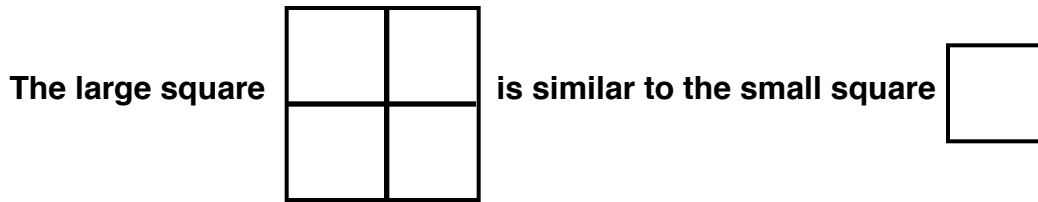


Four To One

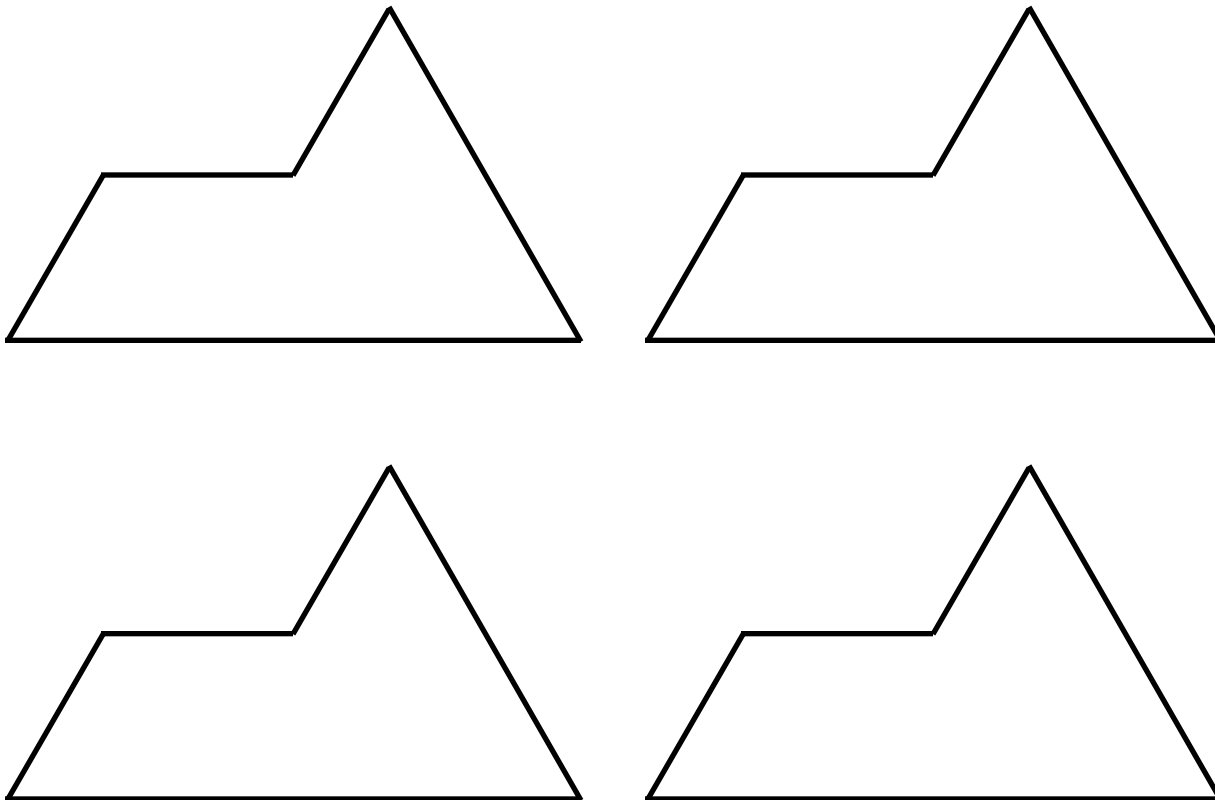
Two shapes are called **Similar Shapes** if that have the same shape but one shape is a larger version of the other.

