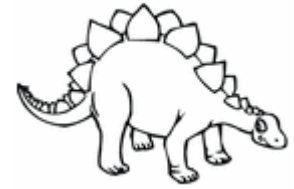




Nature of Science

Name _____



Designing an Experiment

Purpose: To practice designing an experimental investigation.

Background Information: One way to investigate an answer to a question is by doing an EXPERIMENT. A true experiment involves VARIABLES.

In an experiment, scientists ask a question about how one variable [called the INDEPENDENT VARIABLE] will affect another variable [called the DEPENDENT VARIABLE]. Some variables are held CONSTANT - they do not change during the experiment; these are called CONTROLLED VARIABLES.

Usually a HYPOTHESIS is made; this is a prediction about how the independent variable will affect the dependent variable. Then a PROCEDURE is developed to test the hypothesis.

The experiment must be REPEATED SEVERAL TIMES to be confident in the accuracy of the results.

The results [called DATA] of the experiment are recorded, frequently in a TABLE or CHART, and then analyzed.

After the data is analyzed CONCLUSIONS can be drawn about the variables. The original question may be answered, although sometimes more research is needed to be certain of the answer.

A hypothesis is NEVER right or wrong; it is supported by the data or not supported by the data.

Given this research question: *Does the temperature of water affect how long it takes a Magic Grow® capsule and the toy to grow?*

1. Identify the *independent variable* in this question.

2. Identify the *dependent variable* in this question.

3. Identify at least 3 *controlled variables* for this question.

Given these materials:

3 Magic Grow® capsules

Ice

Pot

3 Beakers

Water

Thermometers

Hot Plate

Write a *procedure* to test this hypothesis; use the graphic organizer to help you plan what to do.

<p style="text-align: center;">Steps (What needs to be done)</p>	<p style="text-align: center;">Details (Materials, how much, how often, when, time, temperature)</p>
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

