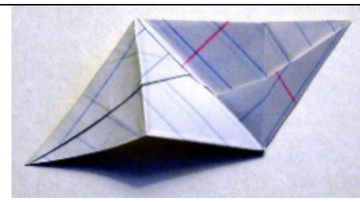
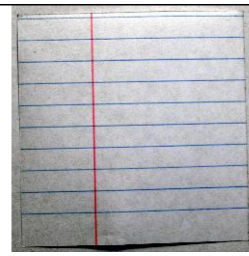
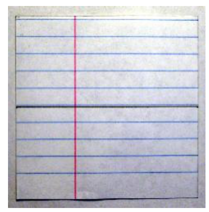
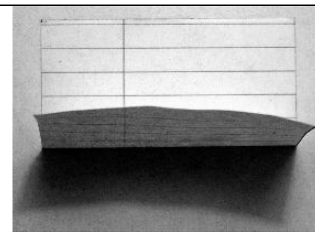
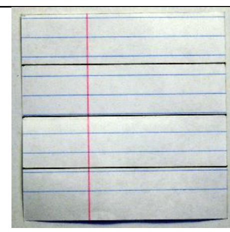
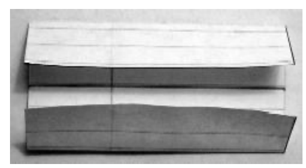
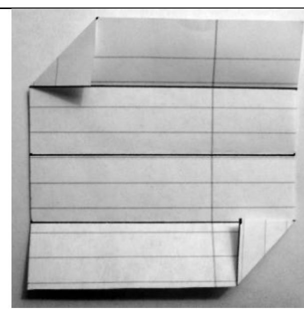
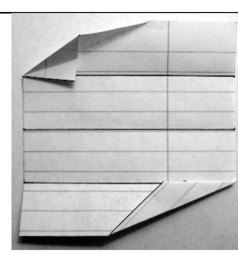
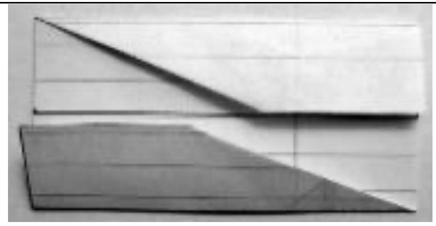
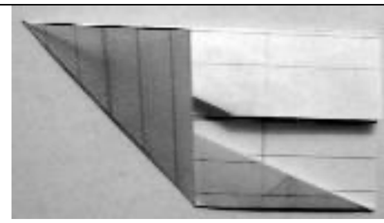
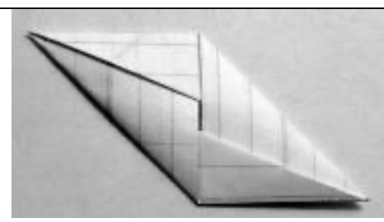
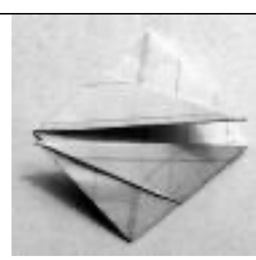
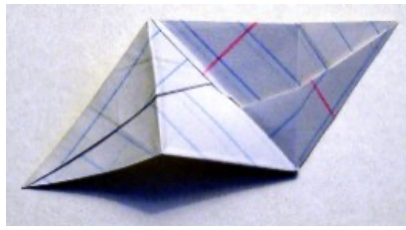
Folding a single piece:

A completed piece. This is your final goal for this section: to make a completed piece.	
1. Start with a square of paper	
2. Make a precise and creased fold lengthwise, folding the paper in half	 
3. Unfold the paper and lay it flat. Take the bottom edge of the paper and fold it to the center crease; then spin the paper 180 degrees and do the same.	 
4. Take the bottom-**right** corner of the paper and fold it into a triangle so that what was the left side of the paper now lies on top of the second fold you made. Leave that folded, spin the paper 180 degrees and make the same fold.	
5. This is the traditional fold you make when producing a needlenose paper airplane. Now, take the bottom-right corner of the paper and make another needlenose-type fold. That means bringing the fold that you just made to lie exactly on top of the second fold you made. Then rotate the paper 180 degrees and make the same fold.	

