

Heat and Temperature Review

What heat-related technologies do we use to meet human needs, based on what scientific principles? What implications do these technologies have for sustainable use of resources?

<p>Key Concepts (Unit At A Glance Science Focus 7 p. 262) Links to Topic Notes provided</p>	<p>Guiding Questions and Activities to Help you Study</p>
<p>Topic 1 Thermal Energy usage Measuring temperature</p>	<ul style="list-style-type: none"> - Can you identify how Thermal Energy is used? - How is temperature measured? - What is the relative temperature of freezing water, boiling water, normal body temperature and comfortable room temperature?
<p>Topic 2 Technological devices and systems using Thermal Energy</p>	<ul style="list-style-type: none"> - What is a thermocouple, a bimetallic strip, a recording thermometer and a infrared thermogram?
<p>Topic 3 The Particle Model of Matter Compressibility of solids, liquids and gases Properties of solids, liquids and gases Thermal Energy, heat and temperature</p>	<ul style="list-style-type: none"> - What are the key points addressed in the Particle Model of Matter? - Explain how gas particles can be compressed and what happens to the volume of the gas. - What properties distinguish solids, liquids and gases? - Define Thermal Energy, Heat and Temperature in terms of the Particle Theory.
<p>Topic 4 Thermal expansion and contraction Thermometers and Thermostats.</p>	<ul style="list-style-type: none"> - Describe expansion and contraction of solids liquids and gases in terms of the Particle Model - Why are two different metals used to make a thermocouple and a thermostat (bimetallic strip)?
<p>Topic 5 Changes of state: melting, freezing, vaporization, condensation and sublimation</p>	<ul style="list-style-type: none"> - Describe the Changes of State and the terminology when a substance undergoes a specific change.
<p>Topic 6 Energy transfer systems consist of an energy source; direction of energy transfer; control systems; and waste heat.</p>	<ul style="list-style-type: none"> - Explain, using an operational definition, the differences between conduction, convection and radiation - in terms of energy transfer. - Describe what creates a convection current. - How is energy transferred differently in solids than it is in gases and liquids? - What are the five common characteristics that are involved in all energy transfer systems?
<p>Topic 7 Sources of Thermal Energy: chemical, electrical, mechanical, nuclear, geothermal, solar, wind and fossil fuels. Advantages and disadvantages of using Fossil Fuels Thermal Pollution Greenhouse Effect</p>	<ul style="list-style-type: none"> - Describe the impacts different energy sources have on the environment. - The Green Solution involves using alternative energy. Why is it called the Green Solution and what positive impacts does it have on the environment? - Alberta's main source of energy is Fossil Fuels. Describe this energy resource in terms of its abundance and importance to Albertans. - Describe what happens to create the Greenhouse Effect. - What is Thermal Pollution and what causes it?
<p>Topic 8 Conservation technologies and strategies to help us conserve fossil fuels and make their use safer.</p>	<ul style="list-style-type: none"> - Provide an operational definition of cogeneration. - Describe technologies and practices that conserve fossil fuel resources - How does a programmable thermostat work? - What is an ENERGUIDE? What does this label tell the consumer?

Design a Concept Map linking the ideas introduced and reinforced in this Unit on Heat and Temperature

Try some of the Practice Quizzes to see how much you have recalled from this Unit

These Internet links may help you find out more information about the key concepts from this Unit.

[heat energy needs](#) and [technologies](#)

[thermal energy](#)

[particle model \(matter\)](#)

[temperature](#)

[thermal expansion](#)

[change of state](#)

[heat transfer](#)

[insulation](#) and [thermal conductivity](#)

[thermal energy sources](#)

[energy conservation \(energy efficiency ratings\)](#)