



Nature of Science



Name _____

Bubble Tube Observations

SAFETY: Use care handling the tubes; they will break!

Purpose: To practice making observations

Background Information: One of the most important skills in science is that of **OBSERVATION**. Most of the time we think of observation as something we do with our eyes; when we see something, we observe it. However, all five of our senses can be used to make observations: sight, hearing, taste, touch, and smell.

A good scientist is observant and notices things in the world. She or he notices what's going on in the world and becomes curious about what's happening. Observing can include reading and studying what others have done in the past because scientific knowledge is collective.

Observations in science are called **DATA**.

We can make two kinds of observations: those that are **FACTS**, and those that are **OPINIONS**. Facts are those things that are true for everybody. A scientist looks seriously at information and attempts to avoid all sources of bias in making observations. Opinions are beliefs based on personal preference.

Data may also be **QUALITATIVE** or **QUANTITATIVE**.

Qualitative data is information that is hard to measure, count, or describe in numbers. It describes the qualities or characteristics of something. Examples are colors, tastes, and sounds.

Quantitative data is information that can be expressed in numbers. If information can be counted or measured, then it is qualitative data. Tools are often used to collect qualitative data. Examples include amounts, temperature, mass, and length.

As you make observations, you may begin to ask questions about those observations.

Observations are usually written down, or recorded in **DATA TABLES** or **DATA CHARTS**. Tables and charts help keep data organized and easy to understand.

Materials:

Set of 3 tubes	Meter stick	Stopwatch
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Procedure:

1. Work with your partner
2. Read the procedure carefully.
3. Make a data table to record your observations before you begin.
4. Pick one tube (it does not matter which one).
5. Move the tube so that the bubble inside tube moves up and down the tube.
6. Record your qualitative and quantitative observations in your table.
7. Repeat with the other tubes.

Data: Make a data table on the back of this paper to record your observations.