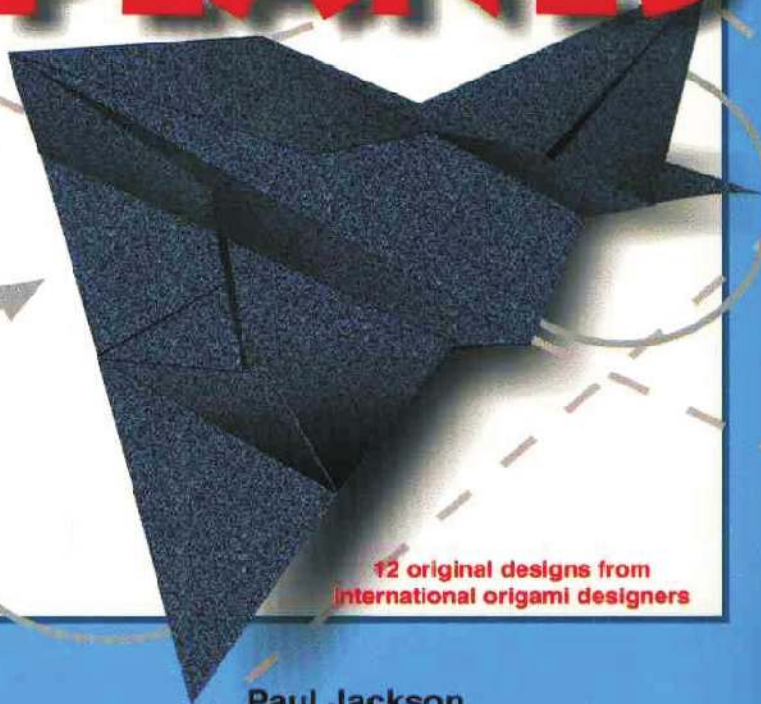


ADVANCED **CHAMPIONSHIP** **PAPER** **PLANES**



**12 original designs from
international origami designers**

Paul Jackson

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Fold accurately and carefully

Paper planes will only fly well if they are folded slowly, with great attention to detail, and with great accuracy. So, at every stage, check that your folding is exactly symmetrical, that sharp points are absolutely sharp, and that delicate single-thickness wings are never accidentally bent out of shape.

Press firmly

All creases must be made firmly to help the edges cut cleanly through the air. It helps to fold smoothly and with confidence, so make your first attempt at folding a new design a dress rehearsal, not a final performance.

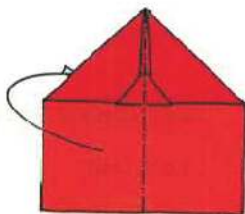
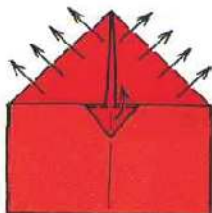
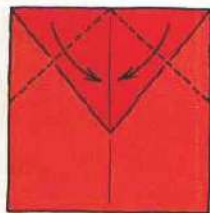
Smooth the layers flat

In some designs, the building up of bulky layers toward the nose and/or along the leading edge of the wings means that the paper will not lie absolutely flat against the hard folding surface beneath, but begins to bubble upward as if air is trapped inside. This bubbling increases the cross section of the plane in flight and will detract from performance.

The remedy is to smooth down the layers after each step. Start at the center crease and press the paper down firmly, stroking left and right toward the nose and leading edges of the wings. The crease along the leading edge will move very slightly as the paper is flattened, but this is normal.

Here is an example:

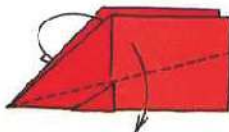
Stroke the paper outward



Stroke the paper outward to flatten it.



Stroke the paper outward to flatten it.



Stroke the paper outward to flatten it.

Symbols

The following symbols are used throughout the book to explain how the paper moves when folded.

It is important to keep looking ahead to the next step to see the results of the present step. The steps are a series of interlocking links — each one is the product of the previous step's instructions, and gives instructions to proceed to the next. So, don't look at each step in isolation, but *keep looking ahead*. Also, fold slowly and with attention to detail — be sure to follow *every* symbol on *every* step.

The symbols don't all have to be learned now, but it is important, at least, to know the difference between a valley fold and a mountain fold before you start. When you come across an unfamiliar symbol, refer back to this table.



Valley	-----
Mountain	-----
Existing crease	-----
X-ray or projection	
Fold forward	→
Fold behind	→

Fold dot to dot



Turn over



Unfold, open out



These distances are equal



These angles are equal



Cut



Folding Techniques

The single crease known as the "valley fold" and its opposite, the "mountain fold," are not really techniques — they are basic folds. Techniques are established when two or more creases are handled at the same time, so that the process of folding becomes more complex.

These techniques can be grouped and named. In this book, techniques commonly known as the Squash fold, Inside Reverse fold and Outside Reverse fold are used. Rather than explain them slowly each time they occur, it is best to explain them together and just once, here in the Basics section of the book.

So, if you are unfamiliar with Squash and Reverse folds, please practice these exercises.

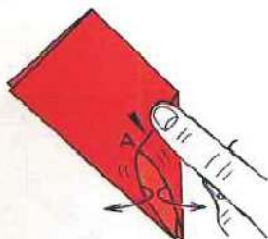
Squash fold



Fold in half.



Make a diagonal crease, lifting corner A.



Put pressure on the edge behind A, opening the pocket.



Squash A flat and crease firmly.

The Squash fold complete.



