Process Skills: Observing

Name: _____

Observing is using one or more of your senses to gather information about the world. Information gathered from observations is called evidence, or data. When you make observations in science, you want them to be accurate and objective. An *accurate* observation is an exact report of what your senses tell you. An *objective* observation avoids opinions, or bias, based on a specific point of view. *Quantitative* observations include numbers. *Qualitative* observations do not have numbers but include descriptions.

Hints for Making Observations

- **Be sure your observations are accurate and objective.**
- **You can record qualitative observations based on your sense of sight, hearing, touch, and/or smell. Safety First: NEVER taste any substance in the laboratory.**
- **Whenever possible, count or use instruments to make quantitative observations. Always include units, for example, for a mass measurement of 5 g or a distance measurement of 15 m.**
- **If no measuring instruments are available, estimate using known standards. For example, an object is about as long as a new pencil or about the mass of a paper clip.**

Practise Your Observing Skills

Put a check mark beside the observations you think are **accurate**.
Underline any that are **objective**.
Circle any that are **quantitative**.
Put a box around any that are **qualitative**.
Explain how you made these decisions.

1. One student recorded: "Sixteen students were present for attendance, and five other students arrived afterward."

2. Another student recorded: "Half the class was late."

3. A third student recorded: "The friendliest people were there first."

4. One visitor to the classroom wrote: "The classroom walls are yellow."

5. Another visitor noted: "The teacher's desk is about as long as an adult's bicycle."

6. A third visitor wrote: "The chalkboard is 1 m high and 2 m wide."

Process Skills: Classifying

Name: _____

Classifying is organizing objects and events into groups according to a system, or organizing idea. The most simple type of classification system uses two groups, one that has a certain property and another that does not. Other systems may begin with three or more groups. Scientists choose the system that best suits their purpose. They may classify to organize objects, such as the chemicals stored in a laboratory. They also classify to help simplify and make sense of the natural world. Good classification systems make finding information easier. They also help to clarify the relationships among the things being classified.

Hints for Classifying

- **Carefully observe the group of objects to be classified. Identify similarities and differences among the objects.**
- **Choose a characteristic that some of the objects share. Using this characteristic as the organizing idea, then place the objects into groups.**
- **Examine the groups and decide if they can be further classified. Each round of further classification may need a different organizing idea.**

Practise Your Classifying Skills

1. Write down everything that you used in some way since waking up this morning until arriving at school. Choose a system or organizing idea to classify this list into two groups. Explain your reasoning.

2. Consider your two groups. How could you further classify these items? If you wish, continue until you have small groups that contain only very similar items.

3. Compare your classification system with that of another student. Make any modifications you wish.

4. Use your classification system to answer these questions:
   - What do I use that I have only at home?
   - If I travel away from home, what would I need to take with me to get ready for the day?
   - How would a power failure affect my morning routine?
   - How many other people are involved in getting me to school each day?