to determine the chemical properties of materials	The physical and chemical properties of materials  Physical and chemical changes, and how they occur  Differentiate between physical and chemical properties of substances  Differentiate between physical and chemical changes  Writing simple word equations for chemical reactions i.e. hydrogen + oxygen = water; Fuel + oxygen = carbon dioxide and water	Research and presentation  Practical: Physical and chemical changes	Internet  Science in Daily Life, Book 1, Chapter 6  Materials for practical	Grading of presentation  Grading of lab reports  Quiz
11	<b>End of Term Assessment</b> <i>(new)</i>	For pupils to answer questions.	Answering questions based on topics done during the term.	Reading and answering questions.	Test papers.	Correcting work.
12	Types of energy	Appreciate the importance of energy conversions to man	Law of Conservation of Energy  Types of energy (potential ( $E_p$ ))	Research and presentation  Creation of charts to demonstrate	Internet  Materials for creation of charts	Grading of presentation

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		<p>Appreciate the need to conserve energy</p>	<p>and kinetic (<math>E_k</math>)</p> <p>Sources of energy and why the sun is the primary source of energy</p> <p>Examples of inter conversions of the common forms of energy in the home, the body, and in industries</p> <p>Differentiate between energy and force</p> <p>Explain the Law of Conservation of Mass (in chemical reactions) [NB: Demonstrate using examples]</p>	<p>conversion of energy</p> <p>Problem solving and Calculations</p>	<p>Worksheets</p>	<p>Grading of charts</p> <p>Grading of worksheets</p>
13	Energy: Matter	<p>Appreciate that matter exists as solid, liquid or gases</p> <p>Appreciate that humans are also made up of matter</p> <p>Appreciate that a change of state is effected by environmental conditions</p>	<p>Definition of matter and mass</p> <p>Matter is made up of particles Matter exists as solid, liquid and gas</p> <p>Properties of (i) solids, (ii) liquids and (iii) gases</p> <p>Changes of state</p> <p>The arrangement of particles in solids, liquids, and gases</p> <p>Positive and negative effects of heat energy on solids and liquids</p> <p>Change in state (arrangement of particles) due to heat energy (heat causes particles to move about more freely and the loss of</p>	<p>Research and Presentation</p> <p>Drawing Diagrams and Charts Be able to use a cooling curve to measure melting point</p> <p>Practical:</p> <ul style="list-style-type: none"> <li>- change of ice to steam</li> <li>- cooling curve</li> <li>- heat rain water to boiling point and compare boiling point when salt is added</li> </ul>	<p>Internet, materials for presentation</p> <p>Bunsen burner, tripod stand, beaker, ice cubes</p> <p>Naphthalene, Bunsen burner, tripod stand, thermometer, capillary tube, water</p> <p>Grade 7 Integrated Science Week 1 worksheets found at <a href="https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a></p>	<p>Grading of presentation</p> <p>Grading of lab reports</p> <p>Grading of worksheets</p>

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			heat energy causes substances to contract).  Determination of boiling and melting points  Cooling Curves			
<b>14</b>	Energy and Matter: Diffusion of Matter (Proof of particulate theory)  Air Pressure and its Application	Appreciate that matter is made up of particles  Appreciate the value of diffusion in maintaining life  Appreciate the importance of devices which make use of air pressure and pressure/volume relationships	Definition of diffusion as well as osmosis and Brownian motion)  Movement of particles is random in liquids and solids  The use of a diffusion gradient in describing the movement of particles  The factors that influence the rate of diffusion (concentration, temperature)  Define air pressure  Devices that use air pressure  Explain compression and expansion  Describe the relationship between pressure and volume	Discussion  Practical: - diffusion - osmosis - Brownian motion  Demonstrations  Solving pressure/volume relations for air ( $P_1P_2 = P_1P_2$ )	Materials for each practical  Grade 7 Integrated Science Week 1 worksheets found at <a href="https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40">https://education.gov.gy/web2/index.php/secondary-resources/grade7/grade7-worksheets/grade-7-worksheets-integrated-science?limit=20&amp;limitstart=40</a>	Grading of lab reports  Quiz
<b>15</b>	Mixing and Separating: Solutions	Willingness to explore mixtures involving solids, liquids and gases  Appreciate the uses of alloys in daily life (i.e. steel, gold)	Definition of solution, saturated solution, solubility, suspension, colloid, solute, solvent, insoluble, and dissolve.  The properties of solutions  Types of mixtures: Solutions, suspensions and colloids	Research and presentation  Name examples of different solutions and identify the solute and solvent  Practical - creating and identification of different types of solutions	Internet  Charts on the types of solutions  Materials for each practical  Science in Daily Life, Book 1, Chapter 4	Grading of presentation  Grading of charts created  Grading of lab reports