In the book a Squash fold is diagramed like this:



Inside Reverse fold

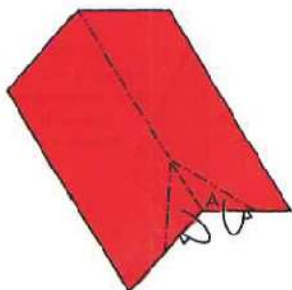
Version A



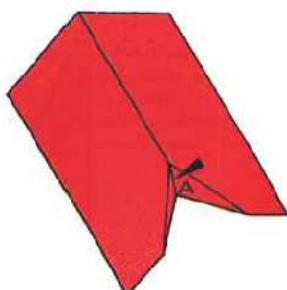
Begin with Step 2 of the Squash fold, then crease and unfold as shown.



Mountain fold and unfold along the existing valley fold line.

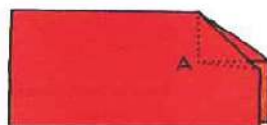


Separately crease three mountains and one valley as shown.



Fold the sheet in half again, but allow corner A to collapse inside between the layers, out of sight.

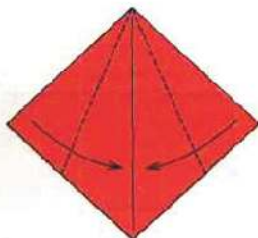
The Inside Reverse fold complete.



In this book, this version of the Inside Reverse fold is diagramed this way:



Version B



Fold the top edges to an existing center crease.



Fold in half.



Valley and unfold.



Mountain and unfold along the existing valley fold line.



Separately crease three mountains and one valley as shown.



Fold in half, collapsing the creases.



The Inside Reverse fold complete.

In the book, this version of the Inside Reverse fold is diagrammed like this:



Outside Reverse fold



Begin with Step 3 of Version B of the Inside Reverse fold, then valley and unfold as shown.



Mountain fold and unfold along the existing valley fold line.



Form three mountains and one valley as shown, then fold the paper in half to collapse all the creases.

The Outside Reverse fold complete.



In this book, the Outside Reverse fold is diagramed this way:



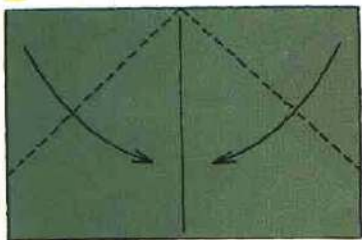


Wide Wing

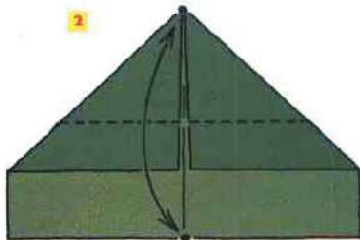
Because this design is much wider than it is long, it will glide slowly through the air like a soaring bird of prey. Designed by Paul Jackson, U.K.

Use A4 or 8½ x 11 in. paper.

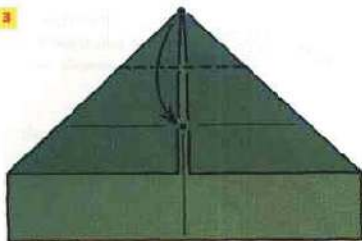
1



2



3



4



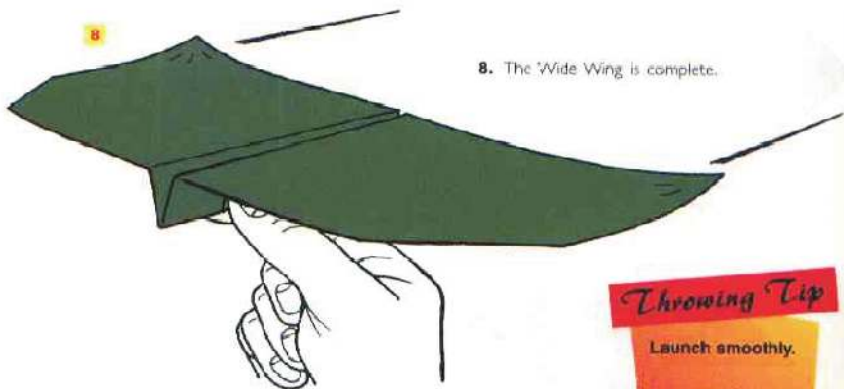
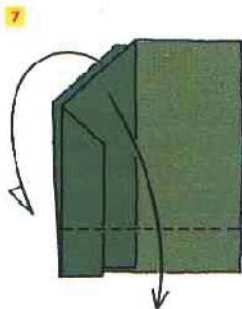
1. Crease and unfold the shorter center crease, then bring the top corners to the crease.
2. Crease and unfold, dot to dot.
3. Fold dot to dot.
4. Again, fold dot to dot.



5. Fold over along the Step 2 crease.

6. Mountain fold the paper in half.

7. Create the wings, making sure that both creases are parallel to the bottom edge. The distance of the creases from the bottom edge is not critical.



8. The 'Wide Wing' is complete.

Throwing Tip

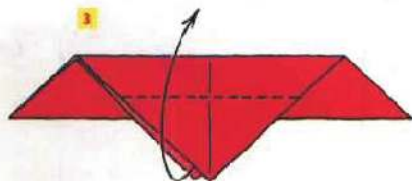
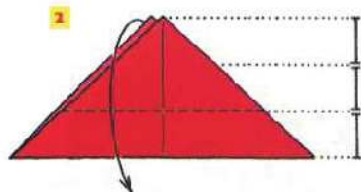
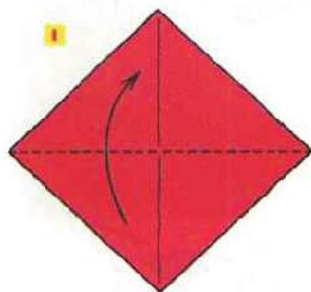
Launch smoothly.



