

# **NATURAL SCIENCES**

**GRADE 7 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: Sources of energy</b> <b>Content &amp; Concepts: Renewable and non-renewable sources of energy</b> <ul style="list-style-type: none"> <li>Energy is needed to make everything work, move or live</li> <li>A source of energy has energy stored waiting to be used, or energy that is needed to make something happen</li> </ul>	26										
<b>Week 1 Lesson B</b>											
<b>Topic: Sources of energy</b> <b>Content &amp; Concepts: Renewable and non-renewable sources of energy</b> <ul style="list-style-type: none"> <li>Non-renewable sources of energy cannot be replenished once used, such as fossil fuels (coal, oil, natural gas) and nuclear fuels (such as uranium) [Links to Planet Earth and Beyond Grade 7 term 4]</li> <li>Renewable sources of energy are continually replenished, such as hydro power, wind, sunlight, biofuel (wood)</li> </ul>	26										
<b>Week 1 Lesson C</b>											
<b>Topic: Sources of energy</b> <b>Content &amp; Concepts: Renewable and non-renewable sources of energy</b> <ul style="list-style-type: none"> <li>Non-renewable sources of energy cannot be replenished once used, such as fossil fuels (coal, oil, natural gas) and nuclear fuels (such as uranium) [Links to Planet Earth and Beyond Grade 7 term 4]</li> <li>Renewable sources of energy are continually replenished, such as hydro power, wind, sunlight, biofuel (wood)</li> </ul>	26										
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Week 2											
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<b>Week 2 Lesson A</b>											
<b>Topic: Potential and kinetic energy</b> <b>Content &amp; Concepts: Potential energy</b> <ul style="list-style-type: none"> <li>Potential energy is energy that is stored in a system, such as in a stretched rubber band, a weight balanced on the edge of a table, a cell (battery), fuel</li> <li>There is also potential energy in food [all energy is measured in a unit called the joule (J)]. The energy content in foods is usually labelled on food packaging [Note: definition and calculation of joules is NOT required]</li> </ul>	26										
<b>Week 2 Lesson B</b>											
<b>Topic: Potential and kinetic energy</b> <b>Content &amp; Concepts: Kinetic energy</b> <ul style="list-style-type: none"> <li>Kinetic energy is the energy that a body has when it is moving, such as when a rubber band snaps back, a weight falls off a table, wind blows, water falls, a vehicle moves, current flows through a circuit (electricity)</li> </ul>	26										
<b>Week 2 Lesson C</b>											
<b>Topic: Potential and kinetic energy</b> <b>Content &amp; Concepts: Potential and kinetic energy in systems</b> <ul style="list-style-type: none"> <li>Potential and kinetic energy are involved in:               <ul style="list-style-type: none"> <li>mechanical systems</li> <li>thermal (heating) systems</li> </ul> </li> </ul>	26										
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<b>Week 3 Lesson A</b>											
<b>Topic: Potential and kinetic energy</b> <b>Content &amp; Concepts: Potential and kinetic energy in systems</b> <ul style="list-style-type: none"> <li>Potential and kinetic energy are involved in:               <ul style="list-style-type: none"> <li>electrical systems</li> <li>biological systems</li> </ul> </li> </ul>	26										
<b>Week 3 Lesson B</b>											
<b>Topic: Potential and kinetic energy</b> <b>Content &amp; Concepts: Law of conservation of energy</b> <ul style="list-style-type: none"> <li>Energy can neither be created nor destroyed but can be converted from one form to another</li> <li>Energy can be transferred in a system when different parts of the system interact with one another and cause changes</li> </ul>	27										
<b>Week 3 Lesson C</b>											
<b>Topic: Potential and kinetic energy</b> <b>Content &amp; Concepts: Law of conservation of energy</b> <ul style="list-style-type: none"> <li>Energy can also be transferred from one system to another such as from an electrical system to a mechanical system in a motor</li> </ul>	27										
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<b>Week 4 Lesson A</b>											
<b>Topic: Heat transfer</b> <b>Content &amp; Concepts: Heating as a transfer of energy</b> <ul style="list-style-type: none"> <li>• Heating is a process in which energy is transferred from a hotter body to cooler body</li> <li>• The energy transfer continues until both bodies are at the same temperature</li> <li>• Heat is transferred in three ways by:               <ul style="list-style-type: none"> <li>○ conduction</li> <li>○ convection</li> <li>○ radiation</li> </ul> </li> </ul>	27										
<b>Week 4 Lesson B</b>											
<b>Topic: Heat transfer</b> <b>Content &amp; Concepts: Conduction</b> <ul style="list-style-type: none"> <li>• Conduction is the transfer of heat between solid objects that are in direct physical contact with each other</li> <li>• Heat “travels” from the source of heat through the object, or from one object to another by conduction</li> </ul>	27										
<b>Week 4 Lesson C</b>											
<b>Topic: Heat transfer</b> <b>Content &amp; Concepts: Conduction</b> <ul style="list-style-type: none"> <li>• Metals are conductors of heat. Some metals conduct heat better than others</li> <li>• Good conductors are used for making things such as cooking pots</li> <li>• Other materials prevent/slow down conduction of heat, and are called insulators of heat (such as plastics and wood). These are generally poor conductors of heat</li> </ul>	27										
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Week 5											
