Experimental Design Activity

COMMON SUPERSTITIONS

1. An apple a day keeps the doctor away
2. Eating chocolate causes zits
3. Drinking coffee will stunt a child’s growth
4. If you swim right after eating, you will get cramps
5. If you go outside while your hair is still wet, you will catch a cold
6. Feed a cold, starve a fever
7. The flu shot makes you get sick
8. Break a mirror and you will have seven years bad luck
9. Spit on a new baseball bat before using it for the first time to make it lucky
10. If you blow out all the candles on your birthday cake (in one try), your wish will come true
11. If you catch a falling leaf on the first day of autumn, you will not catch a cold all winter
12. If you crack your knuckles as a child, you will get arthritis when you are older

You will be assigned one of the above superstitions to work on with your table / lab group.

Your group must design an experiment that tests that specific superstition.

Your design can be in the form of a list or written description, but it must be readable enough that others can evaluate it.

Include each of the following elements in as much details as possible:

- independent variable(s)
- control
- dependent variable (s) and how you’ll measure it/them
- replication (sample size)
Experimental Design Activity

**Write the names of all of your group members here:**

Write out the # and the SUPERSTITION that you will be testing here:

DESCRIBE YOUR:
- independent variable(s)

DESCRIBE YOUR:
- control

DESCRIBE YOUR:
- dependent variable(s) and how you’ll measure it/them

DESCRIBE YOUR:
- replication (sample size)
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You are assigned to review another group’s experimental design. Write YOUR name(s) here:

__________________________________________________________________________________________

Write the # and **the SUPERSTITION** that you are REVIEWING:

__________________________________________________________________________________________

Does this experimental design adequately test the stated Hypothesis / Superstition?  
Why do you think so?

__________________________________________________________________________________________

Was the independent variable that they chose appropriate?_______
Why?______________________________________________________________

Was the dependent variable that they chose appropriate?_______
Why?______________________________________________________________

Was the control that they chose appropriate?_______
Why?______________________________________________________________

Is the sample size and repetition of the test sufficient to achieve reportable results?_______
Why?______________________________________________________________

What improvements to the design can you suggest?
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Reflection after PEER REVIEW

The space on this page is reserved for the ORIGINAL GROUP to write some ideas of how they would change their original experimental design, now that they have read over the suggestions provided by their PEER REVIEWERS.
Experimental Design VOCABULARY

**Purpose** – the question you are trying to answer with your experiment.

**Hypothesis** – educated guess or prediction of outcome.

**Qualitative Observation** – use words to describe something’s appearance such as colour or texture. In labs we observe what we can see, hear, smell and IF IT IS SAFE, how it feels when you touch it.

**Quantitative Observation** – use numbers to describe information about an object. Values that are measurable by the experimenter.

**Independent Variable** – the part of the experiment controlled or changed by the experimenter. On a graph this would go on the x axis.

**Dependent Variable** – the part of the experiment that changes because of the independent variable. You observe or measure this part to collect data. On a graph, this would go on the y axis.

**Constant** – the part of the experiment that remains the same throughout to prevent inaccurate conclusions / outcomes.

**Control** – a standard sample to compare to, in the “natural” state. One that is NOT being experimented on or changed at all.

**Inference** – is an attempt to explain or interpret the observations or to identify the cause of what was observed. This is usually done in the discussion section of the lab report, which comes right before the final conclusion.

4 minute VIDEO: [https://youtu.be/7q8acfBx5to](https://youtu.be/7q8acfBx5to)
INDEPENDENT VARIABLE 
What I CHANGE

DEPENDENT VARIABLE 
What I OBSERVE

CONTROLLED VARIABLE 
What I KEEP THE SAME

Types of Variables

Independent
The one thing you change. Limit to only one in an experiment.
Example: The liquid used to water each plant.

Dependent
The change that happens because of the independent variable.
Example: The height or health of the plant.

Controlled
Everything you want to remain constant and unchanging.
Example: Type of plant used, pot size, amount of liquid, soil type, etc.