**Rubber Band Variables Lab**

**Roles:**

**Materials Collector/Measurer = collects all materials needed for lab and returns them when finished/Measures length of rubber band**

**Data Recorder = records all data observed in lab and shares with groups after procedure is completed**

**Procedure Reader = responsible for carefully reading procedure to group and making sure that everyone is doing the experiment correctly!**

**Experimenter = takes instruction from the Procedure Reader and performs the experiment (with the help of other group members)**

**\*\*If in a 3-person group, 1 person may have 2 roles\*\***

**Background: ( answer questions in lab notebook using PQIA)**

1. What is an independent variable?
2. What is a dependent variable?
3. What is a controlled variable?

**Question:**

 How does the weight of washers affect the “stretchability” of a rubber band?

**Variables:** (copy and complete the information below)

* Independent variable = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Dependent variable = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Controlled variables = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis:**

*Use If, then, because format…*

**Procedure:**

1. Lay the dowel rod on the table with the end hanging off the edge – put 3-4 textbooks on top of the dowel to hold it down on the table

2. Attach the paper clip to the rubber band, open one end of the paperclip to make a “hook” for the washers.

3. Hang the rubber band over the end of the dowel.

4. Measure the length of the rubber band in ***cm***. Record this data in the chart.

5. Place 1 washer on the paper clip “hook”. Measure and record the

length of the rubber band again (\*\*Always in ***cm***!)

6. Continue adding washers, one washer at a time, and measuring the

rubber band until a total of 10 washers have been added.

7. Return materials

8. Data Recorder should share their data with the group.

9. Work on Technical Drawings!

**Data Table: (create this table in your notebook!)**

|  |  |
| --- | --- |
| **Number of Washers** | **Length of Rubber Band in cm** |
| 0 |  |
| **1** |  |
| **2** |  |
| **3** |  |
| **4** |  |
| **5** |  |
| **6** |  |
| **7** |  |
| **8** |  |
| **9** |  |
| **10** |  |

**Technical Drawings:**

Draw what you saw happen in the lab – ***be sure to label the lab equipment, liquids, etc. ADD COLOR***! (use colored pencils). You will want a drawing of what the rubber band looked like before any washers were added and one showing what it looked like after all 10 washers were added.

**Graph:**

Make a ***LINE GRAPH*** to show your data. Use the graph paper provided.

Cut out graph paper and paste into notebook.

Label the following parts:

* X-axis: Number of washers (🡨independent variable always goes on x-axis!)
* Y-axis: Length of rubber band (cm) (🡨dependent variable always goes on y-axis)
* Title of graph: Rubber Band Variables
* Label X-axis from 0 (at the corner) to 10 (every other line = 1)
* Label y-axis from 0 (at the corner) up to your highest measurement. Each square must equal the same amount…

\*\* Graph your points from your data table. Connect the points.

**Conclusion:**

(7th Grade - Follow directions on your Lab Format sheet for CONCLUSION).

(6th Grade – Follow the Lab Format sheet directions for writing a conclusion)

These should be FULL sentences in paragraph form!

**Procedure:**

1. Tape the dowel to your desk so that it hangs over the edge.

2. Attach the paper clip to the rubber band, open one end of the rubber

band to make a “hook” for the washers.

3. Hang the rubber band over the end of the dowel.

4. Measure the length of the rubber band in ***cm***. Record this data in the chart.

5. Place 1 washer on the paper clip “hook”. Measure and record the

length of the rubber band again (\*\*Always in ***cm***!)

6. Continue adding washers, one washer at a time, and measuring the

rubber band until a total of 10 washers have been added.

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**Conclusion:**

 Yesterday in science class we did a lab about the “stretchability” of rubber bands. We put a dowel on the table, put textbooks on top, put a rubber band on the dowel, attached a paperclip to the rubber band and added washers to it. I predicted that the rubber band would stretch more as you added more washers to it. My prediction was correct. The IV was the number of washers. The DV was the length of the rubber band (in cm). The more washers we added onto the paperclip, the longer the rubber band became. What I found out is that by adding more weight, it increases the “stretchability” of our rubber band. I know this is true because with 0 washers the length was **8.3cm** and with 10 washers, the length was **11.6cm**. A possible problem was the fact that for 5, 6 and 7 washers we measured a rubber band length of 9.8cm. I think this may have happened because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 I think my results are valid. The scientific reason we got these results is because the more mass added to an object, the stronger the pull of gravity will be on that object. As we added more washers, gravity was pulling the rubber band down and causing the length to increase.