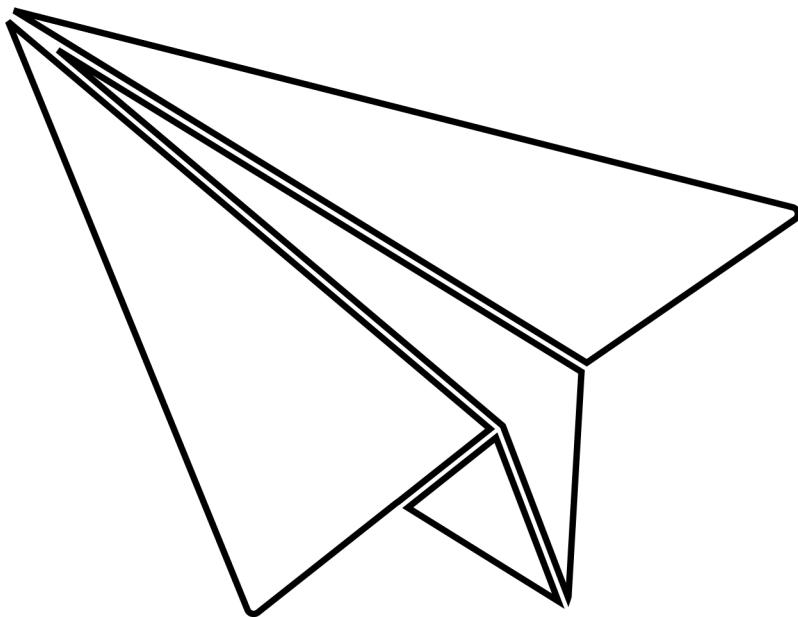


PAPER PHYSICS CAMP



WITH SCIENCE MOM + MATH DAD

SUPPLY LIST

Required Items

- Letter Paper (A4 paper will probably work for most things)
- Origami paper (6 inch recommended. **DIY substitution:** paper cut into squares)
- Scissors
- Paper clips (at least a couple)
- Rubber bands (three or four)
- Pencil or pen
- Tape (scotch tape or masking tape)

Optional Items

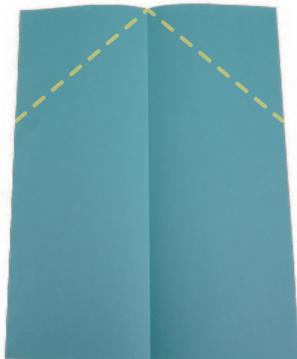
- Markers
- Crayons
- Glue sticks

The Classic Dart

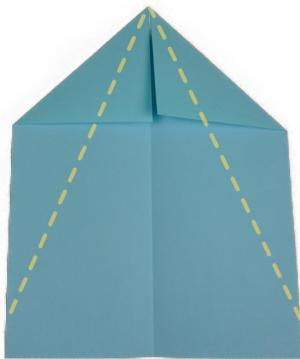
- ①. Fold the paper in half hotdog-style. Then open it back up.



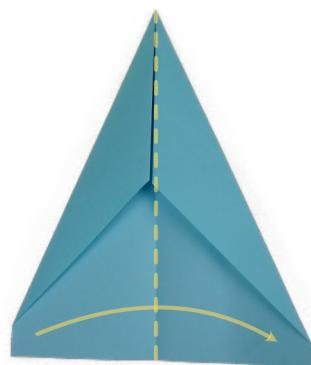
- ②. Fold the top two corners into the center line.



- ③. Fold the obtuse corners to the center line.



- ④. Fold the two wings together.



- ⑤. Fold each wing down so that the edges meet.



- ⑥. Reopen the wings by lifting them up a bit more than 90°.



The Harrier

- ①. Follow the first two steps for The Dart. Then drag the tip to about 2 cm from the bottom and crease the fold.



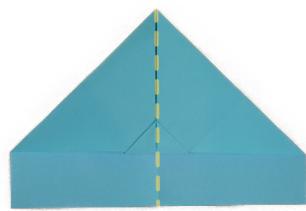
- ②. Fold the top two corners into the center line.



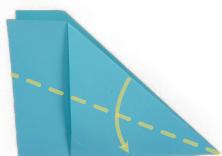
- ③. Fold the triangular flap up.



- ④. Fold the two wings up together.



- ⑤. Fold each wing down so that the edges meet.

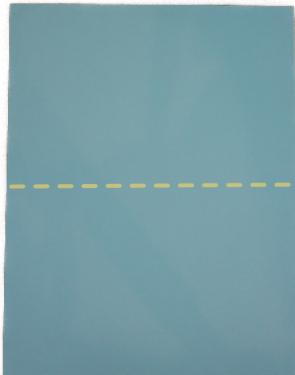


- ⑥. Reopen the wings by lifting them up a bit more than 90°.

