

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 \(energy efficiency ratings\)](#)