**Force Lab**

Directions:

In this lab you will use the scientific method to test acceleration and force. In this lab you will design and complete your own experiment. Your experiment should answer the question: **How does acceleration effect force?** Use the steps of the scientific method to set up your experiment. Spend some time brainstorming and designing your lab. Consider the following: What is mass, what measurements do you need to calculate mass, and how could you get these measurements? What is acceleration, what measurements do you need to calculate acceleration, and how could you get these measurements? What is force, what measurements do you need to calculate force, and how could you get these measurements?

Answer the following Pre-Lab **Questions BEFORE YOU START YOUR EXPERIMENT?**

1. What are the Independent Variables?

a. Calculate the masses of your independent variables

|  |  |  |  |
| --- | --- | --- | --- |
| Objects | Weights in pounds | Weight in Newtons  (weight in pounds X 4.4) | Mass in kilograms  (Weight in Newtons/9.8) |
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|  |  |  |  |
|  |  |  |  |

1. What are the Dependent Variables?
2. What are some variables you would want to keep constant throughout your experiment? (at least 3)

**Title (be creative)**

**Purpose/Question you are trying to answer. TO DETERMINE…**

**Partners**

**Materials: You will need to bring your own materials.**

**Hypothesis: If/then…I think this because…(at least 2 reasons)**

**Write your own Procedure (Directions):**

**Results:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent Variable** | **Initial Time Trial 1** | **Initial Time Trial 2** | **Initial Time Trial 3** | **Avg. Initial Time** | **Final time Trial 1** | **Final Time Trial 2** | **Final time Trial 3** | **Avg. Final Time** | **Initial velocity** | **Final Velocity** | **Acceleration** |
| **Variation 1** |  |  |  |  |  |  |  |  |  |  |  |
| **Variation 2** |  |  |  |  |  |  |  |  |  |  |  |
| **Variation 3** |  |  |  |  |  |  |  |  |  |  |  |

**Conclusion:**

1. **Hypothesis correct?**
2. **Why or why not?**
3. **Explain your results. Did the acceleration effect force? How?**
4. **What went wrong?**
5. **What would you do differently/better next time?**