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			<p>Examples of solutions: Solid in liquid, Liquid in liquid, Gas in liquid and Gas in gas</p> <p>Examples of alloys</p> <p>Uses of alloys</p> <p>Saturated solution and saturated point</p> <p>Solubility of solute</p> <p>Temperature effect on rate of solubility</p>	<p>- effect of temperature on the rate of solubility</p> <p>Research on uses of alloys</p> <p>Draw and interpret a solubility graph</p>		
<b>16</b>	Mixing and Separating: Separating Techniques	<p>Appreciate the importance of filtration, distillation and chromatography in industry</p> <p>Use of water as a universal solvent</p>	<p>Define separation techniques: Evaporation, Distillation, Chromatography</p> <p>Factors that speed up the process of evaporation</p> <p>The difference between fractional and simple distillation</p> <p>Explain why colours separate in paper chromatography</p> <p>Define immiscible liquid, emulsion, and sedimentation</p> <p>Separating funnel can be used to separate two immiscible liquids</p> <p>Separation techniques used in the rice and sugar industries</p>	<p>Practical</p> <ul style="list-style-type: none"> <li>- using separation techniques</li> <li>- paper chromatography (black and coloured ink)</li> </ul> <p>Research and field trip</p> <p>Problem solving on the utilization of the different separation techniques</p> <p>Design a flow chart to show the separation techniques used in</p> <ul style="list-style-type: none"> <li>- the rice industry</li> <li>- the sugar industries</li> </ul> <p>Selecting a suitable solvent (water, alcohol, kerosene) to remove a stain</p>	<p>Materials for each practical</p> <p>Science in Daily Life, Book 1, Chapter 4</p> <p>Worksheets</p>	<p>Grading of lab reports</p> <p>Quiz</p> <p>Grading of worksheets</p>
<b>17</b>	Our Solar System: The Solar	Show an interest in collecting information on the solar system	<p>Definition of sun, planet, satellite, asteroids, comet, meteor, shooting stars, the milky way,</p>	<p>Research and presentation</p> <p>Making of a model of our solar</p>	<p>Internet</p> <p>Chart and DVD with information on our</p>	<p>Grading of presentation</p>

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	System	<p>Appreciate that the solar system is a part of the milky way and moves around its center</p> <p>Appreciate the vast distance in space</p> <p>Appreciate that gravity affects weight but not mass</p>	<p>galaxy, spiral galaxy, light year</p> <p>The members of the solar system</p> <p>The direction of forces which keep objects in orbit</p> <p>The planets of the solar system and comparison of their size, number of moons, atmospheric conditions, direction of rotation and revolution.</p> <p>Space travel and the need for special suits</p> <p>How a rocket functions</p>	<p>system</p> <p>Making of a model of a rocket</p> <p>Demonstration</p> <p>Discussion</p>	<p>solar system</p> <p>Materials for making model of solar system</p> <p>Materials to create model</p>	<p>Grading of model of solar system</p> <p>Quiz</p> <p>Grading of model rocket</p>
17-18	Our Solar System: Seasons of the Earth	Demonstrate awareness of the seasons of earth	<p>The four seasons in the northern and southern hemisphere</p> <p>How the earth's shape, revolution, and inclination influence the seasons</p> <p>Explain why the tropics do not experience four seasons</p> <p>The solstices and equinoxes in both hemispheres</p> <p>The tropical seasons</p> <p>How human and economic activities change with the seasons</p> <p>The effects of the seasons in Guyana on human and economic activities</p>	<p>Research and discussion</p> <p>Creation of chart showing the four seasons</p> <p>Use a model to indicate when the solstice and equinox occur</p> <p>Presentation of report</p>	<p>Internet</p> <p>Materials for creation of charts and models</p>	<p>Grading of portfolio</p> <p>Grading of charts</p>

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<b>18</b>	Our Solar System: Moon phases and tides	Appreciate that plans should be made for the effects of the moon  Appreciate the importance of tides on coastal people	Wet and dry seasons The four phases of the moon and how the phases are caused  Definition of spring and neap tides and how they are caused  Strong winds and tides	Discussion  Design of chart	Materials for creation of chart	Grading of charts  Quiz
<b>19</b>	Review					
<b>20</b>	Assessment					