

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

## Thermal Theories: Thinking Through 3rd Grade Thermodynamics

Moving beyond basic temperature reading, students evaluate complex heat transfer scenarios through logic-based analysis and synthesis of energy flow patterns.

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**1. A wildlife researcher notices that a desert lizard sits on a dark, flat rock for 20 minutes every morning. Why is the lizard choosing this specific rock behavior?**

- A. To keep the rock's temperature from rising
- B. To gain thermal energy quickly via conduction
- C. To create a convection current inside its body
- D. To block the sun's radiation from hitting the ground

**2. If you leave a hot cup of cocoa on the counter, the heat energy moves from the colder room air into the hot cocoa.**

- A. True
- B. False

**3. An inventor is designing a winter coat. To stop heat from leaving the body, they should use a material called an \_\_\_\_\_.**

- A. Incubator
- B. Indicator
- C. Insulator
- D. Integrator

**4. Imagine you have a sealed box of air. If you use a tool to compress (squeeze) that air very quickly, what will happen to the energy inside?**

- A. The energy is destroyed because the air is squished
- B. The air particles slow down and become frozen
- C. The energy disappears until the box is opened
- D. Doing work on the air increases its internal energy

**5. When a chef uses a wooden spoon instead of a metal spoon to stir boiling soup, they are preventing heat transfer by \_\_\_\_\_.**

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

**6. Energy can be created by a very powerful heater as long as it has enough batteries.**

- A. True
- B. False

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**7. You place a tray of water in the freezer. As the water turns to ice, what is happening to the thermal energy of the water?**

- A. The water is gaining cold energy from the freezer
- B. Thermal energy is leaving the water and moving into the freezer air
- C. The energy is being destroyed so the water can become solid
- D. The energy is turning into a type of matter called ice

**8. In a house with two floors, the upstairs usually feels warmer than the downstairs because of \_\_\_\_\_.**

- A. Friction
- B. Radiation
- C. Convection
- D. Magnetism

**9. Entropy is a measure of how organized and orderly energy is in a system.**

- A. True
- B. False

**10. Scientists use the idea of 'Absolute Zero' to describe a state where molecules have almost no movement. This is related to the:**

- A. First Law of Thermodynamics
- B. Second Law of Thermodynamics
- C. Third Law of Thermodynamics
- D. Law of Gravitation