

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Molten Lava and Frozen Tundra: 7th Grade Thermal Energy Quiz

Examine how thermal energy behaves in deep sea hydrothermal vents and spacecraft insulation through the lens of conduction and the laws of thermodynamics.

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**1. When a blacksmith plunges a red-hot iron horseshoe into a bucket of cold water, in which direction does the thermal energy move?**

- A. From the cold water into the hot horseshoe
- B. From the hot horseshoe into the cold water
- C. The energy stays exactly where it started
- D. Energy moves back and forth in a loop forever

**2. True or False: Energy can be completely destroyed if a machine is not efficient enough.**

- A. True
- B. False

**3. In a deep-sea hydrothermal vent, hot water rises while colder water sinks to take its place. This method of heat transfer is called \_\_\_\_\_.**

- A. Radiation
- B. Insulation
- C. Convection
- D. Conduction

**4. Why do engineers use ceramic tiles on the bottom of a space shuttle entering the atmosphere?**

- A. To speed up the flow of heat into the cabin
- B. To prevent heat from conducting into the shuttle's frame
- C. To create electricity from the friction
- D. To make the shuttle heavier so it falls faster

**5. The total amount of disorder or randomness in a system is known as \_\_\_\_\_.**

- A. Entropy
- B. Friction
- C. Velocity
- D. Density

**6. True or False: Thermal radiation is the only form of heat transfer that can travel through the vacuum of empty space.**

- A. True
- B. False

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**7. If you hold a piece of chocolate in your hand and it begins to melt, which process is primarily responsible for the heat transfer?**

- A. Convection
- B. Evaporation
- C. Conduction
- D. Radiation

**8. Scientists use the Kelvin scale to measure temperature. The theoretical point where all molecular motion stops is called \_\_\_\_\_.**

- A. Freezing Point
- B. Absolute Zero
- C. The Boiling Mark
- D. Thermal Equilibrium

**9. True or False: A 'heat sink' in a computer is designed to pull thermal energy away from the CPU to prevent overheating.**

- A. True
- B. False

**10. When you use an electric kettle to boil water, what is the primary energy transformation occurring according to the First Law of Thermodynamics?**

- A. Nuclear energy transforms into light
- B. Electrical energy transforms into thermal energy
- C. Thermal energy is destroyed by the water
- D. Mechanical energy transforms into chemical energy