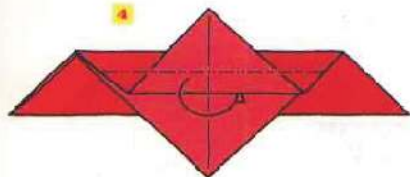
Dove

This pleasant, simple design flies superbly and with tremendous grace, though it is only barely dove-like in shape. With a little extra folding at the nose, you can create a recognizable head shape. *Traditional Japanese*

Use a 6–8 in. (15–20 cm) square of thin paper.

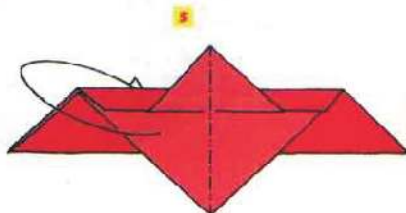


1. Crease and unfold the vertical diagonal, then fold the horizontal diagonal.
2. Fold down the top corner along a crease one-third of the distance between the bottom edge and the top corner.
3. Fold up the top layer only, along a crease placed exactly where shown.

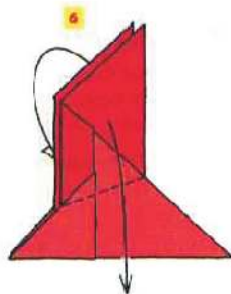


4. Mountain fold the loose edge out of sight, tucking it as far behind as it can go.

5. Mountain fold the paper in half.

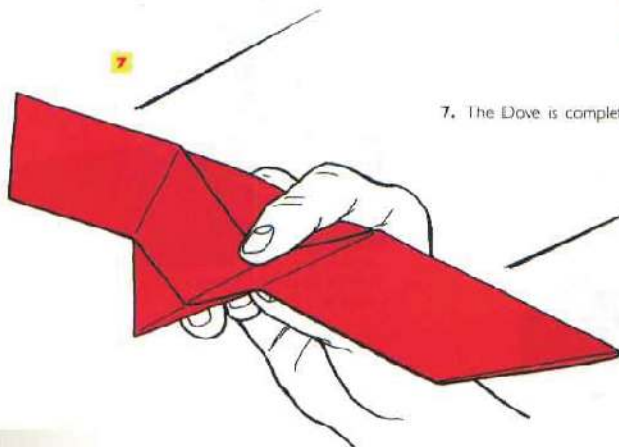


6. Fold the near wing down along a crease that connects where the nose triangle passes over the leading edge of the wing, and the angle where the trailing edge of the wing passes behind the tail triangle. Repeat with the other wing.



Throwing Tip

To launch, place your index finger on top of the central crease and release with a smooth flick.



7. The Dove is complete.

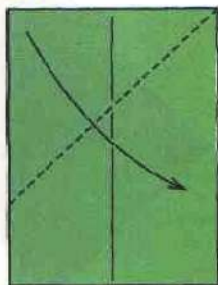


Fly Paper

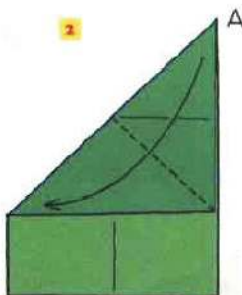
Most paper planes are folded symmetrically, but this one is not. Despite the weight imbalance between the two sides of the finished design, it flies straight and true rather than around in circles, as might be supposed. Designed by Paul Jackson, U.K.

Use A4 or 8½ x 11 in. paper

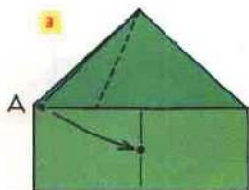
1



2



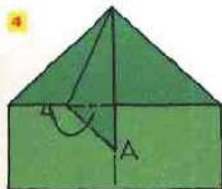
3



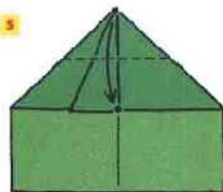
1. Crease and unfold the center crease, then bring the top left-hand corner across to the right-hand edge and crease.

2. Fold corner A across to the left.

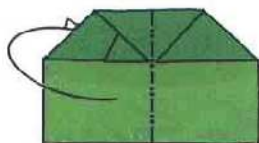
3. Fold corner A down to the center crease.



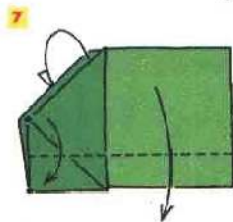
4. Tuck corner A out of sight.



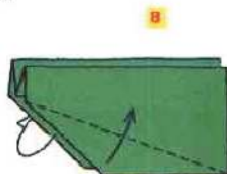
5. Fold dot to dot.



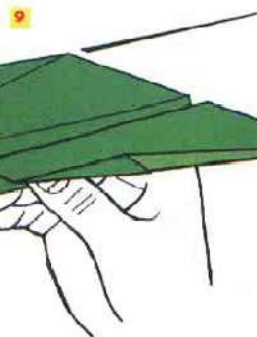
6. Mountain fold the paper in half.



7. Fold dot to dot as shown, so that the crease is parallel to the bottom edge. Repeat behind.



8. Fold up a triangle as shown. Repeat behind.



9. The Fly Paper is complete.

Throwing Tip

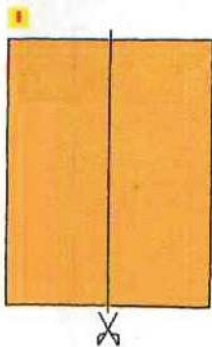
Hold and launch conventionally.



