Paper Airplane Inquiry Lab

**Pre-Lab**

1. What are the steps of the scientific method?

**Lab**

Part 1: Identify and State the Question or Problem

You want to know which paper airplane design is best. The first thing you have to do is decide what best means. This is called an operational definition – the definition you will use during the investigation. For this investigation, we will define best as the plane that flies the farthest. We will not be concerned with height or loops or straight flight.

Now, as a group, decide what you would like to test in order to get the furthest distance covered by your airplane. On your notebook paper, write a question that that states what your group would like to investigate

Part 2: Background Research

Find out what is already known about paper airplanes. iPads are available to you for research only purposes. Remember, you may NOT use Wikipedia as a source. Spend a little time reading up on paper airplanes. Write 3 – 5 notes under this section on the notebook paper.

Part 3: State a hypothesis

Based on how we defined best and what you now know about paper airplanes, write a hypothesis that states which type of paper airplane (that you are testing) will fly the greatest distance and why you think this. Use complete sentences. Do NOT forget the proper way of writing a hypothesis.

Part 4: Write a Procedure

In this section you must include 3 things:

1. Materials (What are you going to need for this experiment. List everything!)
2. Variables (What are your dependent and independent variables?)
3. Procedures (What are your steps you are going to following to complete this experiment? Remember they must be very specific and detailed, including how you are going to make your airplane)
   1. Don’t forget you must repeat this experiment at least 3 times in order for it to be a valid experiment.

Record all this information under this section on your notebook paper.

Part 5: Collect & Record Data

In this section you are to create a data table that holds all the information you are going to collect. Remember there is no math taking place in this section! Record your data table on your notebook paper.

Part 6: Analyze Data

After your data is collected and recorded, you have to make sense of it. During this section, you are to use math to make sense of your data. For example, calculate the average flight distance of your airplanes. You also look for patterns, trends, and relationships. You are really asking yourself, “What does this data mean?” Making a graph is a good way to help analyze data. As a group decide which type of graph would best suit your needs; a bar graph, a line graph, or a pie chart.

Remember all graphs need to include the following:

* X-axis is labeled
* Y-axis is labeled
* Units of measurement are included in the labels
* There is a title on the graph

Part 7: Draw Conclusions

A conclusion is a discussion of the data. The data is described and explained and the hypothesis is accepted or rejected. The conclusion also discusses the usefulness of the results (why was the investigation practical?), how the investigation can be improved, and other questions raised during the investigation. The conclusion for this investigation has been started for you. Remember this section is to be written in paragraph form with at least five (5) complete sentences.

Part 8: Communicate Results

Professional scientists must be able to share the results of their investigations with other scientists all over the world. The scientific community discusses investigations with each other, repeats them, refines them, and compares them to what is already known, all in the effort to find what is really true and accurate. Be prepared to spend 2 – 3 minutes discussing the results of your investigation with your scientific colleagues (classmates).

**Post-Lab**

1. What did you enjoy most about this lab?
2. What was difficult for you to do?
3. What would do differently if you were to do this lab again?