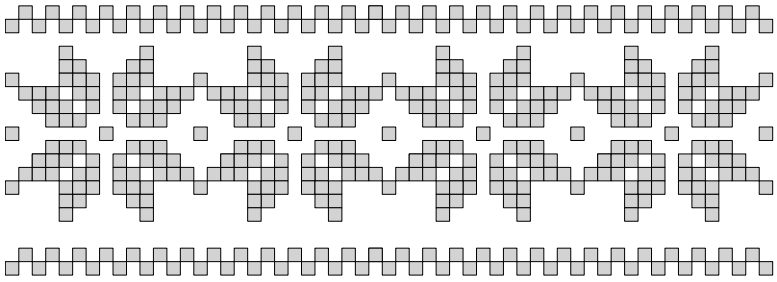
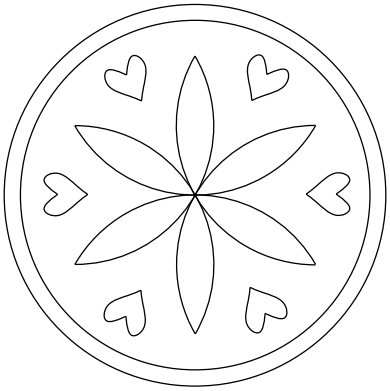
Math 191 Fundamentals of Mathematics II
14.2 Symmetry and 14.3 Congruence
March 26, 2014

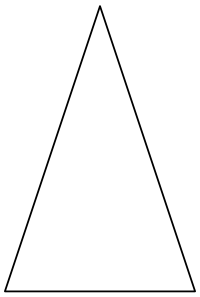
Symmetry

What kinds of symmetry do the following patterns have?

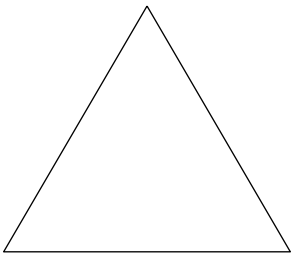




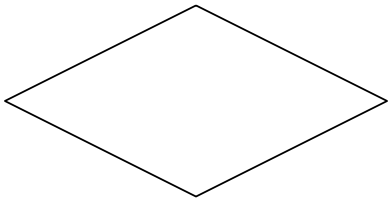
Recognizing symmetry can help us better understand shapes. For example, an isosceles triangle has _____ symmetry. Since _____ preserve _____, this tells us that _____.



An equilateral triangle has _____ symmetry. Therefore, we can tell that _____ have _____.



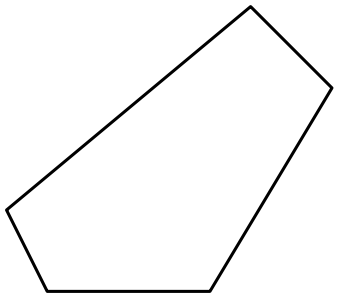
A rhombus has _____ symmetry. This tells us that _____ have _____.

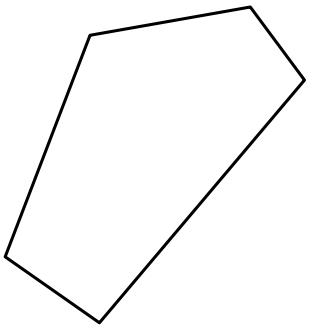


Congruence

We say Object A and Object B are _____ if there is a rigid motion (that is a

that takes Object A to Object B.

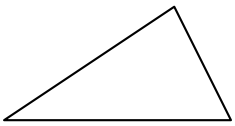


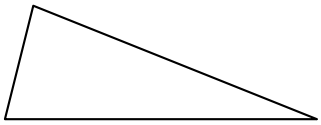


We often think of congruence as meaning that two objects have

Why can't we say the objects are the same?

Caution: Students may interpret "same shape" to mean _____.
For example, they might wrongly think that the shapes below have the same shape because they are both



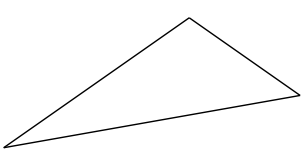


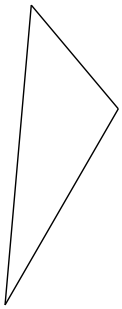
Therefore, emphasize that when we talk about congruence and say that figures must have the "same shape" this means that

We want to be able to tell when objects are congruent. First, how can we tell if line segments are congruent?

The important next step is to be able to tell if two triangles are congruent. Initially, you might check if two triangles are congruent physically by seeing if we can _____ the two triangles together. We can describe our procedure like this:

- Align the
- Check to see if the two triangles are matching. If not see if reflecting one will make them line up.





We will try to find ways of checking whether two triangles are congruent that doesn't involve physically moving triangles around. Notice that two triangles are congruent if

(i) all _____ of corresponding sides are of equal _____

(ii) all _____ of corresponding _____ are equal.

This means that we can check _____ things of the two triangles.

In $\triangle ABC$, we measure:

$\overline{AB} =$ $\overline{BC} =$ $\overline{CA} =$

$\angle A =$ $\angle B =$ $\angle C =$

In $\triangle PQR$, we measure:

$\overline{PQ} =$ $\overline{QR} =$ $\overline{RP} =$

$\angle P =$ $\angle Q =$ $\angle R =$