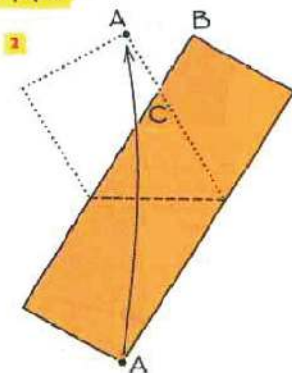
The Scooter

Few designs feature a split wing but this one enables the craft to cleave its way recklessly through the air. Make sure you fold Step 2 accurately. *Designed by Paul Jackson, U.K.*

Use A4 or 8 1/2 x 11 in. paper



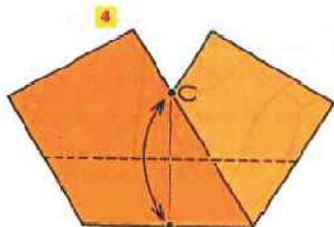
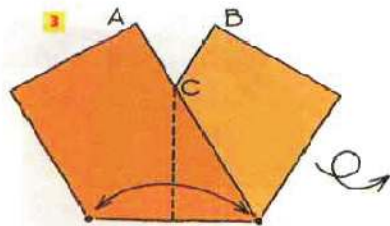
1. Cut the paper in half.

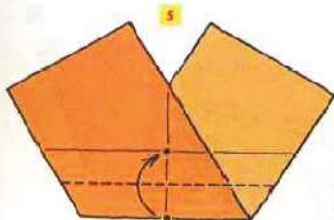


2. Fold dot to (imaginary) dot, so that triangle ABC is equilateral (all the sides are the same length).

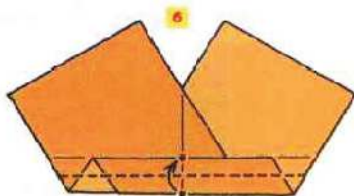
3. Fold in half. Unfold.

4. Fold dot to dot. Unfold.

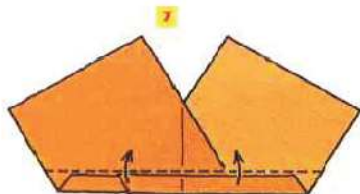




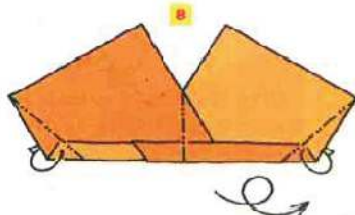
5. Again, fold dot to dot.



6. And again, dot to dot.

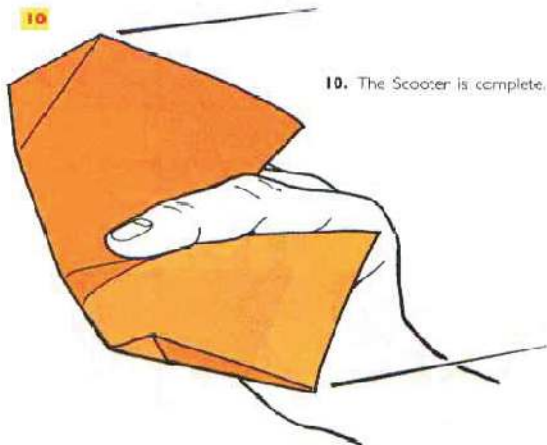


7. Fold over along the Step 4 crease.



8. Fold the bottom corner back.

9. Adjust the central crease to this angle of dihedral.



10. The Scooter is complete.

Throwing Tip

To launch, place your index finger on top of the center crease and flick smoothly forward.

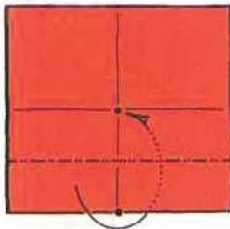


Lock Dart

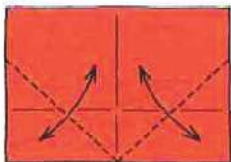
The ingenious use of an Inside Reverse fold in Steps 8-10, and well-designed rudder creases in Steps 3-7, create a beautifully balanced, stable craft that is both interesting to fold and a joy to fly. *Designed by Michael LaFosse, U.S.A.*

Use a square of paper.

1



2



3



1. Crease and unfold horizontal and vertical center folds, then mountain fold the bottom edge behind to touch the center crease.

2. Fold in the bottom corners. Unfold.

3. Fold in the bottom corners to the unfolded creases, as shown.

4. Fold over along the Step 2 creases.

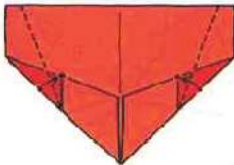
5. Fold dot to dot, bringing the sloping edge to lie alongside the short internal vertical edge.

6. Fold the inner dots to lie on top of the outer dots.

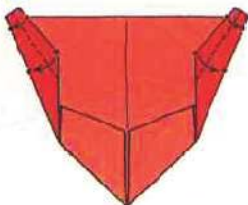
4



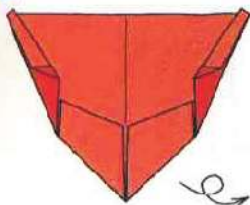
5



6

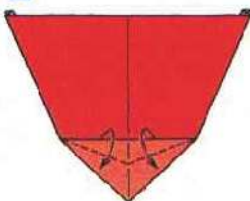


7



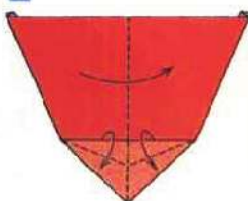
7. Turn over.

8



8. Create two valley folds on the top layer only.

9



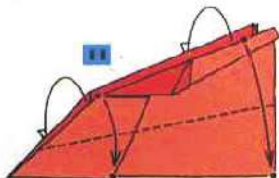
9. Fold the paper in half, also folding the Step 8 creases ...

10



10. ... like this. Notice how the V-shape is collapsing inside the nose.

