Observation vs. Inference in Scientific Inquiry

What Is an Observation?

An **observation** is information gathered using your **five senses** or scientific tools. Observations are facts that can be directly seen, heard, measured, or recorded.

Scientist can make **qualitative observations** (observations based on what they observe written out)

Scientists often use tools to make **quantitative observations** (observations that include numbers), such as:

- **Thermometers** to measure temperature
- **Graduated cylinders** to measure volume
- **Balances/scales** to measure mass
- **Rulers** to measure length

Lets practice:

Directions: Write whether each sentence is **Qualitative Data** (QL) or **Quantitative Data** (QN).

1. The rock is smooth and gray in color. _____
2. The plant is 12 centimeters tall._____
3. The water feels warm to the touch._____
4. The solution has a sour smell._____
5. The mass of the object is 45 grams._____
6. The balloon is bright red and shiny._____
7. The beaker contains 250 mL of liquid._____
8. The metal is rough and cold._____
9. The student measured a temperature of 18°C._____
10. The leaves are green and have jagged edges._____

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What Is an Inference?

An **inference** is a logical explanation or conclusion based on observations and prior knowledge. Inferences are educated guesses that help explain what the observations might mean.

Examples of Inferences:

- The plant is healthy because it is growing taller.

Lets practice:

Directions: Write whether each sentence is an **Observation** or an **Inference**.

1. The sky is cloudy and gray._____
2. The sidewalk is wet._____
3. It probably rained last night._____
4. The plant is 20 cm tall._____
5. The student is smiling during the experiment._____
6. The liquid changed from blue to clear._____
7. The beaker is hot, so it was just heated._____
8. The thermometer reads 32°C._____
9. The animal is hiding, so it might be scared._____
10. The rock has a smooth surface._____

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