What makes a paper airplane fly?

Gravity
is the force that pulls everything toward the center of the earth. It is why when we jump up we fall back to the ground. In order to fly, a paper airplane needs to use some different forces to beat gravity and stay in the air.

Thrust
is a source of power and motion. When you throw the airplane, your arm is the thrust.

Lift
is created when the air below the airplane is pushing up harder than gravity is pulling down. The most lift is created from the wings of the plane.

Drag
is the force that pushes against the plane as it moves forward through the air. The shape of the airplane will create less drag if it is a narrow at the front.

DID YOU KNOW?
A long flight happens when these four forces — gravity, thrust, lift and drag — are balanced.
A plane design that has little lift and drag (small wings and a pointed shape) needs more thrust to fly.
A plane design that has more lift (larger wings and wider shape) needs less thrust.
Try out different shapes and designs to find your favorite balance!

Visit samnoblemuseum.ou.edu/samnoblehome for more activities!
The Spear Plane

Part 1

10 STEPS TOTAL

This model eats distance for lunch. The flight path will shoot into the air like a spear.

1

Fold the top right corner to the left side, where the crease begins at the bottom right corner.

Grey Lines are previously folded sections

2

Open the sheet back up and repeat the same step with the left corner.
Open back up and fold the right corner along the crease of the previous fold.

Repeat with the left side.
Fold the top right edge again, where the outer edge meets the raw edge in the center.

Repeat with the left side.
The Spear Plane
Part 4

10 Steps Total

This model eats distance for lunch. The flight path will shoot into the air like a spear.

Grey Lines are previously folded sections

7

Fold the top edge down to meet the point where the layers cross.

8

Fold the plane in half, with the folded tip on the outside.
Fold down one wing at a slight angle. Repeat with the second wing. There should be no folds showing from the top.

Congratulations, You are ready to soar through the skies!
THE UFO
PART 1

8 STEPS TOTAL

This model is from a different galaxy. Its shape allows it to hover through the air just like a UFO.

Grey Lines are previously folded sections

1
Cut out the bottom corner to round it off as shown.

2
Fold the top corners to the center line.
THE UFO
PART 2

8 STEPS TOTAL

This model is from a different galaxy. Its shape allows it to hover through the air just like a UFO.

Grey Lines are previously folded sections

3
Fold the peak down 2 inches before the bottom edge.

4
Fold down the top two corners about halfway down each diagonal line.
THE UFO
PART 3

8 STEPS TOTAL

This model is from a different galaxy. Its shape allows it to hover through the air just like a UFO.

5

Fold the top edge down about one inch.

6

Fold the plane in half.

Grey Lines are previously folded sections
Finally, fold the sides out to create the long round wings. The body should be a 1/2 an inch.

Grey Lines are previously folded sections.
Bird of Prey
Part 1

8 Steps Total

This model is quick to attack. It flies gracefully and has a precision strike.

1
Hold paper long way, crease down the middle and fold corners in.

2
Fold corners into the crease again

Grey Lines are previously folded sections

Sam Noble Home

STEM Activities
Bird of Prey
Part 2

8 Steps Total

This model is quick to attack. It flies gracefully and has a precision strike.

Grey Lines are previously folded sections

Fold the other side.

Fold the point up between the wings.
5
Fold the pointy end back down, creasing it one inch above the bottom.

6
Grab the ends of the wings and pull them out to the side, pressing them flat.

8 STEPS TOTAL
This model is quick to attack. It flies gracefully and has a precision strike.

Grey Lines are previously folded sections.
Fold down the middle so that the previous folds are on the outside.

Grey Lines are previously folded sections

Fold both wings down and you’re ready to go on the prowl!

This model is quick to attack. It flies gracefully and has a precision strike.