11



11. Fold down the upper dots to lie on top of the lower dots. Repeat behind. Pull open the peated rudders.

12



12. The Lock Dart is complete.

Throwing Tip

To achieve the best flight performance, experiment with the rudder shapes. Hold and throw conventionally.

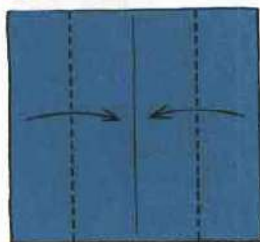


Chuck Finn

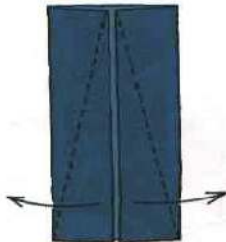
The bulking of the layers toward the nose up to Step 8 means that the rudders created in Step 8 will curve instead of rising straight and flat. Don't panic! The curving actually aids stability. Designed by Michael LaFosse, U.S.A.

Use a 6-8 in. (15-20 cm) square of paper.

1



2



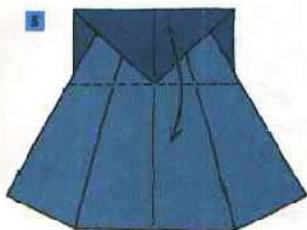
3



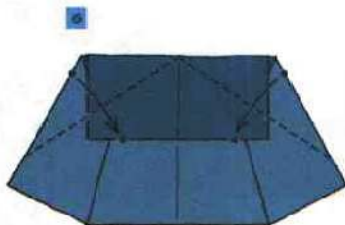
4



1. Crease and unfold a vertical center crease. Fold the sides to the center.
2. Fold out the loose bottom corners along diagonals, as shown. Be accurate.
3. Fold in the top corners.
4. Fold down the top point.



5. Fold down the top edge along a crease that touches what was the top point in Step 4.



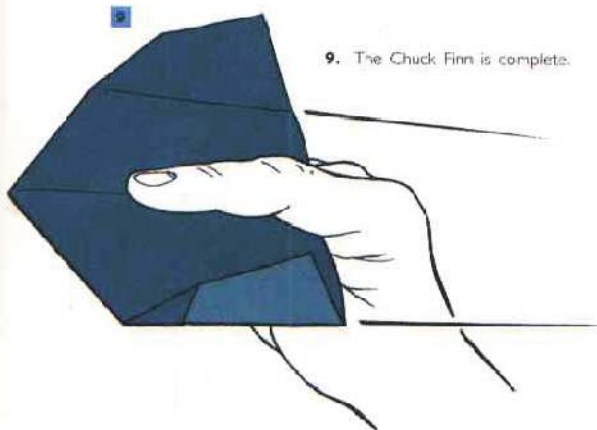
6. Fold dot to dot, as shown.



7. Turn over.



8. Make vertical valley folds, as shown.



9. The Chuck Finn is complete.

Throwing Tip

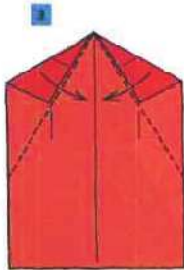
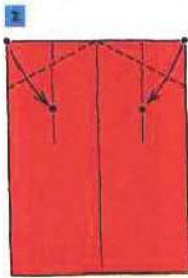
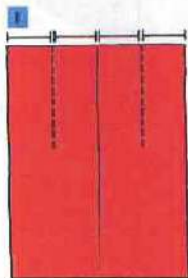
To launch, place your index finger on top of the central crease and throw horizontally forward with a smooth flick.



Needle Floater

The very thin nose on this design needs to be folded with great care and with some strength at Step 10. Folded well, the craft becomes an excellent flier and is an elegant sight in the air: *Designed by Nick Robinson, U.K.*

Use A4 or 8½ x 11 in. paper



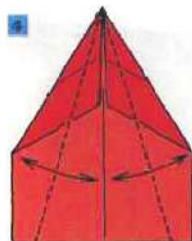
1. Fold and unfold a vertical center crease. Crease quarter creases that end midway down the sheet.

2. Fold in the top corners to the quarter creases, so that both new creases begin exactly in the middle of the top edge.

3. Fold in the triangles to the center crease.

4. Fold in the sloping edges to the center, then unfold.

5. Make valley folds along the bottom edges of the thick triangles. Then make three valley folds at once, as shown, folding the nose in half and lifting it so that it points upward. Flatten the nose back down so that it points to the left.

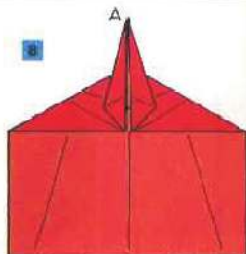




6. Lift up corner A (the nose) and Squash fold it flat (see "Folding Techniques," p. 4).



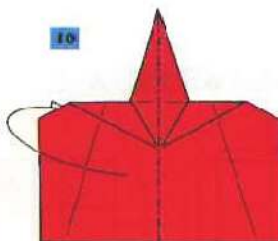
7. Use the mountain creases made at the nose in Step 4 to swing point A upward through 180°, to create a long, thin, forward pointing nose. Add a short horizontal valley to assist the swing, and note how the point narrows...



8. ... like this. Turn over:



9. Pull down the blunt corner as far as it will go.

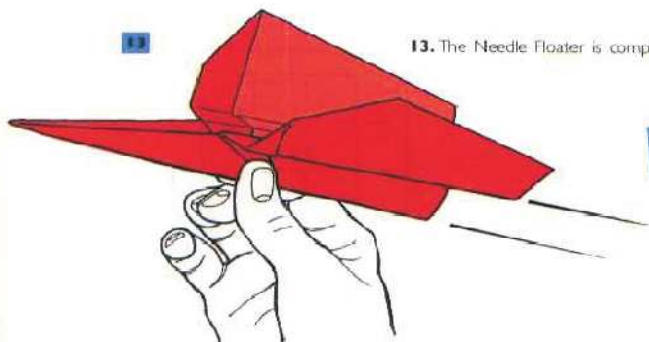


10. Mountain fold the paper in half.



11. The mountain fold is an existing crease. Create the valley by lowering the mountain onto the bottom edge. Repeat behind.