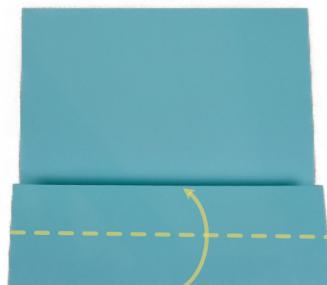


The Front Four

①. Fold the paper in half hamburger-style. Then open it back up.



③. Again fold the bottom edge up to the original center crease.



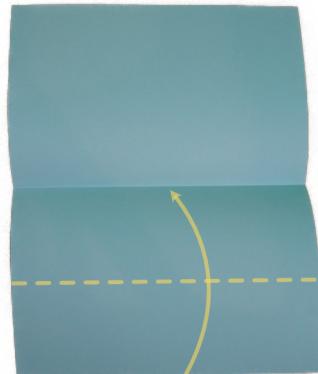
⑤. Fold the paper in half to make a "V" shape.



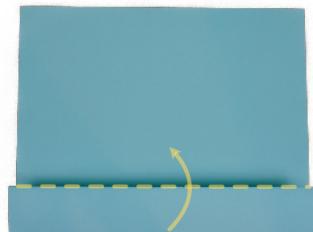
⑦. Give the wings tips about 1 cm from the edge



②. Fold the bottom edge up to the center.



④. Then fold the layered part over the original center crease.



⑥. About 2 cm from the base, fold the "V" into two wings.

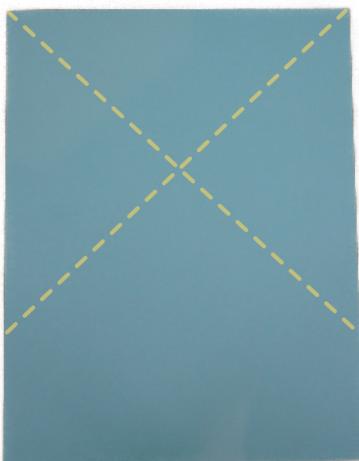


⑧. Reopen the wings and tips to about 90°.



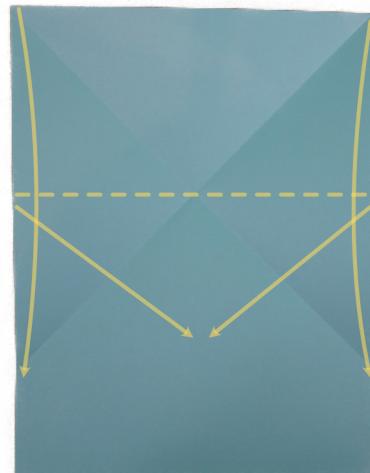
The Stealth Glider

- ①. Fold the top edge to the left edge. Then fold it back up. Repeat on the other side.

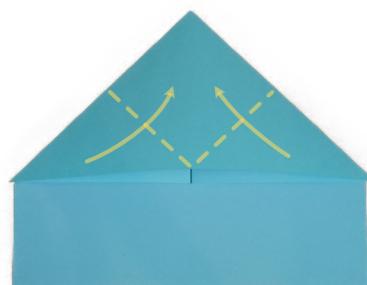
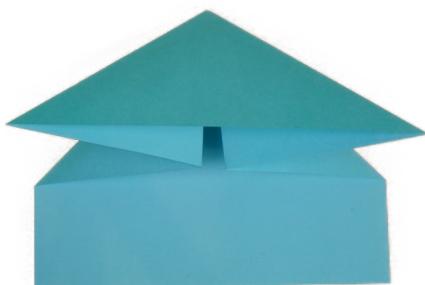


- ③. Firmly crease the new fold in place.

- ②. Fold the top two corners into the center line.

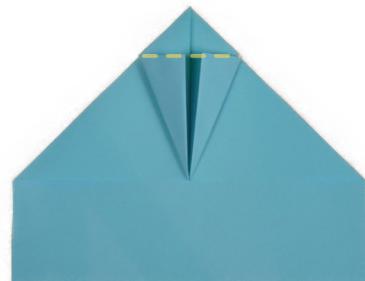


- ④. Fold the lower corners of the top layer of the triangle up to the top corner



- ⑤. Fold the lower edges of the square to the center diagonal of the square.

- ⑥. Fold the top layer of the triangle in the kite shape down.



⑦. Tuck the two dangling triangles behind the bottom of the kite.



⑧. Fold down the top triangle to make a flat top.