The large square below is the same shape as the small square. It has the same shape but is has sides that are twice as long as the small square.

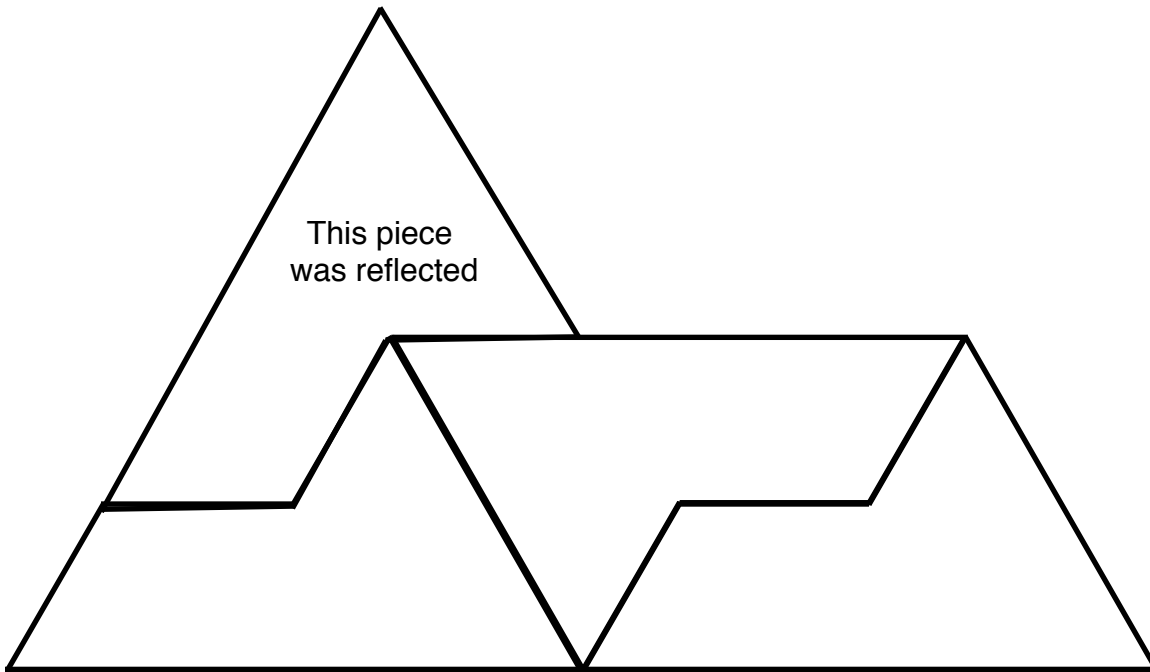


Cut out the 4 identical shapes shown below. Arrange the 4 shapes so that they fit together to make 1 shape. The new shape must be **the same shape** as the original shape but each side must be **twice as long**.

