

# Show Us Your Magic Cut!

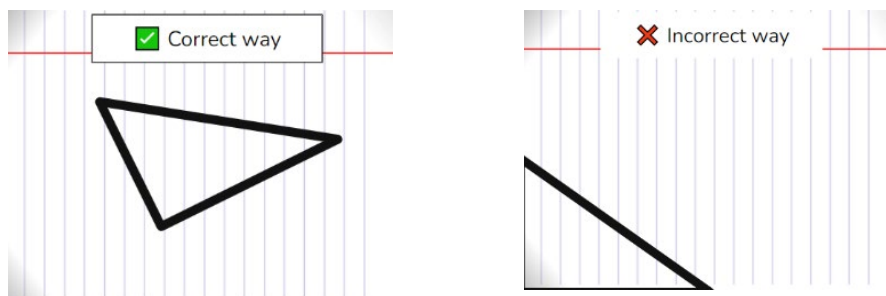
Felipe Merino & Shawn Feener

| Grade Range | Content Area   | Materials  |
|-------------|--|--|
| 3 to 6      | <ul style="list-style-type: none"><li>• Geometry and Measurement</li></ul> | <ul style="list-style-type: none"><li>• Ruler</li><li>• Paper</li><li>• Pen</li><li>• Scissors</li></ul> |

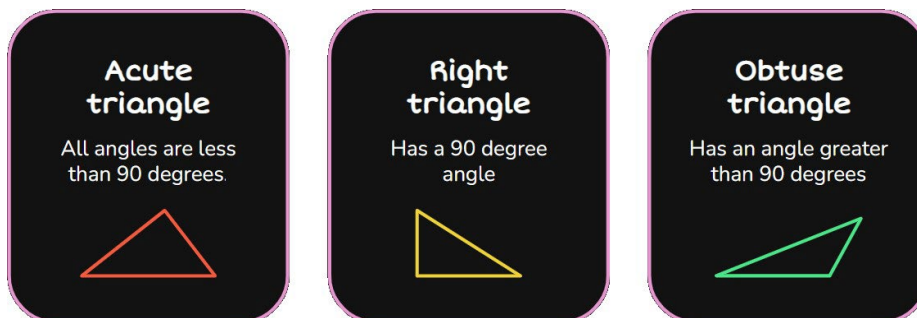
## Activity

**The Task:** We will cut out a triangle with just one straight line cut.

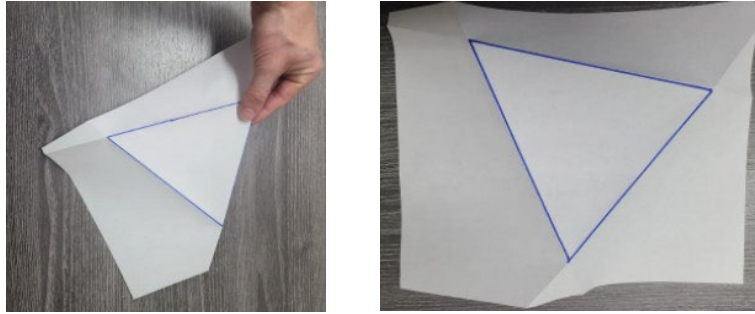
**Step 1:** Draw your triangle near the center of your paper.



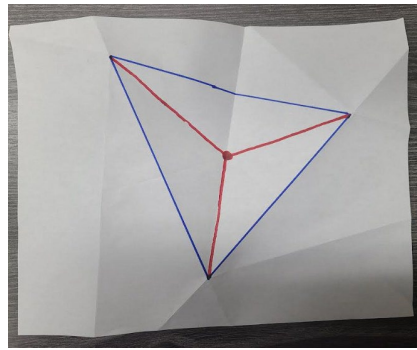
Any triangle is fine.



**Step 2:** Fold the paper backwards along all 3 sides of your triangle.



**Step 3:** Next fold each angle in half. These lines are called angle bisectors. Then draw the angle bisectors. Notice they meet at a single point!



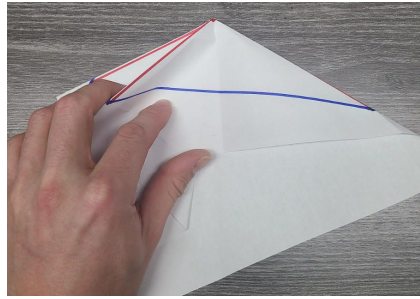
**Step 4:** To help foster imagination, creativity and perseverance it is recommended to play around with the current folds and some additional folding. While playing around with the folding, observe and predict what object might be created if you were to make a magic cut. Take as much time as you like based on your comfortability with this task.

**Step 5:** The big reveal.

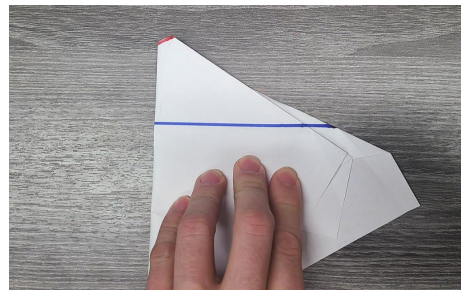
Push in the sides of the triangle so that the angle bisectors look like below.



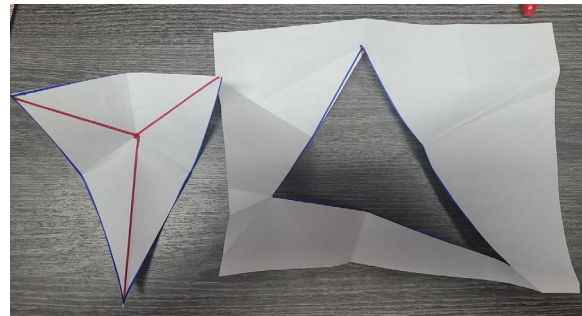
Lay the paper down. Fold one tab on top of the other so two sides of the triangle line up.



Then fold the last tab so the third side of the triangle lines up.



Now you are ready for your magic cut.



### Extensions & Additional Resources

#### Extensions:

1. In step 3, is it always true that the angle bisectors of any triangle will meet at a single point? Think, play, explore and see.
2. Will this magic cut work for a square, a rectangle, or other polygons? Think, play, explore and see.

#### Additional Resources:

1. A good [video](#) that overviews the “fold - one cut theorem”.
2. The activity was made to demo in a virtual environment with a camera. So here is a [video](#) showing the steps.