**Scientific Method Activity**

Date: \_\_\_\_\_\_\_\_\_\_\_\_ Lead Investigating Scientist (Name): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Investigating scientists (Group members): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**General Topic: Exercise and the body**

**Definitions:**

* Variable to Change (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable)
* Variable to Measure (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable
* Variables keep the same (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variables)

**Step 1: Problem**

What is the question the experiment is trying to answer? Include the independent and dependent variables in the question. For example: What fertilizer (independent variable) will grow a bean plant to the tallest height (dependent variable)?

How does \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (independent variable)

Affect the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (dependent variable)

**Step 2: Information**

What **background** information will be helpful to know?

**Step 3: Hypothesis**

If the **independent** variable changes … … then this is what will happen to the **dependent** variable.

Write your **hypothesis** below.

If the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(independent variable) (describe how you will change it)

then the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(dependent variable) (describe the effect of the change)

**Step 4: Experiment** - Write out your **experimental plan**

Materials List: Safety Precautions: Preparation:

Step by step instructions (like a recipe)

1. Take a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of all group members.
2. Record \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Do \_\_\_\_\_\_\_\_\_ jumping jacks. Take \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Record \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Allow heart rate to return to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (Rest in a chair!!!)
6. Repeat 3 & 4 for each group member one at a time while the others rest.
7. Do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ jumping jacks at the same pace. Take \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
9. Allow heart rate to return to the normal rate.
10. Repeat 7 & 8 for each group member one at a time while the others rest.
11. Do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ jumping jacks at the same pace. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
12. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
13. Repeat 11 & 12 for each group member one at a time while the others rest.

**Step 5: Results – Data Table**

Record your data in the data table below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| When the **independent variable** changed: | This was the result (**dependent variable**): | | | | | | |
|  |  | | | | | | |
|  | Trial | | | |  | |  |
|  | 1 | 2 | 3 | 4 | | Total | Average |
|  |  |  |  |  | |  |  |
|  |  |  |  |  | |  |  |
|  |  |  |  |  | |  |  |
|  |  |  |  |  | |  |  |

**Step 5: Results – Graphing**

Title: The effect of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(independent variable) (dependent variable)



**Step 6: Conclusion – Finding Patterns**

Write out your conclusion, answering these questions:

1. What was the purpose of this experiment? (Hint: Look back at the *problem* on the first page)
2. What were the major findings? (What did you learn about the problem?) **Include data examples.**
3. Was the hypothesis supported by the data? Explain.

1. How did the findings compare with other research, other scientific facts you knows, or other experimentation (classmates)?
2. What possible sources of error may have occurred?