⑨. Tuck the bottom triangles into the slots of the top triangle.



⑩. Flip the plane over.



⑪. About 1 cm from the wing tip, fold the edge down. In 1 additional cm, fold the tip up. Adjust these folds to be 90°.

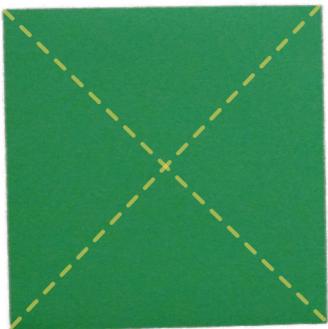


⑫. Fold the top layer of the triangle in the kite shape down.

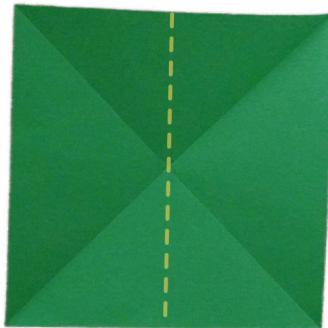


Disc Star

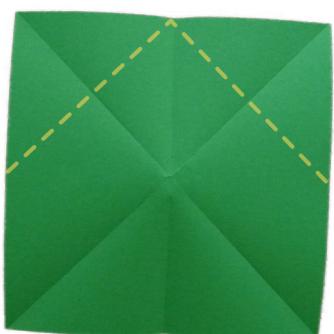
- ①. Fold opposite corners together. Then crease and reopen the square.



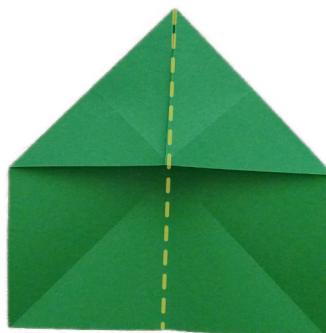
- ②. Fold in half. Crease and then reopen.



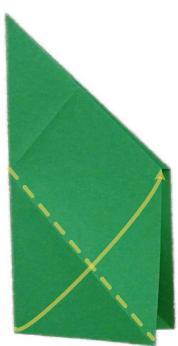
- ③. Fold the top two corners down to the center and crease.



- ④. Fold the entire structure in half.



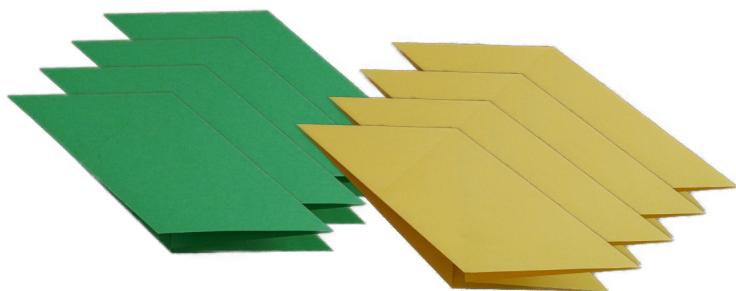
- ⑤. Tuck the bottom corner inside to make a parallelogram.



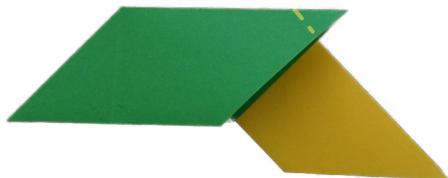
- ⑥. Repeat this process with 7 other squares to get 8 identically folded parallelograms.



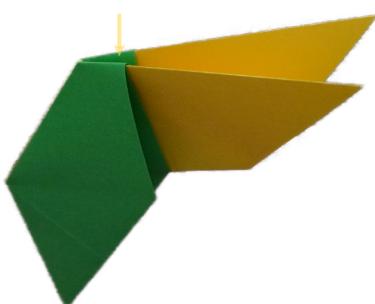
⑦. Note that you can use any color you want, but alternating the colors is nice.



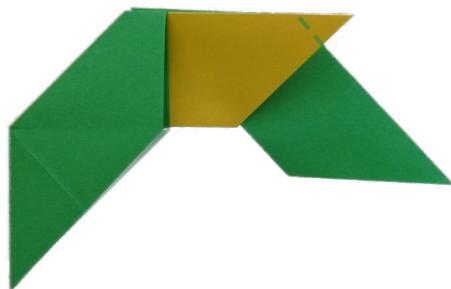
⑧. Fit one parallelogram inside the wings of another so their tops align. Make a crease for two triangles that spill over the edge.



