

# **NATURAL SCIENCES**

**GRADE 8 TERM 3**

**Tracker**



Week 1											
CAPS Concepts and Activities	CAPS Page no.	Year:					Year:				
		Class					Class				
		Date Completed					Date Completed				
<b>Week 1 Lesson A</b>											
<b>Topic: Static electricity</b> <b>Content &amp; Concepts: Friction and static electricity</b> <ul style="list-style-type: none"> <li>Friction (rubbing) between certain materials (such as plastic, Perspex, glass, nylon, wool, silk) transfers electrons between the atoms of the two materials being rubbed together</li> <li>The electrons move from one material causing a positive charge on its surface and causing a negative charge on the surface of the other material (it is only the electrons that are transferred, protons and neutrons do not move)</li> </ul>	47										
<b>Week 1 Lesson B</b>											
<b>Topic: Static electricity</b> <b>Content &amp; Concepts: Friction and static electricity</b> <ul style="list-style-type: none"> <li>Objects/materials with same/like charges repel each other</li> <li>Objects/materials with opposite/unlike charges attract each other</li> </ul>	47										
<b>Week 1 Lesson C</b>											
<b>Topic: Static electricity</b> <b>Content &amp; Concepts: Friction and static electricity</b> <ul style="list-style-type: none"> <li>A discharge of the electrons causes the sparks or shock of static electricity, especially when the air is dry</li> </ul>	47										
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Week 2 Lesson C												
<p><b>Topic: Energy transfer in electrical systems</b></p> <p><b>Content &amp; Concepts: Components of a circuit:</b></p> <ul style="list-style-type: none"> <li>• Cells/batteries are chemical systems that are sources of energy               <ul style="list-style-type: none"> <li>○ cells store chemical substances (potential energy)</li> <li>○ when the circuit is completed, the chemicals react together to produce an electric current</li> <li>○ an electric current is the flow of charges (kinetic energy) along a conductor</li> </ul> </li> </ul>	47											
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<b>Week 3 Lesson A</b>											
<b>Topic: Energy transfer in electrical systems</b> <b>Content &amp; Concepts: Components of a circuit</b> <ul style="list-style-type: none"> <li>• Conducting wires are usually made of metal and carry electricity over a short or long distance</li> <li>• Switches provide a convenient way of controlling electrical circuits</li> </ul>	47										
<b>Week 3 Lesson B</b>											
<b>Topic: Energy transfer in electrical systems</b> <b>Content &amp; Concepts: Components of a circuit</b> <ul style="list-style-type: none"> <li>• Resistors are made of materials that resist/oppose the flow of electrical current in a circuit               <ul style="list-style-type: none"> <li>○ resistors in a circuit have an influence on the amount of electric current flowing in that circuit</li> <li>○ some resistors (including bulb filaments, heating wires, elements in kettles/heaters/geysers/stoves) can heat up to provide useful output energy                   <ul style="list-style-type: none"> <li>- A light bulb such as a torch bulb, contains a resistance wire called a filament. The filament heats up to be white hot when connected in a circuit. The resistance wire is connected to two contact points - the one end to the screw part (casing) and the other end to the solder knob at the bottom. The two contacts are separated by an insulator</li> </ul> </li> </ul> </li> </ul>	48										

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<b>Week 4 Lesson A</b>											
<b>Topic: Energy transfer in electrical systems</b> <b>Content &amp; Concepts: Effects of an electric current</b> <ul style="list-style-type: none"> <li>• A current can heat a resistance wire (such as a bulb filament)               <ul style="list-style-type: none"> <li>○ an electrical current transfers energy to the particles in a bulb filament, producing light that the filament emits</li> <li>○ circuits can overheat if a short circuit occurs                   <ul style="list-style-type: none"> <li>- fuses are special wires which break the circuit when they overheat and melt. These are safety devices that reduce the danger when using electricity</li> <li>- a short circuit can occur when an electric current takes the path of lowest resistance, for example when a conductor is connected directly to both terminals of a cell/battery</li> </ul> </li> </ul> </li> </ul>	48										
<b>Week 4 Lesson B</b>											
<b>Topic: Energy transfer in electrical systems</b> <b>Content &amp; Concepts: Effects of an electric current</b> <ul style="list-style-type: none"> <li>• A current causes a magnetic field (such as in electromagnets)               <ul style="list-style-type: none"> <li>○ an electric current can be used for making temporary magnets known as electromagnets. Moving charges (current) in a conductor (such as a wire), cause a magnetic field around it</li> </ul> </li> </ul>	48										



