Paper Folding

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This activity was adapted from the youcubed paper-folding activity, available here: `https://www.youcubed.org/tasks/paper-folding/`.

1 Goals

The goals of this activity are:

1. To give students practice with important problem solving skills, and to provide an opportunity to engage in mathematical thinking that is both visual and tactile.
2. To challenge students to use the "skeptic" framework to start thinking about the process of mathematical proof.

2 Materials

For this activity you will need:

1. A few squares of origami paper per student.

3 Instructions

This activity will take approximately 20 minutes.

1. Form pairs students, and explain the goals of the activity. Emphasize that there is no expectation that they solve all the problems on the handouts.
2. Give students the following problems, and explain that in each problem, they should convince themselves and their partners that they have really succeeded. Explain that they should take turns being the "explainer" and the "skeptic."
   (a) Construct a square with exactly 1/4 the area of the original square.
   (b) Construct a triangle with exactly 1/4 the area of the original square.
   (c) Construct another triangle, also with 1/4 the area, that is not congruent to the first one you constructed.
   (d) Construct a square with exactly 1/2 the area of the original square.
   (e) Construct another square, also with 1/2 the area, that is oriented differently from the one you constructed in the previous prompt.
3. As students work on the problems, visit each group to answer any questions they may have.

4 Tips

1. Origami paper folds nicely, but it is also possible to fold and cut standard 8.5 by 11 inch paper into squares.

2. Students will likely not complete the last challenge and can be encouraged to continue working on the problem.