



Nature of Science

Name \_\_\_\_\_



## 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:

3 Brands of paper towels	1 ball Jar	Water
Graduated cylinder	Pennies	Triple Beam Balance



**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 **HYPOTHESIS** 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:

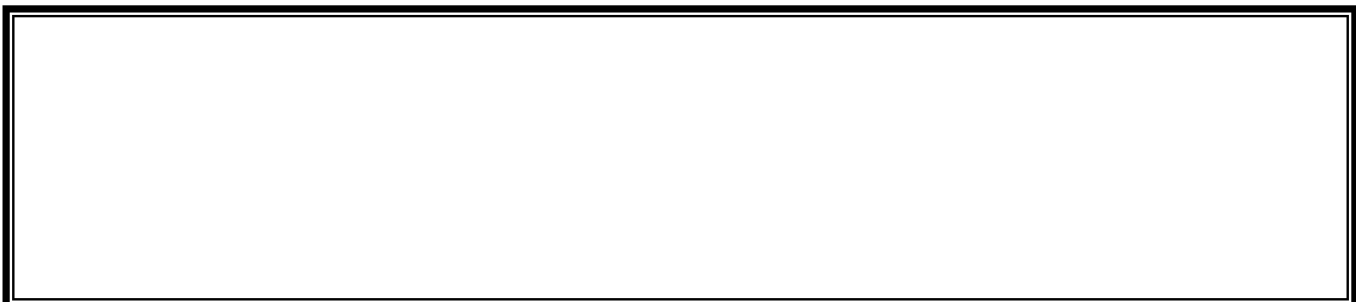
**Step 5:** Write the **PROCEDURE** you will follow during your investigation, *step-by-step*.

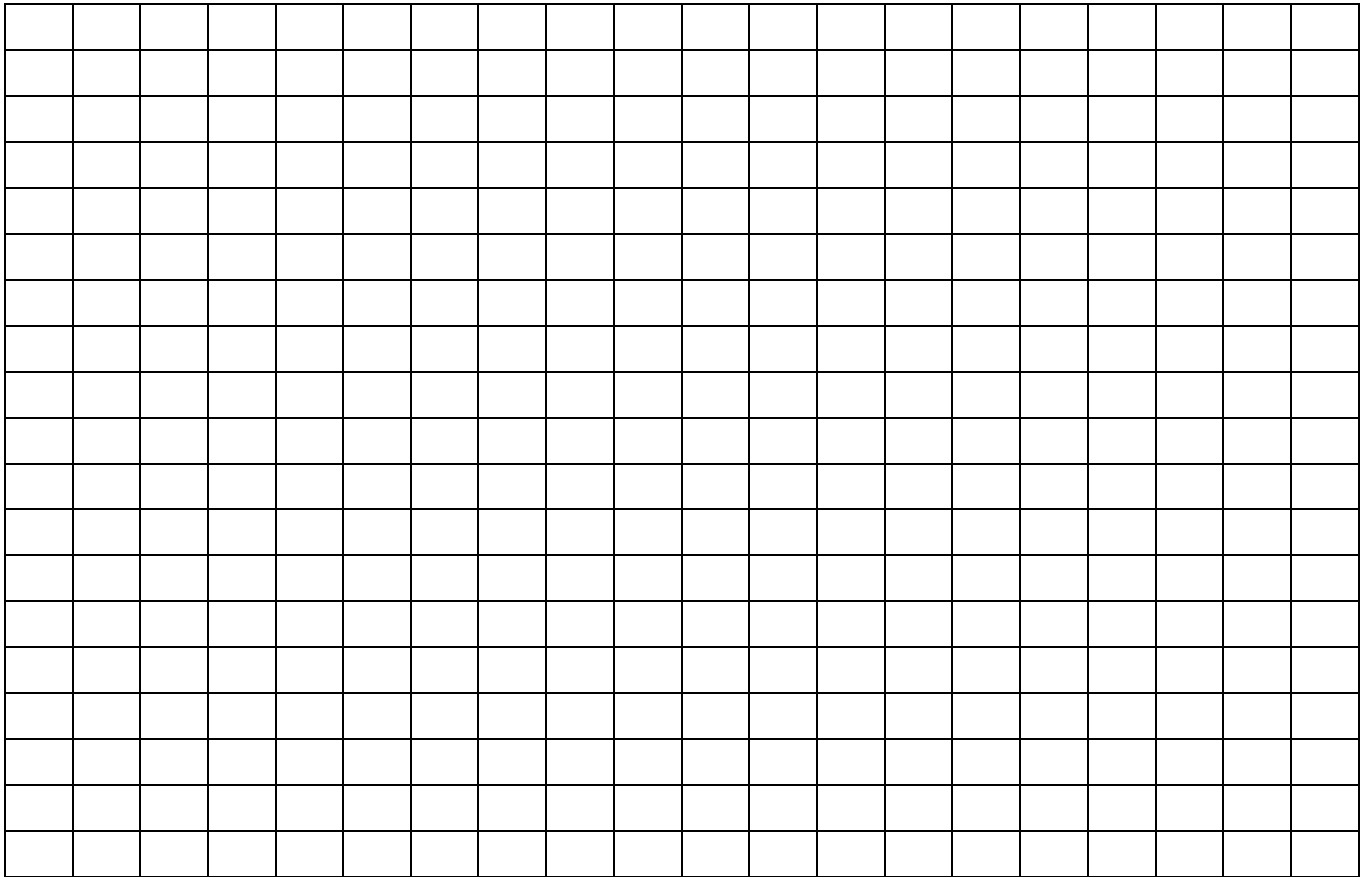
1.
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**Step 6:** Make the **DATA TABLE** to record your data. Include a place for your *reduced data & measures of central tendency* [average].



**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?

