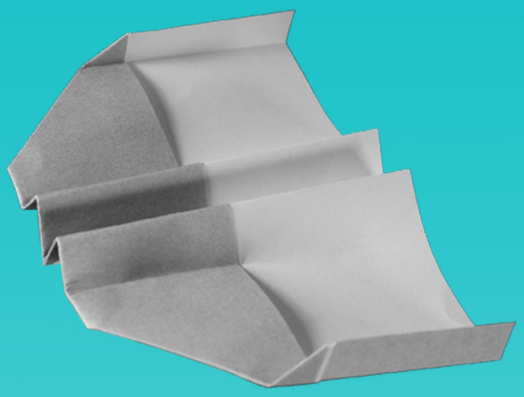
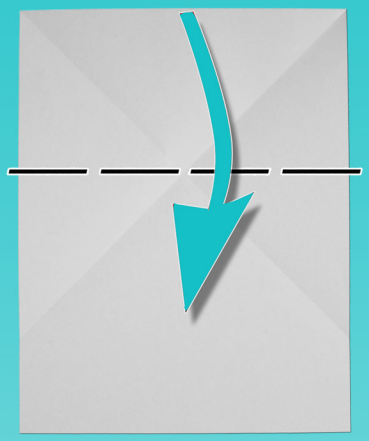
PHAT GLIDER

A great stunt plane: circles, loops, and inverted flights are all packed into an easy to fold plane.

Throwing is a big key to stunts. Remember to tilt the plane over for circles.

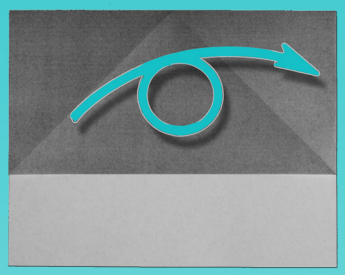


1



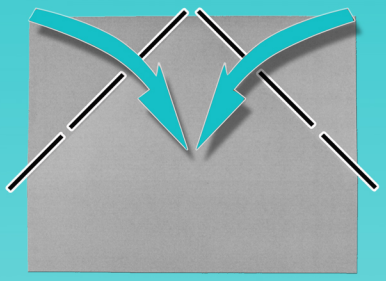
After making diagonal folds, fold the X in half.

2



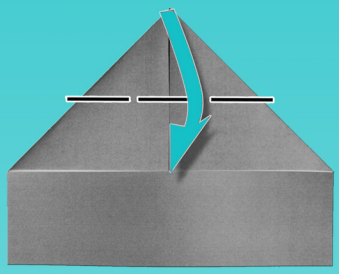
Flip the plane over.

3



Follow the existing creases to move the corners down.

4

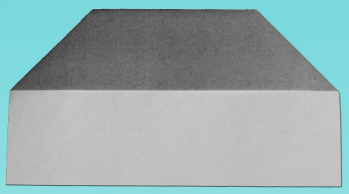


Fold the top down to the center.

5

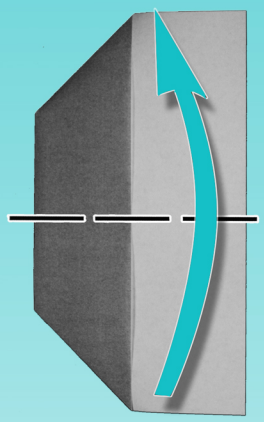
Flip the plane over.

1/4 6



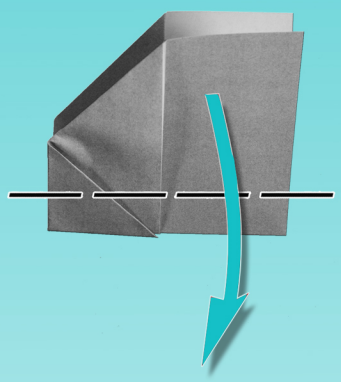
Rotate the plane.

7



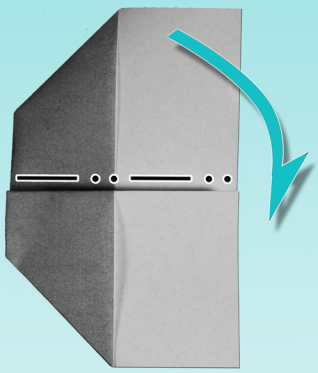
Fold the plane in half.

8



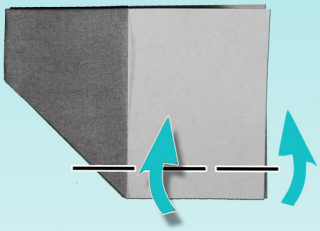
Make the wing crease. The front edge is folded in half. Making the wing longer makes it turn easier. Fold up to 2/3 of the edge down.

9



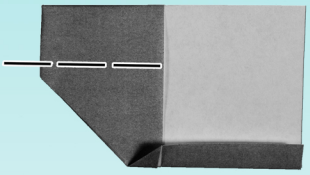
Make the other wing match.

10



Make the winglets about half the height of front edge.