12. Adjust the creases so that the Floater has this profile.



13. The Needle Floater is complete.

Throwing Tip

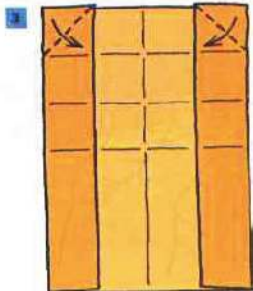
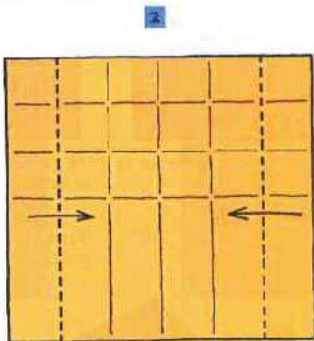
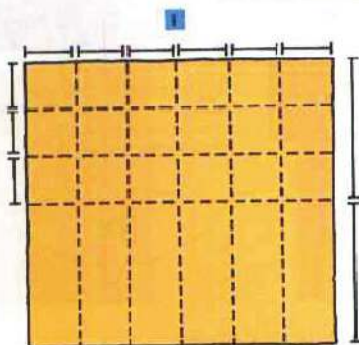
Hold and throw conventionally.



The Cutter

Because of its flat, wide shape, this design will slice through the air at a surprising speed, almost as if the launch was power-assisted. *Designed by Paul Jackson, U.K.*

Use an 8 in. or (20cm) square of paper.



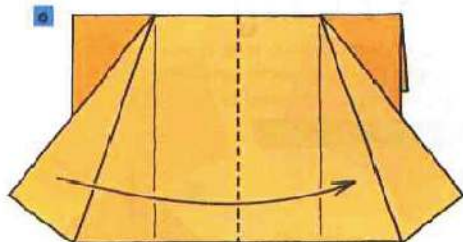
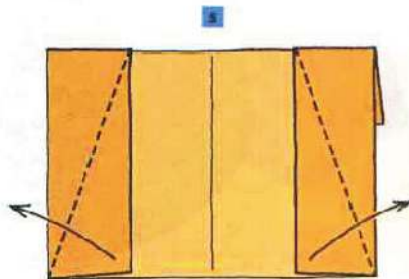
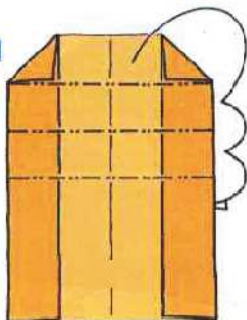
1. Divide a square into sixths vertically. Find the horizontal center crease and divide the top half into thirds. If you have trouble with this, divide a square into eighths, then trim off two-eighths along adjacent edges to create sixths.

2. Fold in the left and right edges along the first crease.

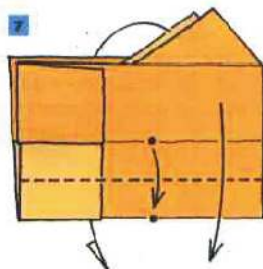
3. Turn in the top corners.

4. Roll the top edge back, along three mountain folds.

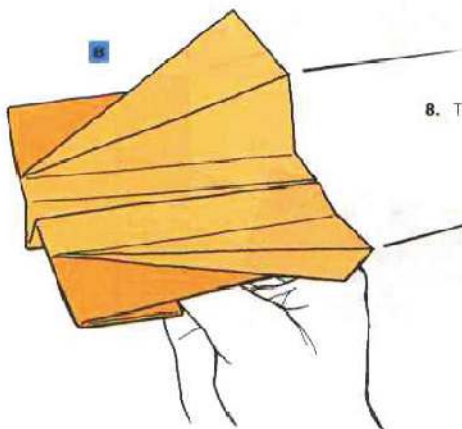
5. Fold out the loose corners, as shown.



6. Valley fold the paper in half.



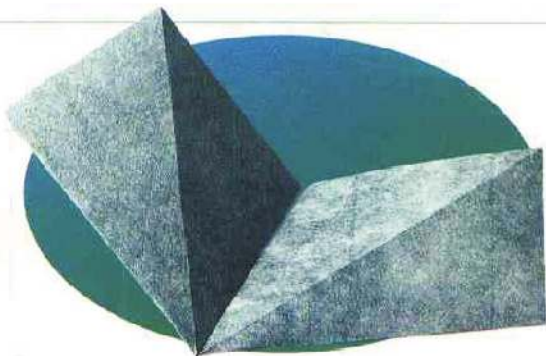
7. Carefully fold dot to dot, creating a crease parallel to the bottom edge. Repeat behind.



8. The Cutter is complete.

Throwing Tip

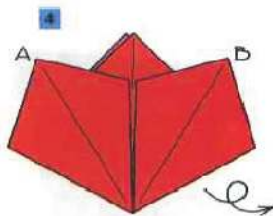
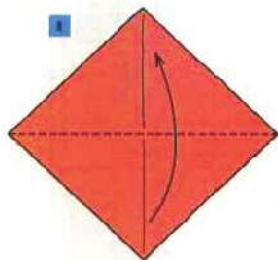
To launch, throw smoothly forward.



Stealth Wing

The most important step here is Step 2. Take as much time as you need to get the creases done accurately, so that Step 4 is exactly symmetrical. After that, the design still needs to be folded carefully. Designed by Paul Jackson, U.K.

