

Everything you need to know about:

(Unit Four)

Heat

Objectives:

- The student will investigate and understand temperature scales, heat, and thermal energy.
- Compare and contrast methods of thermal energy transfer (conduction, convection, and radiation).
- Analyze a time/temperature graph of a phase change experiment to determine the temperature at which the phase change occurs (freezing point, melting point, or boiling point).

Key terms:

- | | |
|--|---------------------------------------|
| <input type="checkbox"/> temperature | <input type="checkbox"/> liquid |
| <input type="checkbox"/> heat | <input type="checkbox"/> gas |
| <input type="checkbox"/> thermal energy | <input type="checkbox"/> plasma |
| <input type="checkbox"/> conduction | <input type="checkbox"/> endothermic |
| <input type="checkbox"/> convection | <input type="checkbox"/> exothermic |
| <input type="checkbox"/> radiation | <input type="checkbox"/> freezing |
| <input type="checkbox"/> absolute zero | <input type="checkbox"/> melting |
| <input type="checkbox"/> conductor | <input type="checkbox"/> condensation |
| <input type="checkbox"/> insulator | <input type="checkbox"/> evaporation |
| <input type="checkbox"/> thermal expansion | <input type="checkbox"/> deposition |
| <input type="checkbox"/> Joule | <input type="checkbox"/> sublimation |
| <input type="checkbox"/> heat engine | <input type="checkbox"/> vaporization |
| <input type="checkbox"/> solid | |

Essential Questions:

1. What are the three temperature scales?

2. How is Kelvin different from the other scales? _____

3. What is thermal expansion? _____

4. How are heat and thermal energy related? _____

5. Name the three types of heat energy transfer and give an example of each.

6. Give an example of a material that is a conductor and a material that is an insulator. _____

7. Name the three states of matter and describe the particle movement of each. _____

8. Draw the phase change triangle and label it.

Virginia Standards of Learning for Heat

PS.2 *The student will investigate and understand the nature of matter. Key concepts include*

- b) solids, liquids, and gases;

PS.7 *The student will investigate and understand temperature scales, heat, and thermal energy transfer. Key concepts include*

- a) Celsius and Kelvin temperature scales and absolute zero;
- b) phase change, freezing point, melting point, boiling point, vaporization, and condensation;
- c) conduction, convection, and radiation; and
- d) applications of thermal energy transfer.



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BELL RINGERS



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