**Airplane Flight Lab**

These are all the things I already know that may affect this lab

**Question:**

I want to find out how to make a circular paper airplane fly the farthest.

**Research:**

* I know that the weight of a plane affects its flight
* I know that the surface area of a plane affects it’s flight
* I know that the overall size of a paper airplane affects its flight
* I know that circle planes need to fall a certain distance before it “levels out” and flies for a distance.

**Hypothesis:**

I think that a larger paper airplane will work better than a smaller paper airplane because it would have a larger overall surface area which would help it to cushion the air and help it to fly.

I also think that more weight can increase the distance of flight because it can increase the speed of the plane on its fall before it “levels out” . But will I be dropping it from a high enough point to allow it time to level out?

So, I think the largest paper with 3 folds will likely fly the farthest unless it doesn’t have time to level out. Then I think that the largest paper with only 2 folds will fly the farthest.

**Materials:**

You need to make sure that you have a complete list

* Paper
  + 2 sheets of 8.5 X 11 paper
  + 2 sheets of 8.5 X 14 paper
  + 2 sheets of 11 X 14 paper
  + Staples
  + Pencil (for labelling the different planes)
  + Tape Measure

**Procedure:**

I will create 6 different paper airplanes that follow the directions (on Mr. Ewert’s blog) for making a circle paper plane.

* 1 plane will be made of 8.5 X 11 paper and have 2 folds

Your procedure must be very detailed and clear so another person could recreate your experiment.

* 1 plane will be made of 8.5 X 11 paper and have 3 folds
* 1 plane will be made of 8.5 X 14 paper and have 2 folds
* 1 plane will be made of 8.5 X 14 paper and have 3 folds
* 1 plane will be made of 11 X 14 paper and have 2 folds
* 1 plane will be made of 11 X 14 paper and have 3 folds

For each plane I will stand on a chair, hold it with my middle finger in the “v” shape of the back of the plane, hold it at a 45 degree angle and release it. I will do this 3 times for each plane and then measure the best flight.

You MUST record the results and explain why you think they happened.

**Trial #1**

**Results and Observations:**

I flew the 8.5 X 11 plane with 2 folds. The first 2 launches hit a chair but the third one flew well. It flew for 164 inches. It levelled out just before the ground and came to a smooth stop. I think the surface area and weight must be well balanced for a smooth flight like this to happen.

**Variable to Change and Why:**

I will make a 8.5 X 11 plane with 3 folds. I think it will be too heavy on the front and it will hit the ground before is levels out.

You MUST say what you are changing for the next experiment and predict how it might change the experiment

**Trial #2**

**Results and Observations:**

The plane hit the floor before levelling out. It only measured about 46 inches. I think it was too heavy in the front for this small of a plane.

**Variable to Change and Why:**

I will make a larger plane with less weight by using 8.5 X 14 paper and only 2 folds. Because there is less weight and more surface area I think the plane will level out sooner but will fly slower.

**Trial #3**

**Results and Observations:**

The plane levelled out really early without picking up much speed first. This made it not fly too far. It only measured 112 inches.

**Variable to Change and Why:**

I will create another 8.5 X 14 plane with 3 folds. I think the extra weight will make it pick up more speed before levelling out and the plane will fly further.

**Trial #4**

**Results and Observations:**

The plane only started to level out right before it hit the floor so it didn’t fly very far. It only went 94 inches. I think I would need to release from a slightly higher height to make it level out before the floor.

**Variable to Change and Why:**

I will make a 8.5 X 11 plane with 3 folds. I don’t thin this will fly well because the extra weight will likely make the plane crash into the ground earlier.

**Trial #5**

**Results and Observations:**

The plane actually levelled out well. I am not sure why because I thought the extra weight would make it fall but it levelled out and flew for 229 inches.

**Variable to Change and Why:**

I will make a larger plane with 11 X 14 paper and using only 2 folds. I think it will fly but not far because it will likely have so much surface area that it will need more weight to fly.

**Trial #6**

**Results and Observations:**

The plane levelled out early but then did a nose dive into the floor. It only travelled 135 inches. I think that there wasn’t enough weight to make the large plane balanced in the air.

**Variable to Change and Why:**

I will make a plane that is also 11 X 14 but will have 3 folds. I think the extra weight will make it more stable and fly farther.

**Final Results:**

The extra weight made it fly more stable but it did not fly far. Maybe it was so big that the air just slowed it down (friction). It only flew 120 inches.

**Conclusions and Final Observations:**

I think that an airplane that is made with the medium sized paper (8.5 X 11) is the best size and that it would be good to continue to experiment with the weight at the front of the plane. The mid-size paper appears the best for holding its shape and flying through the air and I think that by finding a better balance of weight the plane would have the best flight distance.

Final reflections are ESSENTIAL. This is where you state what you learned from the experiment. This is a very important part!

Flight Distance - Inches

Type of Airplane

The results must be recorded and graphed for easy understanding of your experiment.