

Name \_\_\_\_\_

## Heat vs. Temperature: Unlocking the Mystery of Energy

### Open-Ended Response Answer Key

1. When you pour the cold milk into the hot coffee, heat from the coffee is transferred to the milk. This causes the milk's thermal energy and temperature to increase, while the coffee's temperature may decrease slightly. Eventually, both liquids reach a common temperature in between their initial temperatures.
2. In designing an engine, understanding the relationship between heat and temperature is crucial. An engine converts heat energy into mechanical work, and this process relies on precise control of temperature changes within the engine components to maximize efficiency.
3. To demonstrate the difference between heat and temperature, you can use two containers of water at different temperatures and show how adding heat to both containers increases their thermal energy and temperature but doesn't make them the same temperature.
4. Temperature plays a significant role in determining weather conditions because it influences the behavior of the atmosphere. Warm air rises, cold air sinks, and the interaction between different temperature regions in the atmosphere leads to weather patterns and phenomena like rain, storms, and wind.