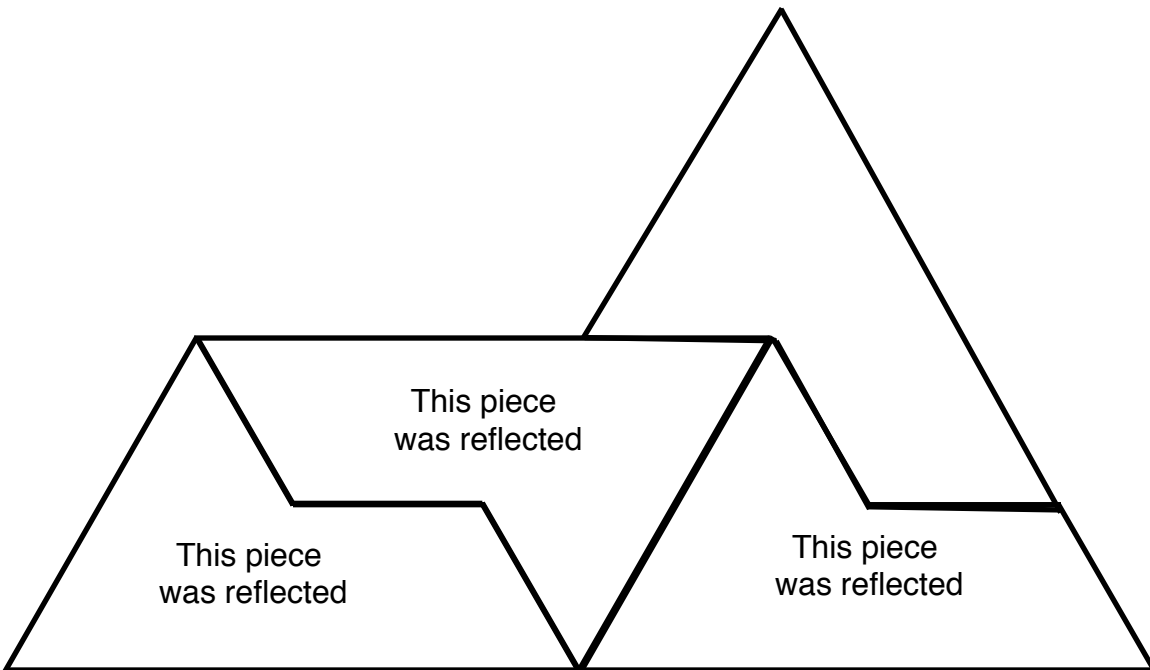
Arrange the 4 shapes to make a new shape that is similar to the original shape. You may turn the pieces around (rotate) as much as you want. You may also flip over (reflect) any pieces you want.



Solution



or

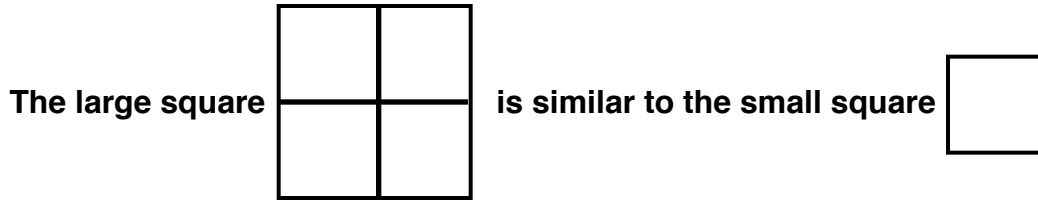


The 2 solutions are reflections of each other.

