

Name _____

How do Thermometers Measure Temperature?

Open-Ended Response Answer Key

1. Liquid-in-glass thermometers and digital thermometers both measure temperature, but they do so using different principles. Liquid-in-glass thermometers use the expansion of liquid to move a scale, while digital thermometers send an electric current through a sensor to measure temperature. Liquid-in-glass thermometers are typically used for general temperature measurement, while digital thermometers are more accurate and suitable for various applications.
2. A scientist studying extremely hot substances might choose to use a thermocouple because thermocouples can withstand high temperatures, making them suitable for such experiments. Other types of thermometers, like liquid-in-glass or digital thermometers, may not be able to handle the extreme heat without getting damaged.
3. The invention of digital thermometers has improved temperature measurement in daily life by providing faster and more accurate readings compared to traditional liquid-in-glass thermometers. Digital thermometers are also easy to read and can store previous temperature measurements for reference, making them more convenient for medical and home use.
4. Using an infrared thermometer would be advantageous over using a liquid-in-glass thermometer when measuring the temperature of a hot or potentially dangerous object, such as a hot pan on a stove. An infrared thermometer can measure the temperature without direct contact, reducing the risk of burns or injuries. Additionally, it provides quick and accurate readings.