11



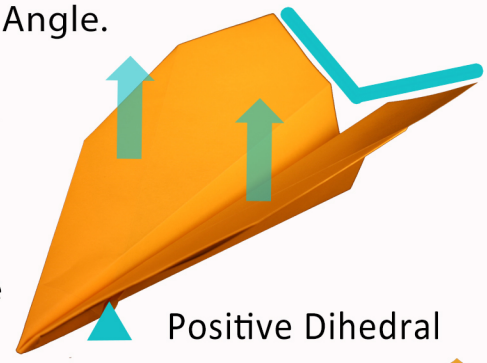
Make a crease that only runs through the layered part and is even with the center crease. Do both wings.

Steering in 3D

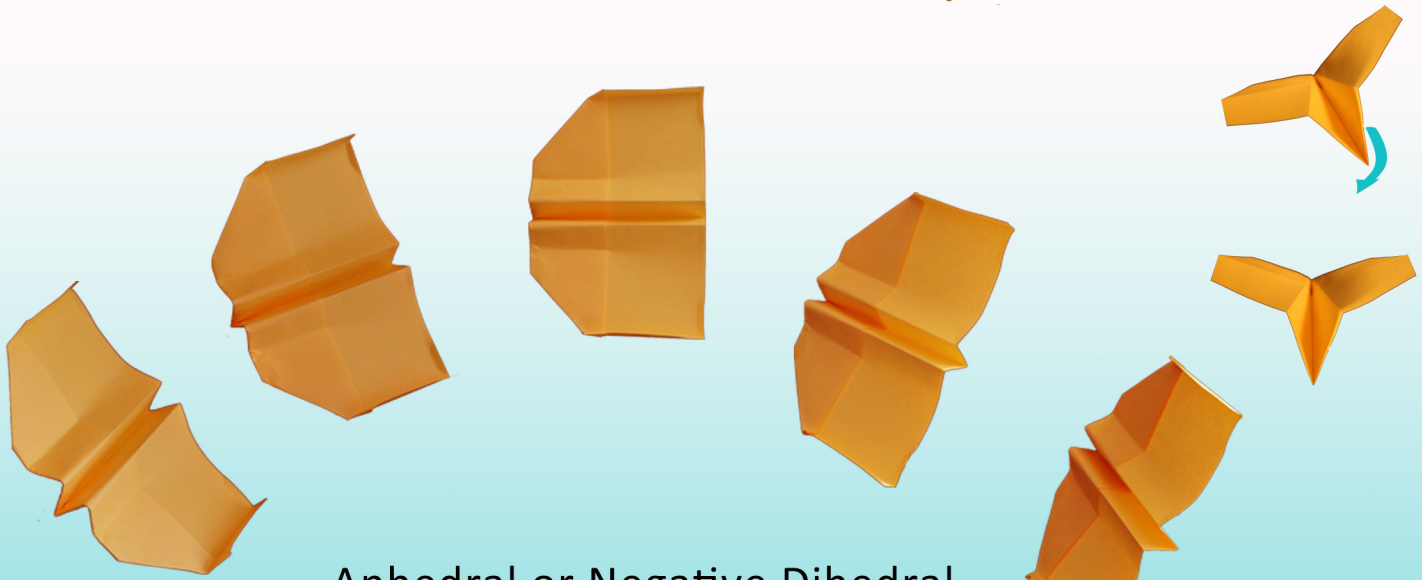
Some planes, like the Phat Glider, stay in a banked attitude. If you throw them leaned over, they stay leaned over. The center of gravity on the Phat Glider is near the center of lift, so the plane will climb easily with some up elevator. In fact, the Phat Glider does great loops. But the real secret to staying leaned over has to do with Dihedral Angle.

Dihedral Angle is simply the angle the wings are attached to the plane. Most paper airplanes (good ones) have positive dihedral, which is a fancy way of saying the wings slope upward as they leave the fuselage (body) of the plane.

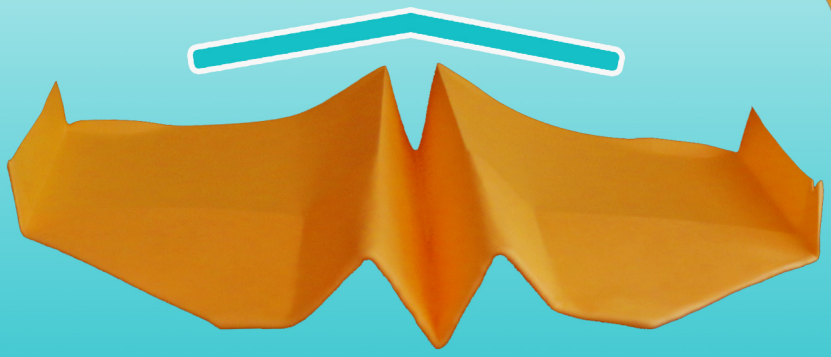
Postive Dihedral puts the lifting surface above the center of gravity. So, if the plane gets rocked to one side, sort of like a pendulum, the plane rocksback to neutral. This is sometimes called ***Dead Stick Stability.***



Positive Dihedral



Anhedral or Negative Dihedral



Take a close look at the Phat Glider. The wings are drooping a bit. That's called anhedral angle or negative dihedral. The plane doesn't rock back to neutral. If you throw it leaned over, it stays leaned over. A climb, with the plane leaned to one side, makes a circle. That's why the Phat Glider can circle right or left and loop. Notice the upward bends at the back of the plane. That's the up elevator adjustment.