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<p><b>Topic: Energy transfer in electrical systems</b>  <b>Content &amp; Concepts: Effects of an electric current</b></p> <ul style="list-style-type: none"> <li>• An electric current can cause a chemical reaction in a solution, this process is called electrolysis               <ul style="list-style-type: none"> <li>○ water can be broken down by electrolysis to produce oxygen and hydrogen gas</li> <li>○ copper(II) chloride solution can be broken down to copper metal and chlorine gas. Copper is deposited on one electrode (cathode) and chlorine gas is formed as bubbles at the other electrode (anode)</li> </ul> </li> </ul>	48										
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Week 5 Lesson A											
<b>Topic: Series and parallel circuits</b> <b>Content &amp; Concepts: Series circuits</b> <ul style="list-style-type: none"> <li>A series circuit provides only one pathway for the current passing through it. The current is the same everywhere in the circuit but every time a resistor is added in series, the overall current in the circuit decreases</li> </ul>	49										
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<b>Topic: Series and parallel circuits</b> <b>Content &amp; Concepts: Parallel circuits</b> <ul style="list-style-type: none"> <li>A parallel circuit provides two or more pathways for the current passing through it, but the overall current increases when more resistors are added in parallel</li> </ul>	49										
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<b>Topic: Series and parallel circuits</b> <b>Content &amp; Concepts: Parallel circuits</b> <ul style="list-style-type: none"> <li>A parallel circuit provides two or more pathways for the current passing through it, but the overall current increases when more resistors are added in parallel</li> </ul>	49										
<b>Week 6 Lesson B</b>											
<b>Topic: Series and parallel circuits</b> <b>Content &amp; Concepts: Other output devices</b> <ul style="list-style-type: none"> <li>Other complex circuits are used for output devices, such as beepers, buzzers, LED's (Light Emitting Diodes) or motors</li> </ul>	49										
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<b>Week 8 Lesson A</b>											
<b>Topic: Visible light</b> <b>Content &amp; Concepts: Opaque and transparent substances</b> <ul style="list-style-type: none"> <li>Light passes through transparent substances (such as glass, clear plastic, cellophane, clean water) therefore some of the light is absorbed, some is reflected, but most passes through</li> </ul>	50										
<b>Week 8 Lesson B</b>											
<b>Topic: Visible light</b> <b>Content &amp; Concepts: Absorption of light</b> <ul style="list-style-type: none"> <li>Light can be absorbed by surfaces of some materials</li> <li>Light is absorbed differently by different materials</li> <li>A material has colour because it absorbs some of the colours in the spectrum (some of the frequencies) and reflects other colours</li> <li>The frequencies that are absorbed do not reach the eye               <ul style="list-style-type: none"> <li>a red object (such as a wall painted red) reflects the frequencies we see as red and absorbs other frequencies/ colours, such as violet, indigo, blue, green</li> <li>a black object (such as a black pot) absorbs all of the frequencies/ colours and therefore looks black (links absorption of heat by matt black surfaces: Grade 7)</li> <li>a white object (such as white paper) reflects all of the frequencies/ colours and therefore looks white (links to reflection of heat by shiny silver or white surface: Grade 7)</li> </ul> </li> </ul>	50										



Week 8 Lesson C											
<b>Topic: Visible light</b> <b>Content &amp; Concepts: Reflection of light</b> <ul style="list-style-type: none"> <li>• Light is reflected off most surfaces, including mirrors</li> <li>• Light can change its direction when it is reflected</li> <li>• In reflection, the angle of incidence and reflection are measured from the normal which is a line perpendicular to the surface</li> <li>• On smooth surfaces, all light is reflected in the same direction</li> <li>• On rough surfaces, reflected light is scattered</li> </ul>	51										
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Week 10											
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<b>Revision</b>											
	47-51										
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