Four To One

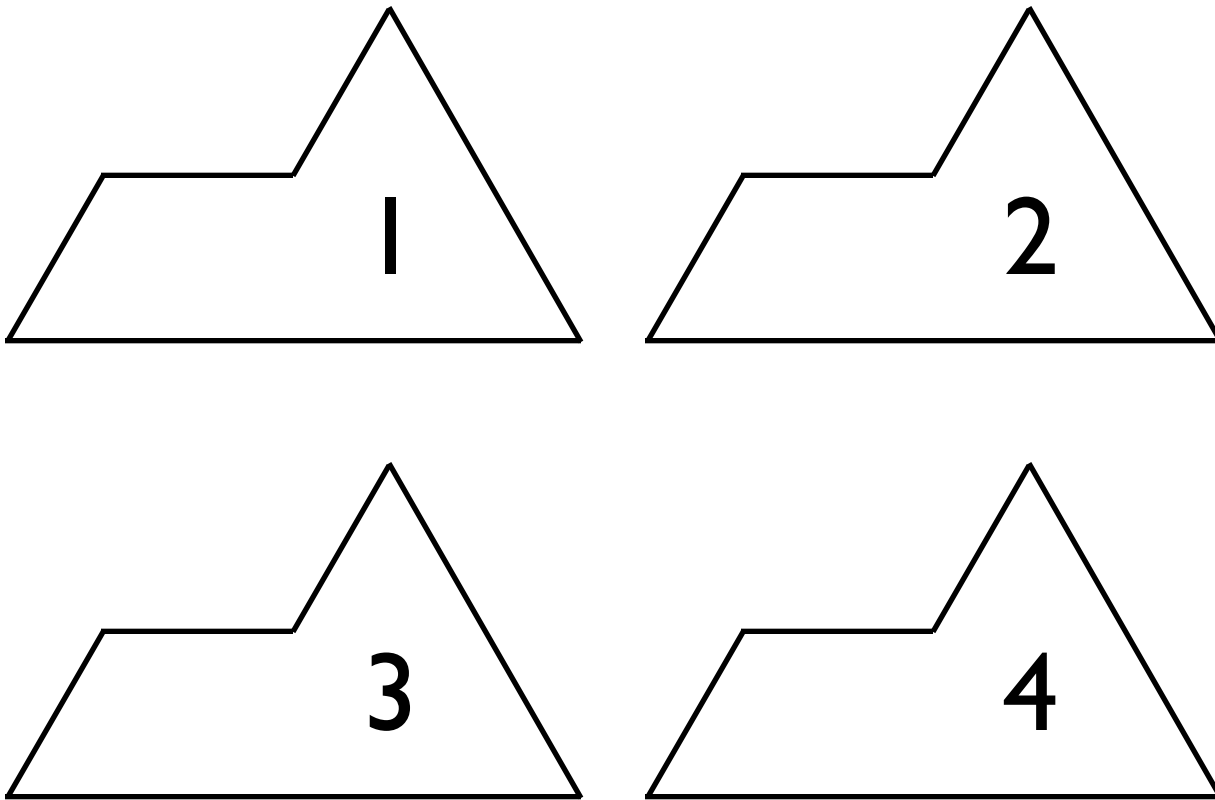
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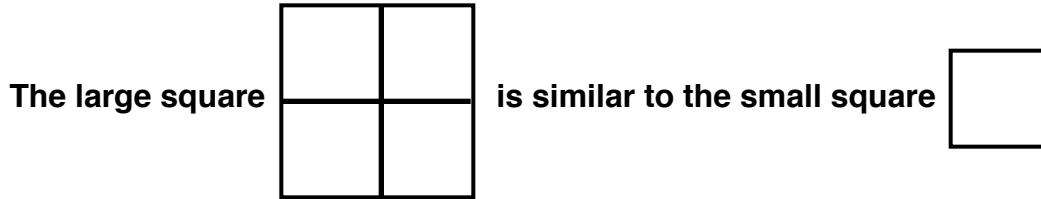
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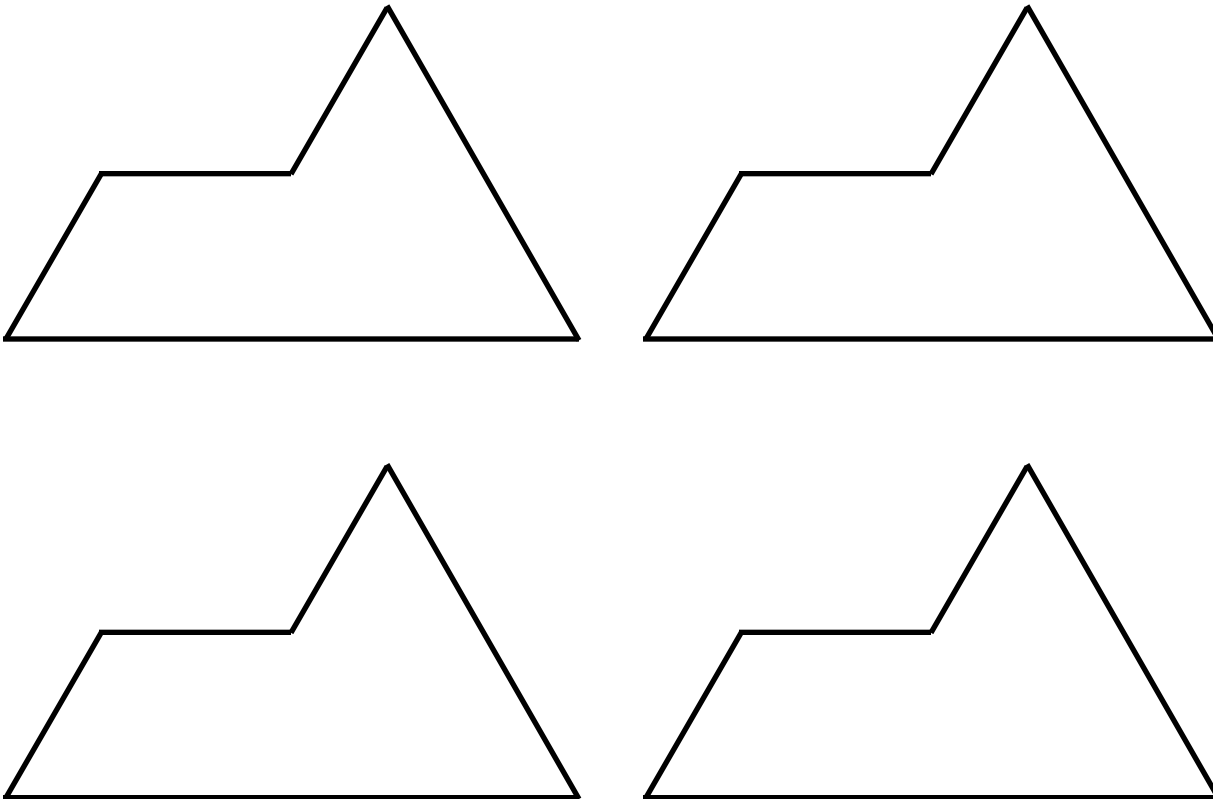
Four To One