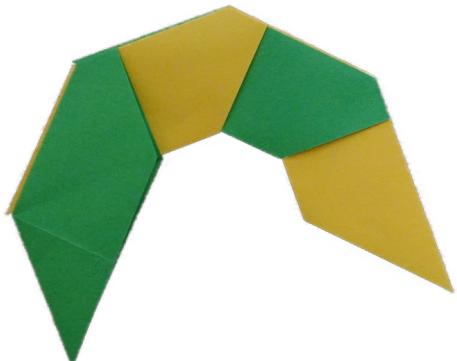
⑨. Tuck the triangle fold inside the wings, tying the two papers together.



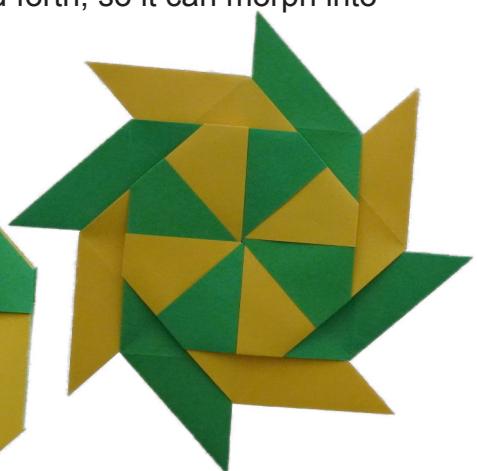
⑩. Repeat steps ⑧ and ⑨ for all the remaining pieces.



⑪. Only the 8th piece will require you to carefully position the pieces, but the procedure stays the same.

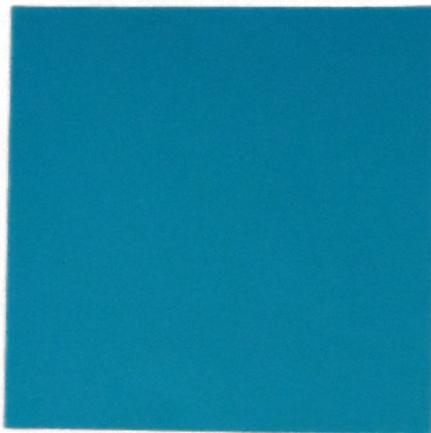


⑫. Once the ring is finished, the pieces will slide back and forth, so it can morph into a star.



Ninja Star

- ①. Fold a square in half. Then fold it in half again to get a long narrow strip.



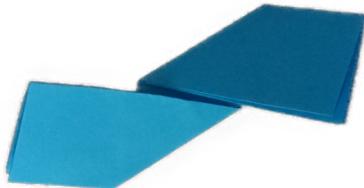
- ②. Fold the strip in half and undo the fold. Fold across, using the center line as a guide.



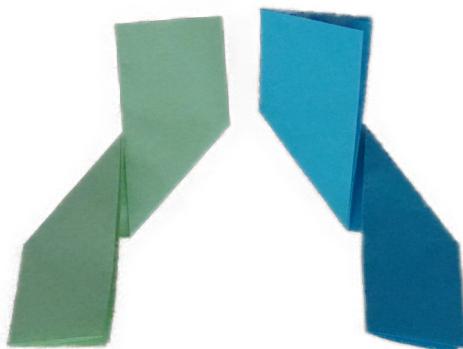
- ③. Duplicate the previous fold in the other direction.



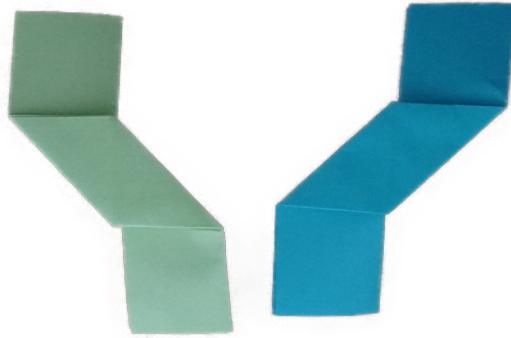
- ④. Repeat steps ①-③ with another square, except that the two pieces should be mirror images



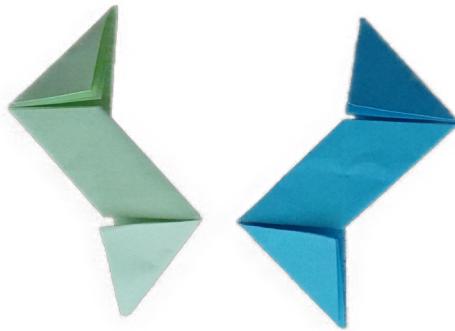
- ⑤. Once you have verified that the two pieces are mirror images, flip them over.



