**Scientific Method Lab (Bubble Gum)**

**Purpose:** To use the scientific method to solve problems and collect data-based observations. In doing the investigation students will know how to use SI units and differentiate qualitative and quantitative data.

Observation: You have 2 different types of gum.

**Problem (Question):** Which piece of bubble gum blows the biggest bubbles?

**Hypothesis:** State in the “If…then...” format which piece of gum will blow the biggest bubble. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Materials:**

2 small pieces of wax paper 1 meter long piece of string Triple Beam Balance

I meter stick 2 different bubble gums (A and B)

**Procedures:**

1. Make 3 observations about each brand of gum in Table 1 below. Make sure to include the names next to A and B.
2. Now weigh each piece of gum and record the weight in Table 2 below.
3. The person with gum A **(ONLY)** will chew their piece of gum for 3 minutes. The **person with gum B does not begin chewing** until all the tests on gum A are complete.
4. The person with gum A will now blow a bubble.
5. Using a string, your partner will measure the diameter (distance across the largest part) of the bubble. Put the string on the meter stick to measure the distance in centimeters (cm).
6. Record the measurement in the data table 3 below. Repeat the process for 3 more trials.
7. Find the average bubble size for brand A (add all the distances and divide by 4) and put in the data table 3.
8. Repeat steps 1-7 with brand B gum.

**Data:**

**Table 1 (Observations)**

|  |  |  |
| --- | --- | --- |
| Brand of Gum | A =  | B =  |
| Observations  |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |

**Table 2 (Weight in grams)**

|  |  |  |
| --- | --- | --- |
| Brand of Gum | A =  | B = |
| Weight (grams) |  |  |

**Table 3 (Bubble size)**

|  |  |  |
| --- | --- | --- |
| Diameter (cm) | A = | B =  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| Average |  |  |

**Conclusion:**

Review your data.

1. What brand of gum is best for blowing larger bubbles? \_\_\_\_\_\_\_\_\_
2. What your hypothesis supported or rejected? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Restate your hypothesis using Accept or Reject: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Part 2**

**Problem (Question):** How does gum ‘strechability’ relate to bubble size?

**Hypothesis (If/Then statement):** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedures:**

1. The person chewing brand A gum, will roll the gum into a ball.
2. The person who chewed gum A will hold it in their hand. Another person in the group will hold the same piece of gum using wax paper. Place the gum near your chest; begin to slowly walk backwards (away from each other). **Do this slowly!!!**
3. Another team member will measure the distance the gum stretched before it broke (use centimeters) In Table 4 below.
4. Record the measurement in the data chart. ONLY DO ONE TRIAL
5. Repeat steps 1-4 with gum B

**Data:**

**Table 4**

|  |  |  |
| --- | --- | --- |
| Brand of Gum | A = | B = |
| Distance (cm) |  |  |

**Conclusion:**

How does gum ‘stretchability’ relate to bubble size? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List 4 variables that may affected the outcome of this experiment/

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain how the data collected can be described as both qualitative and quantitative.