Problem of the Week

Problem A

Transforming Triangles

A) Start with a square piece of paper. Fold it in half along the diagonal to form a triangle and then open it up again. There should be a crease in the paper. Cut along the crease to make two triangles.

Label the angles of each of the triangles with the letters $a$, $b$, and $c$, where $c$ is at the corner with the largest angle like this:

```
  a
 /|
 / |
 /  |
c /   |
    b
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What are the sizes of the angles $a$, $b$, and $c$? Justify your answer.

B) Take one of triangles and fold it in half so that the corner labelled $a$ touches the corner labelled $b$ and then open it up again. There should be a crease in the paper. Cut along the crease to make two triangles.

Compare one of the smaller triangles to the larger triangle left uncut from part A). What features of the triangles are different? What features of the triangles are the same?

C) The two smaller triangles from part B) have equal sides and angles. Arrange these triangles into a single shape where sides from each triangle with matching lengths are lined up and touching without overlapping. What shapes can you form?