Use an 8 in. (20 cm) square of paper.



1. Crease and unfold the vertical diagonal, then fold the horizontal diagonal.

2. With two valley folds, create three equal angles, as shown. This can take a little time, so don't crease heavily until you are sure that they are accurately located. Unfold.

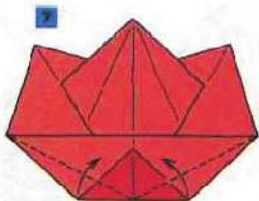
3. Using the valleys as guides, create Squash folds (see "Folding Techniques," p. 4). Note A & B.

4. Turn over.

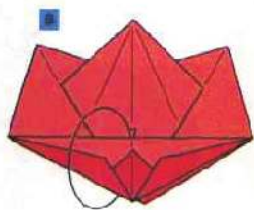
5. Pull down the upper layer as far as it will go.



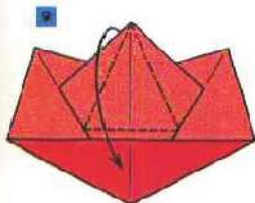
6. Fold up the bottom corner so that the crease lines up with the corner beneath. With mountain folds, narrow the top corner, then unfold.



7. Fold in the bottom corners.



8. Swing the top layer back on itself, so that it tucks neatly into the pocket behind.



9. Swing down the top corner using the mountain folds made in Step 6, adding a horizontal valley to assist the swing. Look at Step 10 to see the result.



10. Fold up the bottom point, so that it does not project beyond the edges beneath.



11. Tuck the same point into the pocket beneath. No new creases are made.



12. Create a shallow mountain crease down the center. Turn over.



13. The Stealth Wing is complete.

Throwing Tip

To launch, place your index finger on top of the center crease and throw forward with a smooth flick.



Glynn's Glider

At the time this book was written, this remarkable design held the official Guinness Book of Records World Record of 28.7 m (54 ft) in the Origami Distance category, set by its designer at the Yorkshire Air Museum, Yorkshire, England, on September 19, 1997. Other paper planes have flown further, but none were pure origami (folded from a rectangle without cuts and without the aid of glue, tape, weights, etc.). *Designed by Robin Glynn, U.K.*

Use A4 or 8½ x 11 in. paper

1



2



3



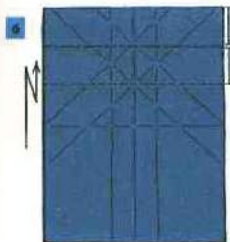
4



5



1. Crease and unfold horizontal and vertical center folds. Crease and unfold 45° diagonals on the top half, as shown. Turn over.
2. Fold dot to dot, bringing the existing mountain diagonal crease to the center point and flattening to create a new valley crease, parallel to the mountain ...
3. ... like this. Unfold.
4. Repeat Step 2 on the right.
5. Create vertical valleys that touch the corners of the small, creased diamond near the top edge. Be accurate.



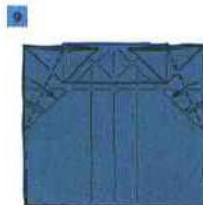
6. Create a horizontal valley that touches the bottom corner of the same creased diamond, then a mountain, midway between the valley and the top edge.



7. Fold in the top corners. Unfold.



8. Create Squash folds (see "Folding Techniques," p. 4), swinging the single thickness top corners toward the center.



9. Fold in the top corners to lie along the Step 7 creases.



10. Refold the Step 7 creases, tucking corners A & B and corners C & D under the horizontal edge. This locks the paper flat.



11. Re-form the vertical valleys and make a central mountain crease.

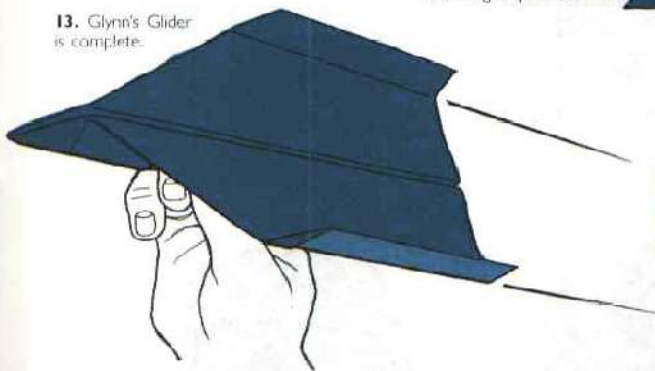
12

12. Add a rudder to the wing. Repeat behind.

12



13. Glynn's Glider is complete.



Throwing Tip

Hold and throw conventionally. With only slight adjustments to the angles of the wings and rudders, it should fly a great distance.



Thunder Bomber

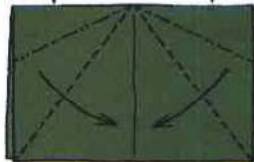
This is one of those very pleasing designs that seems to fold itself. The sequence is somehow 'obvious' and flowing, with no tricky parts. It flies superbly, too. *Traditional.*

Use A4 or 8½ x 11 in. paper

1



2



1. Crease and unfold down the center, then fold the top edge down to the bottom edge.

2. Create two Squash folds (see 'Folding Techniques,' p. 4). Note the positioning of the valley folds.

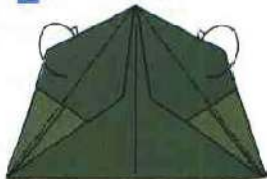
3. With mountain folds, narrow the open ends of the Squash folds.