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Week 5 Lesson A											
<b>Topic: Heat transfer</b> <b>Content &amp; Concepts: Convection</b> <ul style="list-style-type: none"> <li>• Convection is the transfer of heat from one place to another by the movement of liquid or gas particles:                             <ul style="list-style-type: none"> <li>○ air and water expand when heated and the particles move upwards. When cooled they move down again. This is called a convection current</li> </ul> </li> </ul>	28										
Week 5 Lesson B											
<b>Topic: Heat transfer</b> <b>Content &amp; Concepts: Radiation</b> <ul style="list-style-type: none"> <li>• Radiation is the transfer of heat and does not require physical contact or movement of particles</li> <li>• The heat from the Sun travels mainly by radiation across empty space to the Earth</li> </ul>	28										
Week 5 Lesson C											
<b>Topic: Heat transfer</b> <b>Content &amp; Concepts: Radiation</b> <ul style="list-style-type: none"> <li>• Shiny surfaces (such as silver) are good reflectors of radiant heat and dark surfaces (such as black) absorb heat energy (links to Light in Grade 8 and FET)</li> <li>• Radiation heats up dark surfaces more quickly (absorb heat) than it heats up shiny surfaces (reflect heat)</li> </ul>	28										
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<b>Week 6 Lesson A</b>											
<b>Topic: Insulation and energy saving</b> <b>Content &amp; Concepts: Using insulating materials</b> <ul style="list-style-type: none"> <li>Heat can be 'lost' through conduction, convection and radiation from our bodies and objects such as electric geysers</li> </ul>	28										
<b>Week 6 Lesson B</b>											
<b>Topic: Insulation and energy saving</b> <b>Content &amp; Concepts: Using insulating materials</b> <ul style="list-style-type: none"> <li>Heat can also be gained through radiation, conduction and convection, for example in solar water heaters</li> </ul>	28										
<b>Week 6 Lesson C</b>											
<b>Topic: Insulation and energy saving</b> <b>Content &amp; Concepts: Using insulating materials</b> <ul style="list-style-type: none"> <li>People use insulating materials to help minimise heat loss in winter or heat gain in summer</li> </ul>	28										
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<b>Week 7 Lesson A</b>											
<b>Topic: Insulation and energy saving</b> <b>Content &amp; Concepts: Using insulating materials</b> <ul style="list-style-type: none"> <li>Insulating materials slow down heat transfer (heat loss or gain) through conduction, convection and radiation. Insulators are used:               <ul style="list-style-type: none"> <li>for making things such as “cool boxes”</li> <li>in the ceilings of buildings,</li> <li>for clothing (such as coats, jerseys, woolly hats) and blankets</li> </ul> </li> </ul>	28										
<b>Week 7 Lesson B</b>											
<b>Topic: Insulation and energy saving</b> <b>Content &amp; Concepts: Using insulating materials</b> <ul style="list-style-type: none"> <li>Conservation of heat energy in homes and buildings can be improved by minimising heat loss in winter and heat gain in summer</li> </ul>	28										
<b>Week 7 Lesson C</b>											
<b>Topic: Insulation and energy saving</b> <b>Content &amp; Concepts: Using insulating materials</b> <ul style="list-style-type: none"> <li>Many indigenous, traditional homes and technologies in South Africa are designed for our climate and to be energy efficient</li> </ul>	28										
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Week 8											
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<b>Week 8 Lesson A</b>											
<b>Topic: Energy transfer to surroundings</b> <b>Content &amp; Concepts: Useful and 'wasted' energy</b> <ul style="list-style-type: none"> <li>Systems such as appliances, tools, vehicles, machines provide useful energy outputs</li> </ul>	29										
<b>Week 8 Lesson B</b>											
<b>Topic: Energy transfer to surroundings</b> <b>Content &amp; Concepts: Useful and 'wasted' energy</b> <ul style="list-style-type: none"> <li>Some energy that is transferred in a system can escape to the surrounding environment as 'wasted energy'</li> <li>The output energy in a system is always less than the input energy, because some of the energy escapes to the surroundings</li> </ul>	29										
<b>Week 8 Lesson C</b>											
<b>Topic: Energy transfer to surroundings</b> <b>Content &amp; Concepts: Useful and 'wasted' energy</b> <ul style="list-style-type: none"> <li>'Wasted' energy can escape in the form of heat and/or sound               <ul style="list-style-type: none"> <li>sound is an example of 'wasted' energy in an electric drill, food processor, hair dryer</li> <li>heat is an example of 'wasted' energy in a candle, lamp, engine</li> </ul> </li> </ul>	29										
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Week 9 Lesson C											
<p><b>Topic: The national electricity supply system</b></p> <p><b>Content &amp; Concepts: Energy transfers in the national grid</b></p> <ul style="list-style-type: none"> <li>• South Africa has a limited supply of electrical energy</li> <li>• There are many different ways to use energy wisely and to save energy at home: by turning off lights and appliances, using energy saving light bulbs, wearing warm clothing, stopping cold draughts, using energy efficient appliances, matching pot size to stove plate and using a “hotbox” for cooking</li> </ul>	30										
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Week 10											
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<b>Revision</b>											
	26-30										
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