THE PAPER AIRPLANE EXPERIMENT

Vocabulary

Variable – Something that a scientist changes, measures, or modifies in an experiment.

Control Variable – A variable that remains unchanged during the experiment

Average – The middle of a set of numbers found by adding all the numbers up and dividing by the amount of numbers.

Stage 1: Creating our Control

Scan here for standard paper airplane instructions!

Supplies:

- Printer paper
- These instructions
- Paper clips (optional)
- Stapler/staples (optional)
- Tape (optional)
- Different types of paper (optional)

Prompt: How can we build the best paper airplane? What **variables** can we change to make it fly fastest and furthest?

Directions:

Start by scanning the QR code above for the "standard paper airplane" and following the instructions in the video. This plane will act as our **control variable**. Throw your standard plane three times. Measure how far it goes each time. No need to use a tape measure if you don't have one. You can invent your own unit of measurement using your feet! You don't have to be exact on your measurements either. Feel free to estimate.

Once you have thrown your plane three times, you will be able to find the **average** distance it flies. Add up the total distance of each flight and divide by the number of throws, which in this case is three. If you want to add more throws for increased accuracy, feel free! Below is a QR code link to an online calculator to help you with your math.

Scan here for an online calculator!

Mr. Josh's Airplane Throws (measured using my own feet)

Throw 1 – 8 steps

Throw 2 – 12 steps

Throw 3 – 13 steps

Total Steps - 33

33÷3=11 **My Average Distance is 11 Steps.**

"The only difference between science and playing around is writing it down."
-Adam Savage

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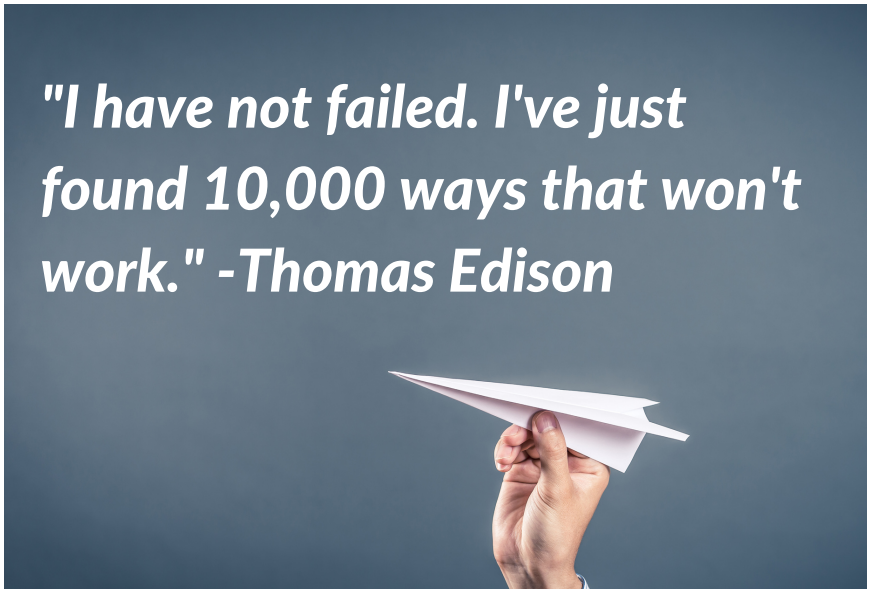
THE PAPER AIRPLANE EXPERIMENT

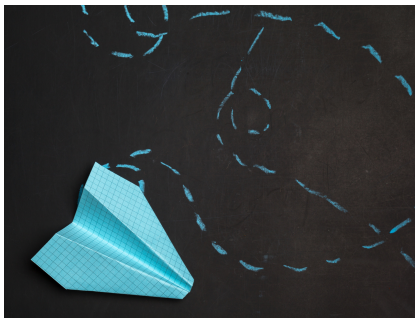
Stage 2: Building a Better Airplane

Directions:
The goal of the experiment is to see what **variables** can be changed to increase the **average** distance your plane flies. Think about what you could change to make your plane fly further! You could try a new airplane design. You could add weight using paperclips, staples, or tape. You could use different kinds of paper. You could adjust your throwing technique. You could even try throwing your plane indoors or outdoors. Be creative! Anything you can think of changing can become a **variable** in your experiment!

Once you have changed your **variables**, throw your new plane three more times and find the **average** distance one more time. Was it further or shorter than your **control variable**? Why do you think that was? Remember, if your plane doesn't fly farther, you didn't mess up. You just discovered a new way that doesn't work as well! Knowing what doesn't work is just as important as knowing what does work in an experiment.



Congratulations! You have just successfully completed a science experiment! You now know what does (or doesn't) make your airplane fly farther. You can continue the experiment if you like by adding or changing more **variables**. You could also retry the experiment again with the stunt glider instructions found by scanning the QR code below.



Scan here for stunt glider instructions!

Who has the best throw?
Experiment with different people you know! Have them throw a paper airplane three times each. Who has the highest average throw? Why do you think that is?

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