4. Fold the Squash folds in half. The paper will then be the same, front and back.

3



4

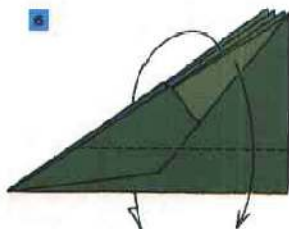


5



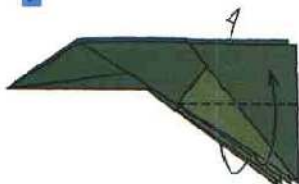
5. Valley fold the paper in half.

6



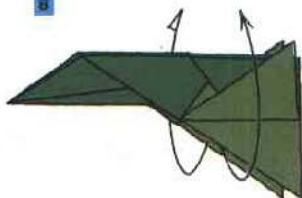
6. Valley fold the wing downward. Repeat behind.

7



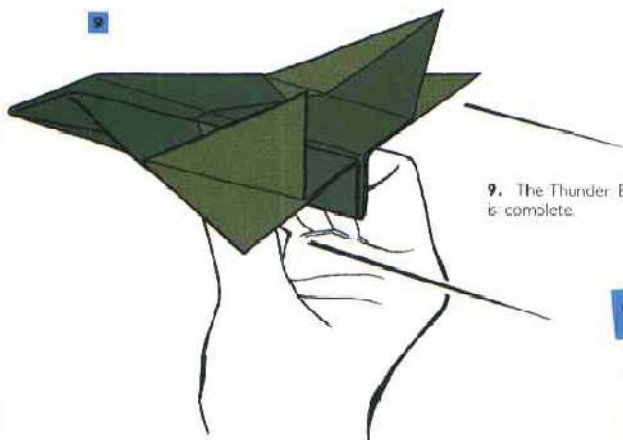
7. Fold the top layer of the wing upward. Repeat behind.

8



8. Lift the wings to the horizontal.

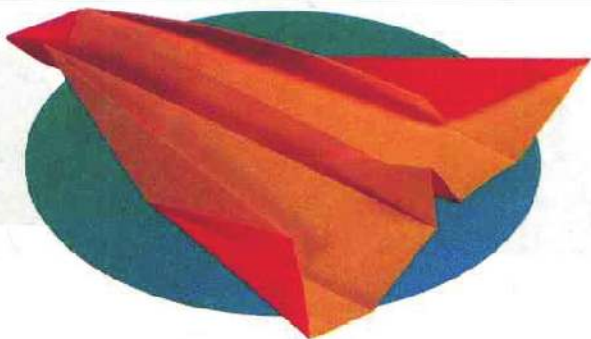
9



9. The Thunder Bomber is complete.

Throwing Tip

Hold and throw conventionally.

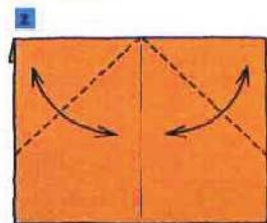
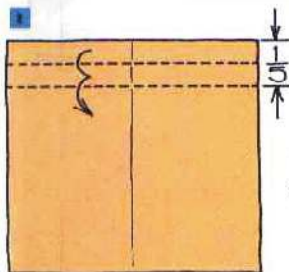


Classique

This design has a familiar delta shape, but carefully controlling the proportions in the Step 1 creases creates just the right amount of weight in the nose to balance the craft in flight.

Designed by Alain Georgeot and Eric Joisel, France.

Use an 8 in. (20 cm) square of paper.

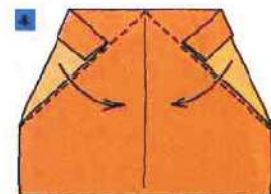
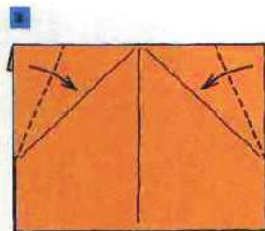


1. Fold and unfold a vertical center crease. Fold the top edge over and over, so that the lower crease is one-fifth of the way down the paper. Turn over.

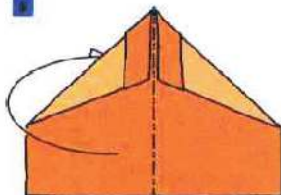
2. Fold in the top corners. Unfold.

3. Fold in the sides to lie along the existing creases.

4. Fold over along the Step 2 creases.

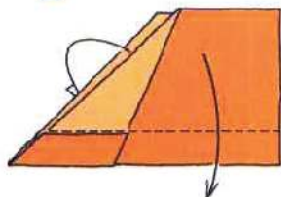


4



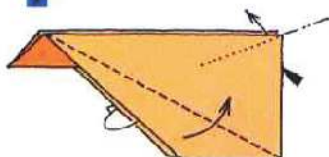
5. Mountain fold the paper in half.

5



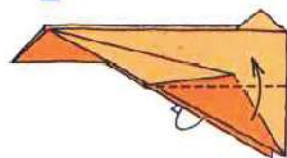
6. Fold down the wing. Repeat behind.

6



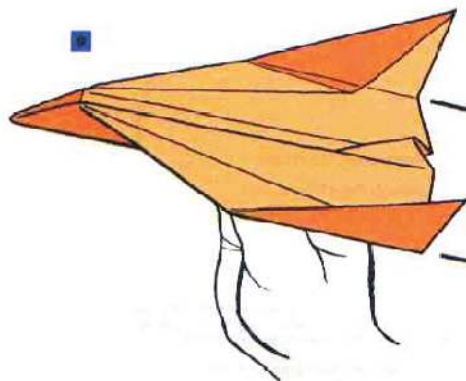
7. Reverse out a tailplane. Fold in the leading edge of the wing. Repeat behind.

7



8. Fold up the wing tip. Repeat behind.

8



9. The Classique is complete.

Throwing Tip

Hold and throw conventionally.

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