6. Repeat step 3 by folding the top quarter of the paper down, and the bottom quarter of the paper up, but this time with the new triangular folds	
7. Take the bottom-left corner of the paper and fold it so that what was the left edge of the paper now lies on top of the top edge of the paper, producing a triangle	
8. Rotate the paper 180 degrees and repeat. A parallelogram! Now, you must tuck in that large triangle fold into the paper	 (The left fold is tucked in, while the right fold is not)
9. Then rotate the paper 180 degrees and tuck in the other fold	
10. Flip the paper over and rotate it like so	
11. Fold the bottom point of the paper **straight up** to meet another vertex of the parallelogram	
12. Then rotate the paper 180 degrees and repeat, producing this	

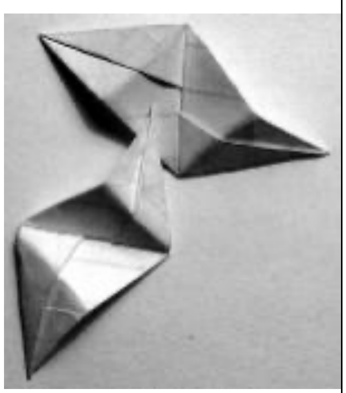
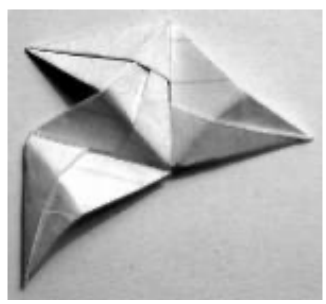
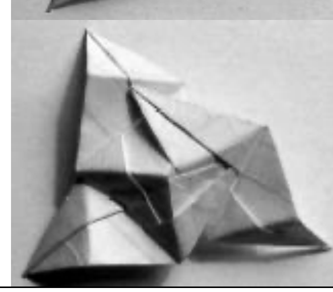
13. Now you need to give the paper a bend in the middle.	

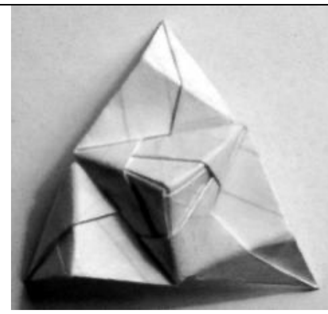
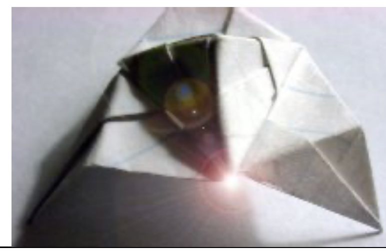


Voila! You have created one piece.

Making Polyhedra:
Now that you know how to make pieces, you need to choose which polyhedron you'd like to construct!

1. The cube requires 6 pieces.
2. The octahedron. (A stellated octahedron, actually.) Requires 12 pieces.
3. The icosahedron. (A stellated icosahedron.) Takes 30 pieces

A piece has two sharp corners and two pockets, which allow them to interlock. Here are two pieces placed to illustrate this: 	
Here is a third piece, placed over the first two:	 

There is a free corner and free pocket that can be locked together. Doing so necessitates forming the three pieces into a three-dimension configuration that I call a peak: Peaks are the founding blocks of your models.	
With two such peaks, you should be able to assemble a cube. Here is a cube, pictured with a peak at the center of the image:	
Now, here is a what I call (somewhat confusingly), a "point". Around every "point" in a polyhedron there are three or more peaks. The lens flare in the following image shows where a point is located relative to a peak	
Here is a picture of an octahedron, with a point more or less in the center of the image. See how four peaks are arranged around the point?	
And here is an icosahedron. Icosahedra have five peaks around every point:	

Forming the first three models, therefore, can be straightforward when thought about in terms of peaks and points.

Simply start out with the required number of pieces (6, 12, or 30) and place 3, 4, or 5 peaks around every point until you've run out of pieces and close the model. You will end up with a cube, an octahedron, or an icosahedron, respectively.

Adapted from **Stephan T. Lavavej** https://nuwen.net/poly.html