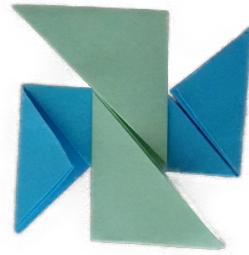
⑥. Fold the squares on each end into a triangle so that the whole shape becomes a “Z” shape.



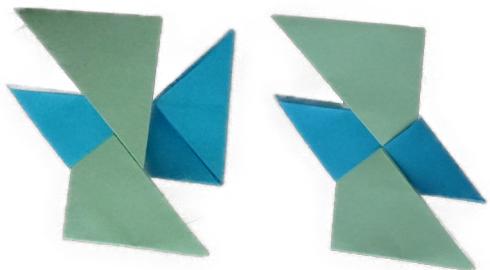
⑦. Flip over one piece and place one on top of the other perpendicularly.



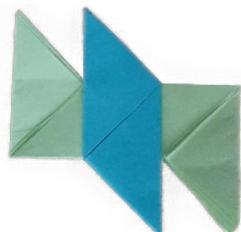
⑧. Fold a triangular wing of the bottom piece over the top piece. Then tuck it into the top piece.



⑨. Repeat with the other triangular wing piece.



⑩. Flip the construction over and duplicate steps ⑧ and ⑨.

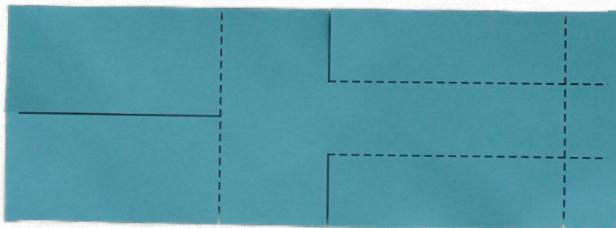


⑪. Don't throw your cool new ninja star at other people. :)

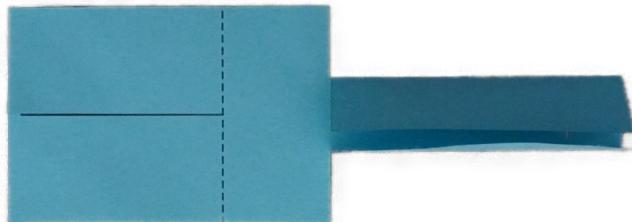


Helicopter

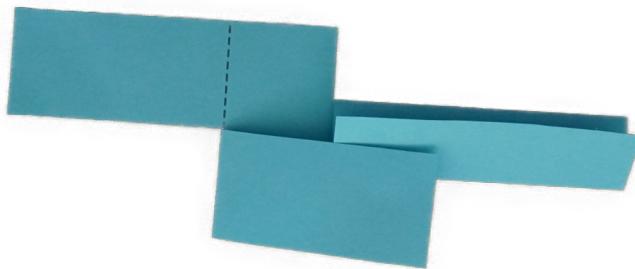
①. Cut along all solid lines. The dashed lines are for folds.



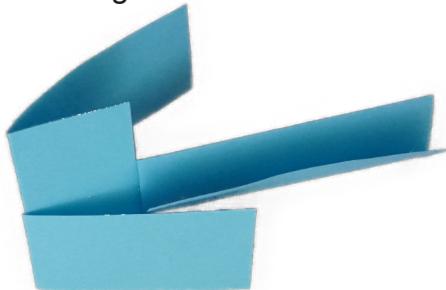
②. Fold section C and D along the dotted line.



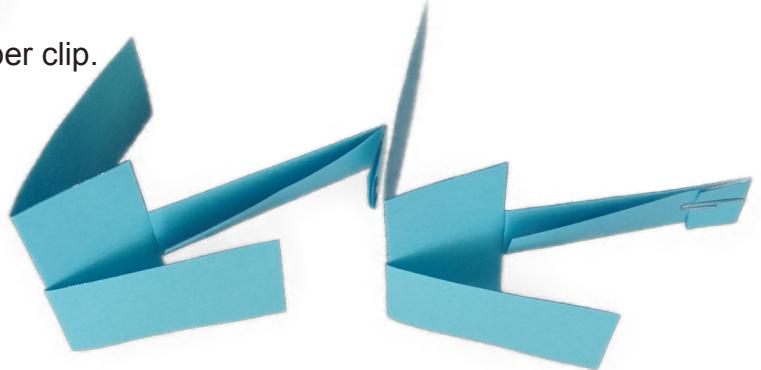
③. Fold section B towards you along the dotted line.



④. Fold section A away from you along the dotted line.



⑤. Fold the tip up and hold it in place with a paper clip.



⑥. Toss the final helicopter into the air or drop it from the ceiling.



