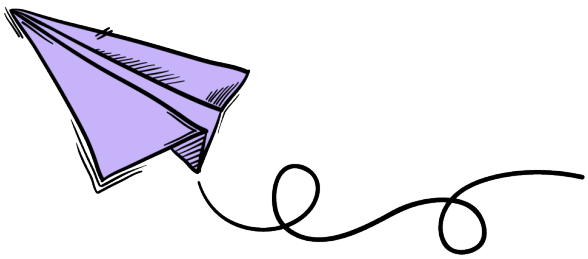
Airy Experiment

Celebrate National Paper Plane Day by testing the aerodynamics of a paper plane!



Collect:

- Sheet of letter-sized copy paper (8.5 x 11 inches)
- Measuring tape
- Stopwatch
- Paper clips

Fold a basic paper plane.

1. Fold the paper in half vertically and then unfold it.
2. Fold the left and right top corners so the edges line up with the crease in the center of the paper. Press down firmly to flatten the edges.
3. Fold the top diagonal edges down again so the edges meet in the center, again lined up with the center crease.
4. Fold the plane in half from right to left.
5. Fold the left edge to the right to form one wing. Flip the plane over and repeat on the other side to create the second wing.

Take a test flight!

Test your plane and record the results. Use a stopwatch and a measuring tape to record airtime (how long the plane stayed in the air), the total distance traveled, and if the plane performed any interesting maneuvers like rolling, turning, or making a loop.

Take it further!

There are several modifications you can make to your design to change how the plane flies. For each test flight, make sure to record your data and compare your results! Try folding the wings in a slightly different way. How does folding the tip of just one wing affect the flight? Try adding weight by attaching one or more paper clips to your plane. How does adding weight to the wings versus the body affect the flight? What other modifications can you think of to change your plane?

How does it work?

The design of a paper plane can modify how high or fast it might fly. There are four aerodynamic forces involved in a paper airplane flight: thrust, drag, lift, and gravity. When you throw a plane forward, you are generating **thrust**. **Drag** is a force opposite to thrust; it slows down the plane. **Lift** is the force of air that helps the plane to rise, moving upward. **Gravity** is the force that pulls planes down. A long flight occurs when these four forces are in balance.