

**TRY THIS
AT HOME!**

Create your own
flight lab to see
**WHICH PAPER
AIRPLANE
DESIGNS WILL
FLY THE
FARTHEST.**

Gliders fly without
engines, just like
paper airplanes!

CREATE YOUR OWN

What would happen if you altered a
plane's lift, weight, drag or thrust?
Could it fly faster or further, or do
stunts? Try experimenting with
the forces of flight at home.

Here's
what
you will
need:



COMPUTER WITH
INTERNET ACCESS
AND A PRINTER



REGULAR
PRINTER PAPER
(8½ X 11 INCHES)



PAPER CLIPS



TIP!

FOR AN EARTH FRIENDLY PROJECT
REUSE PAPER THAT HAS ALREADY
BEEN PRINTED ON.

**CHOOSE
YOUR AIRPLANE
DESIGN HERE!**

SOME ARE EASY TO MAKE;
OTHERS ARE MORE DIFFICULT.
TAKE YOUR PICK! YOU CAN EVEN
CHOOSE COLORFUL DESIGNS TO
ADD TO YOUR PLANE. PRINT OUT
YOUR CHOICE AND FOLD YOUR
AIRPLANE ACCORDING TO THE
INSTRUCTIONS. **MAKE ONE,
TWO, OR ALL THREE!**



NOTEBOOK AND
PENCIL TO RECORD
YOUR FLIGHT DATA



STOPWATCH
AND A FRIEND TO
TIME YOUR TEST
FLIGHTS



The Dart

(EASY)

DESCRIPTION: The Dart is
very streamlined, with a
long fuselage (body) and
delta wing (a wing shaped
like a triangle).

CHARACTERISTICS:

The Dart is excellent for
long-distance flights and
flights requiring accuracy,
but it's not very good
for stunts. The Dart is an
extremely fast and stable
paper airplane.



FLIGHT LAB



Does this stealth bomber look like any of the paper airplanes below?



The Canard

(MEDIUM)

DESCRIPTION: The Canard has a long fuselage, delta wing, and canard. A canard is a small wing that is in front of an airplane's main wing.

CHARACTERISTICS: The Canard is excellent for long-distance flights and flights requiring accuracy. Its forward wings give extra control over how it flies. The Canard is not nearly as fast as the Dart, but it is fairly stable.



The Delta

(HARD)

DESCRIPTION: The Delta has a wide delta wing, winglets (turned-up wings), and a blunt nose.

CHARACTERISTICS: The Delta is a slow-moving glider. Its forward weight design and large tapered winglets make it a stable flier. If built right and launched from a high place, it can make long, sweeping turns.



Once you have your paper airplane ready, **SET UP A TEST AREA.** It's best if you can test your airplane outside, on a non-windy day. Mark your starting point. Always throw your plane from the same point. Be sure to do the same test many times. Scientists always write down their test results, so have your pencil and notebook handy!

You can test different things in your flight lab:

- See how long your plane stays in the air. Test it at least three times. Use a stopwatch and write down your results.
- See how far your plane flies. Use a tape measure or yard stick to measure each flight.
- You can also make slight changes to your plane's design to see what happens.

Here are some suggestions for ways to change your design:

- Angle the rear wings up, just a little bit, with small folds. What happens? Why do you think so?
- Angle the rear wings down, just a little bit, with small folds. What happens? Why do you think so?
- Add a paper clip to the underside of the plane. Place it near the front of the plane. What happens? Try it again, moving it back a bit. Continue to test it out, placing the paper clip in different spots. Think about how it changes the flight of the plane each time.
- Make up your own experiments. Try folding a different kind of paper airplane. Once you come up with a design, make one small change for each flight and watch what happens.

JOURNAL

What did you figure out about flight in your flight lab?

How do these different adjustments affect the way lift, weight, drag, and thrust act on your paper airplane?