A

B

C

D

A

B

C

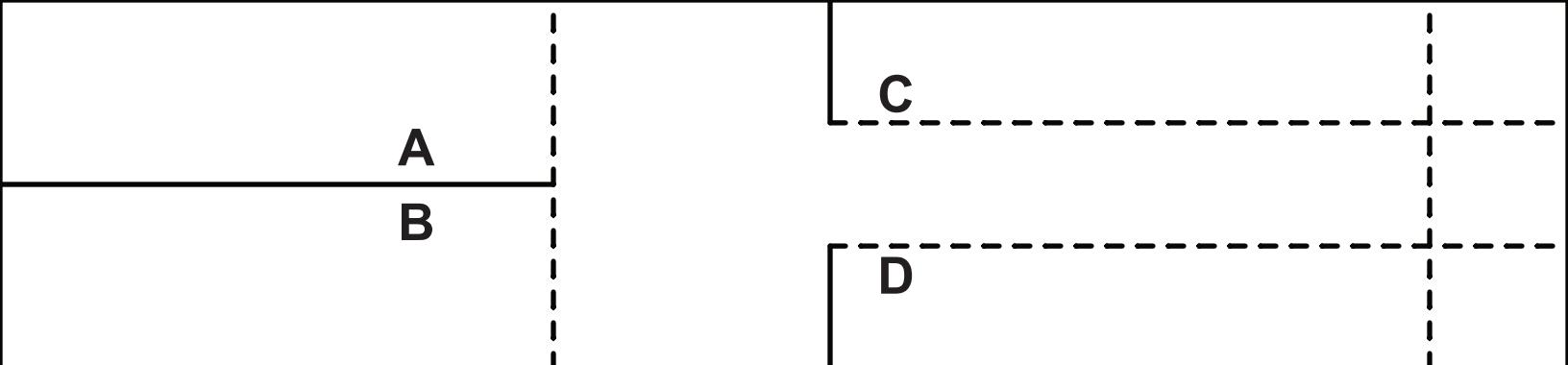
D

A

B

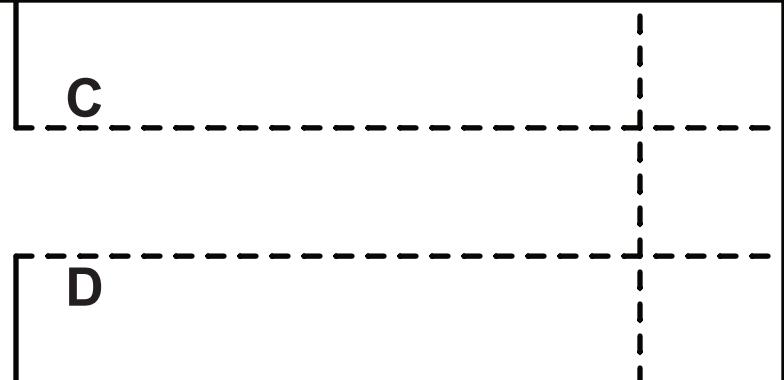
C

D



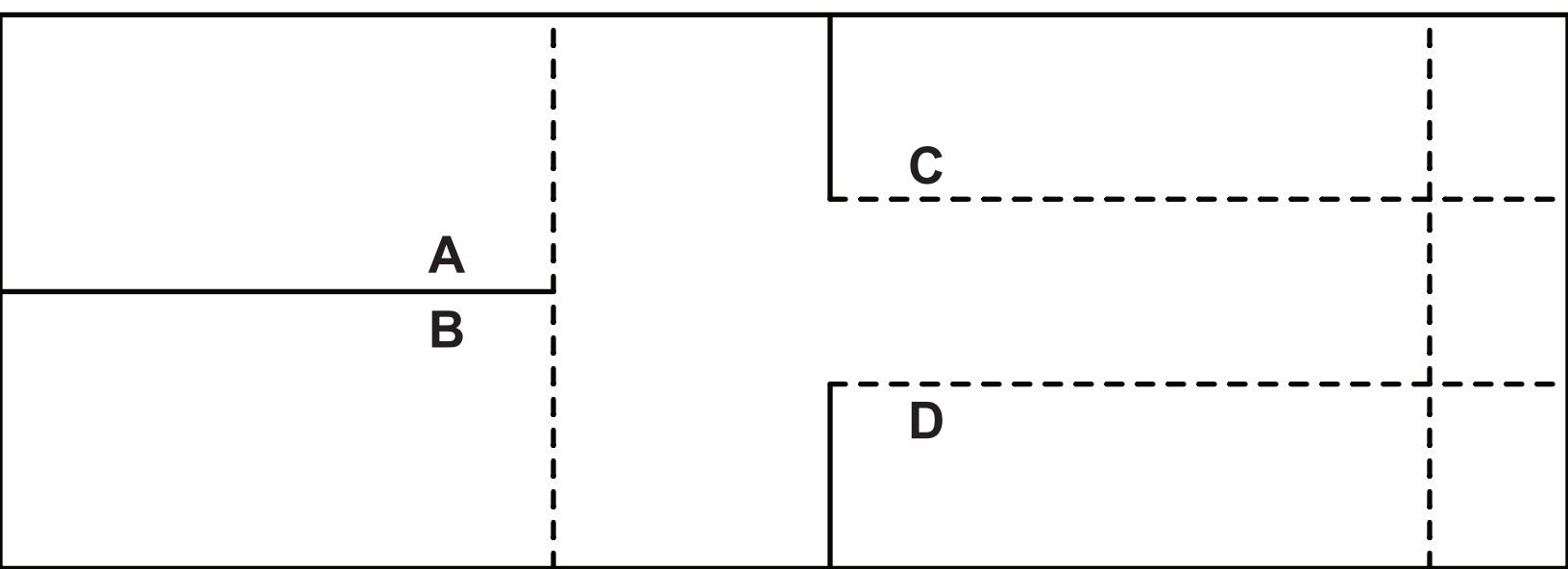
A

B



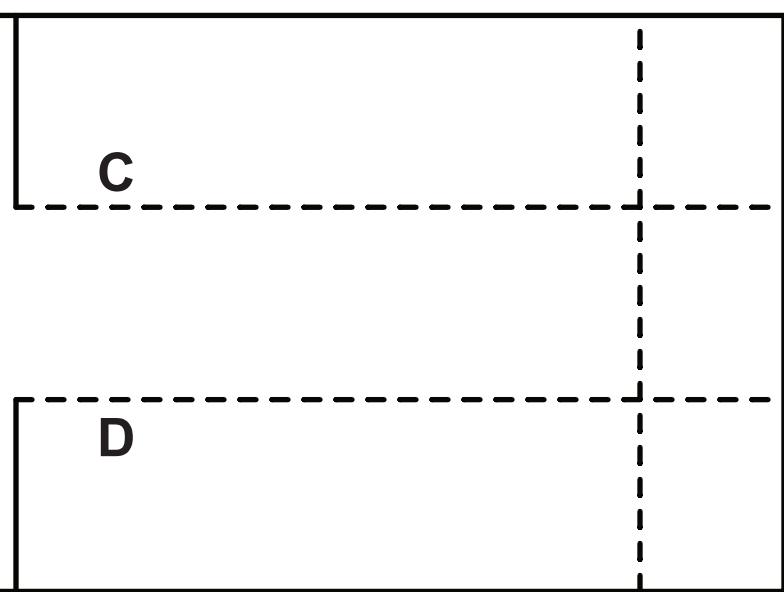
C

D



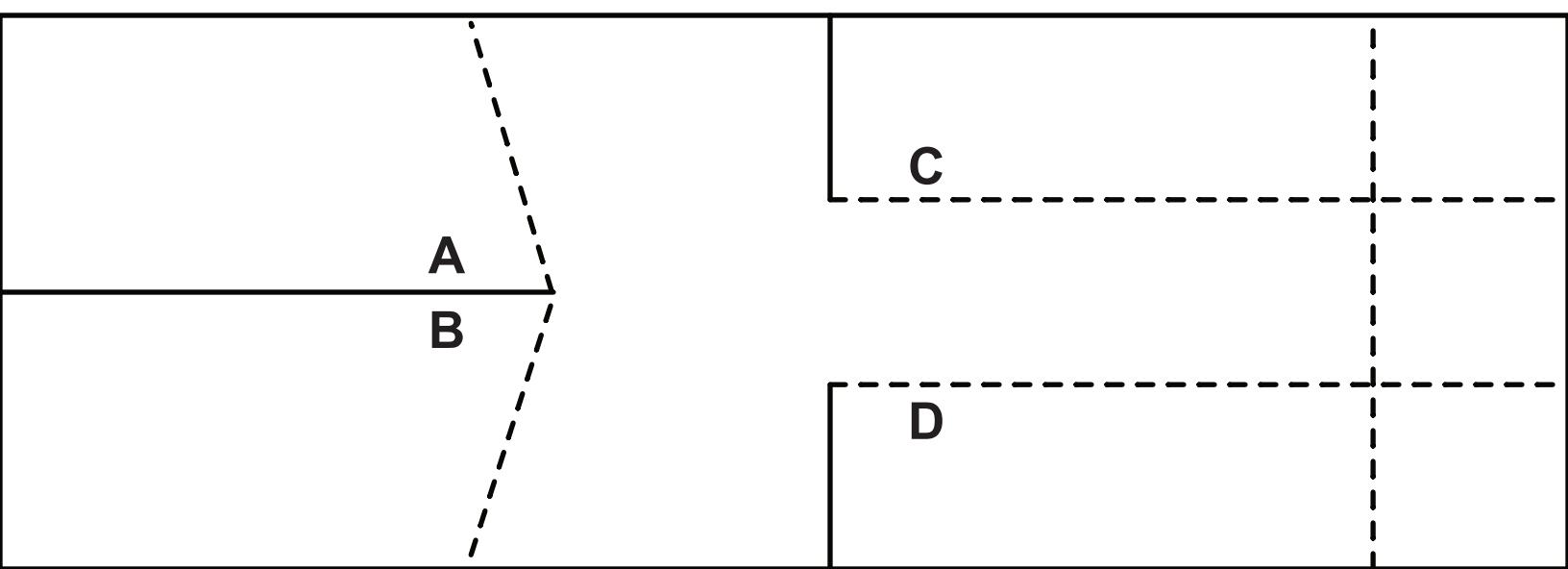
A

B



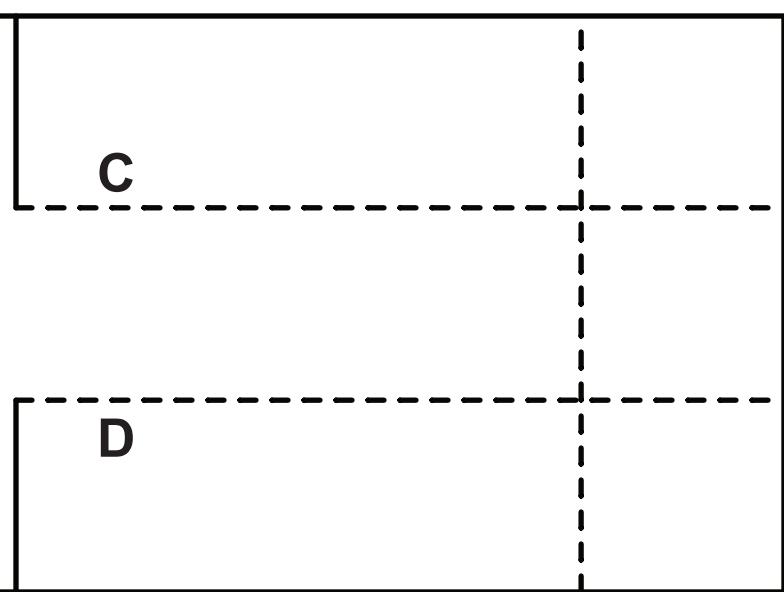
C

D



A

B



C

D

Paper Airplane

Serge Ballif

Melody

The musical score consists of two staves. The top staff is labeled "Melody" and the bottom staff is labeled "Echo". Both staves are in common time (indicated by a "4" below the staff) and major key (indicated by a "G" with a sharp sign). The Melody staff has a treble clef and an 8th note time signature. The Echo staff has a treble clef and an 8th note time signature. The lyrics are: "Pa-per air - plane fly - ing through the sky. Pa - per air - plane". The music includes various note values such as eighth and sixteenth notes, and rests.

Echo

Guit.

The musical score consists of two staves. The top staff is labeled "Guit." and the bottom staff is also labeled "Guit.". Both staves are in common time (indicated by a "4" below the staff) and major key (indicated by a "G" with a sharp sign). The lyrics are: "gli-dingoh sohigh. Fold and tuck the edge - s in, Got-ta make the crease just right. Pa - per". The music includes various note values such as eighth and sixteenth notes, and rests.

Guit.

Guit.

The musical score consists of two staves. The top staff is labeled "Guit." and the bottom staff is also labeled "Guit.". Both staves are in common time (indicated by a "4" below the staff) and major key (indicated by a "G" with a sharp sign). The lyrics are: "gli-dingoh sohigh. Fold and tuck the edge - s in, Got-ta make the crease just right.". The music includes various note values such as eighth and sixteenth notes, and rests.

Guit.

Guit.

The musical score consists of two staves. The top staff is labeled "Guit." and the bottom staff is also labeled "Guit.". Both staves are in common time (indicated by a "4" below the staff) and major key (indicated by a "G" with a sharp sign). The lyrics are: "air - plane read - y for the flight.". The music includes various note values such as eighth and sixteenth notes, and rests.

7

Pa - per air - plane read - y for the flight.