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Notes.

Some shapes stay the same when flipped over (reflected) like squares or rectangles. Some have a “right or left” orientation to them when reflected. These parts may look the same to a student but they are not. You could not rotate the original piece to match the reflected piece. The parts in this puzzle are like this. To solve this puzzle you must flip over some the pieces. The 2 solutions list the pieces that were flipped over. You cannot rotate the original face up pieces so they match the orientation in the solution.

I often number the front faces of my puzzle pieces. The reason for this lies in the problem of reflection. Some puzzles can only be solved if all the pieces stay face up. If some of the pieces were facing up and some were facing down the puzzle may not be possible to complete. In that case I number the pieces front faces.

Some puzzles can only be solved if one or more of the pieces are flipped over. These type of puzzles are harder to solve. In these cases I do not normally number the pieces front faces. It may confuse the student. Most students will see the numbered faces and assume the numbered faces must be kept face up

The puzzle can only be solved if 3 parts stay face up and 1 is flipped over or if 3 parts are flipped over and 1 part stays face up.

You must decide what information if any you give the students as the start of the trick.

I have 3 version of the puzzle.

The first version has hints about flipping the pieces but the pieces **are not** numbered. Many student will start flipping the pieces and get lost. They will not know what pieces have been flipped and which ones have not. They cannot start over at the beginning unless they turn and reflect the 4 pieces so they all are in the same orientation. It is a good test of their skills.

The second version has hints about flipping the pieces and the pieces **are** numbered. They can start over at the beginning by turning the pieces so the numbers all face up. It is the easiest version to use.

The third version gives no hints and the parts are not numbered. It is the hardest version and may challenge many students.