**Paper Airplane Contest**

**Objective:** I can create a paper airplane that flies at least 20 feet. I can create an airplane that can accurately hit a target.

**Introduction:** Go to <tinyurl.com/EMSairplanes> and answer the following questions.

1. What makes paper airplanes fly? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Describe the difference you can feel when you wave your hand through the air when your palm is perpendicular to the ground and when it is parallel to the ground.
3. What is wind resistance on a plane called? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Besides drag, what other force is pulling on your plane? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What is thrust? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What is lift? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. A long flight occurs when these four forces—drag, gravity, thrust and lift—are \_\_\_\_\_\_\_\_\_\_\_\_.



**Questions:** Which airplane design will be able to fly the furthest? Which airplane design will be the most accurate?

**Research and Design:** draw below what your airplane(s) will look like.

1. Why did you choose the design that you chose?
2. What is the name of the website (so you can go back tomorrow, if needed)?

**Data Tables:**

Distance (in meters) the plane went.

|  |  |  |
| --- | --- | --- |
| **Trial 1 distance** | **Trial 2 distance** | **Trial 3 distance** |
|  |  |  |

Distance (in meters) from target

|  |  |  |
| --- | --- | --- |
| **Trial 1 distance** | **Trial 2 distance** | **Trial 3 distance** |
|  |  |  |

**Analysis and Conclusion:**

1. If you could change one thing about your plane, what would it be and why?
2. Based on what you saw from all of the planes in your class, what was the best design?
3. Which force (thrust, lift, gravity/weight, or lift) was most important? Explain.

**Extension:** Make another plane and repeat the tests.

1. Was your new plane better? What is your evidence?