Paper Airplanes!

* We are going to design an experiment to test paper airplane flight distance.
* We want the planes to fly as far as they can.
* We need to think about how we are going to design and perform the experiment.
* What things do we need to think about? (Think about the steps of the Scientific Method)

Problem

* What question are we trying to answer?
  + We want to design an experiment to test how the addition of paper clips will affect the flight distance of the paper airplane.
  + How does adding paper clips to a paper airplane affect its flight?

Hypothesis

* What do you think is going to happen?
  + How do you think the addition of paper clips to the paper airplane affect its flight distance?
  + Does the placement of the clips matter?
  + If paper clips are added to the \_(location)\_ of the paper airplane, then \_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Materials

* What do we need to perform this experiment?
  + Make a list of materials:
    - Everything and anything we need to carry out the experiment.

Procedure

* How are we going to perform the experiment?
  + What do we need to do?
  + What needs to be kept constant?
  + What is our control?
  + What is our independent variable going to be?
  + Where are we going to perform the experiment?
  + What are we going to observe? How?
* This should be written as a list of numbered steps.

Observations

* Data Table with measurements from the experiment.
* Include headings and labels.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **# of paper clips** | **Distance in Meters** |  | **# of paper clips** | **Distance in Meters** |
| **1** |  |  | **8** |  |
| 2 |  |  | 9 |  |
| 3 |  |  | 10 |  |
| 4 |  |  | 11 |  |
| 5 |  |  | 12 |  |
| 6 |  |  | 13 |  |
| 7 |  |  | 14 |  |

Experiment

1. Get paper clips, lab notebook and a meter stick.
2. Make the paper airplane. Make sure you follow directions.
3. Gather materials and head out to your assigned runway.
4. Fly your airplane, measure flight distance, and record your data in your notebook. Remember to add a paper clip each time.

Lab Write Up

* Must include:
  + Title page: Title, name, period, date due
  + Introduction: one paragraph about why we did this experiment
  + Problem: What question did we want to answer?
  + Hypothesis: What you think will happen and why?
  + Materials: A list of materials used
  + Procedure: Step by step explanation of what you did to perform the experiment. (Include airplane picture with paper clips)
  + Data Table and Graph: Include labels
  + Conclusion: Explain your results
  + Questions: Answer the questions about the lab in complete sentences.

Make a Graph

* Remember that number of paper clips is what you are changing so that is your INDEPENDENT variable and distance is your DEPENDENT variable

Conclusion

* What did you learn during the experiment?
  + Does your data make sense?
  + Was your hypothesis correct? Explain why or why not?
  + Did you do anything wrong?
  + Is there anything that you would have or should have done differently?

Questions (must be answered in your lab report at the end)

1. What is a control? What was the control in this experiment?
2. What is a constant? What were the constants in this experiment?
3. What is an independent variable? What was the independent variable in this experiment?
4. What is a dependent variable? What was the dependent variable in this experiment?
5. Should your results be the same as others? Why or why not?