Towel Testing

Purpose: To practice the skills used to design experiments

Problem: Many brands of paper towels claim that they are the strongest. Research is needed to determine which brand of paper towel really is the strongest.

Background Information: Since paper towels are usually wet when they are being used, the “wet strength” of the towel is important. Wet strength is the strength of paper when it is wet. This can be measured by the amount of mass that a wet paper towel can hold.

The Task: To design an experimental investigation (a fair test) to test the strength of three different brands of paper towels. You will have these materials to conduct the experiment:

<table>
<thead>
<tr>
<th>3 Brands of paper towels</th>
<th>1 ball Jar</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduated cylinder</td>
<td>Pennies</td>
<td>Triple Beam Balance</td>
</tr>
</tbody>
</table>

Step 1: Identify the INDEPENDENT VARIABLE [what you will change, or the difference between the groups], the DEPENDENT VARIABLE [what you will observe and measure, the data that you will collect], and all of the CONTROLLED VARIABLES you can think of [all of the variables that could change, but won’t].

- Independent Variable:
- Dependent Variable:
- Controlled Variables:
Step 2: Write a RESEARCH QUESTION using affect or effect.

Step 3: Write a HYPOTHESES that shows the expected relationship between the variables. Use an IF, THEN statement.

Step 4: Design an EXPERIMENTAL INVESTIGATION to test your hypothesis. Decide:

✓ What your specific independent variables are:

✓ What you are going to observe and measure:

✓ How you will do the measuring:

✓ How many trials you will have:
Step 5: Write the PROCEDURE you will follow during your investigation, step-by-step.

1.

2.
Step 6: Make the DATA TABLE to record your data. Include a place for your reduced data & measures of central tendency [average].

Step 7: Make a GRAPH of your reduced data. Remember DRY MIX and TAILS. Explain what type of graph you will use and why.
Step 8: **ANALYZE** your data: What story does the graph tell? What do you know about the effect of the independent variable on the dependent variable?
Step 9: Write a CONCLUSION. Answer your original questions. Accept or reject your hypothesis. Use actual data [real numbers] to provide evidence for what you say.

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