

Student Objectives

- I know that vertical angles are always congruent.
- I know the definition of congruence and related notation, \cong .
- I know that to prove two figures are congruent there must be a sequence of rigid motions that maps one figure onto the other.

Classwork

Exploratory Challenge 1

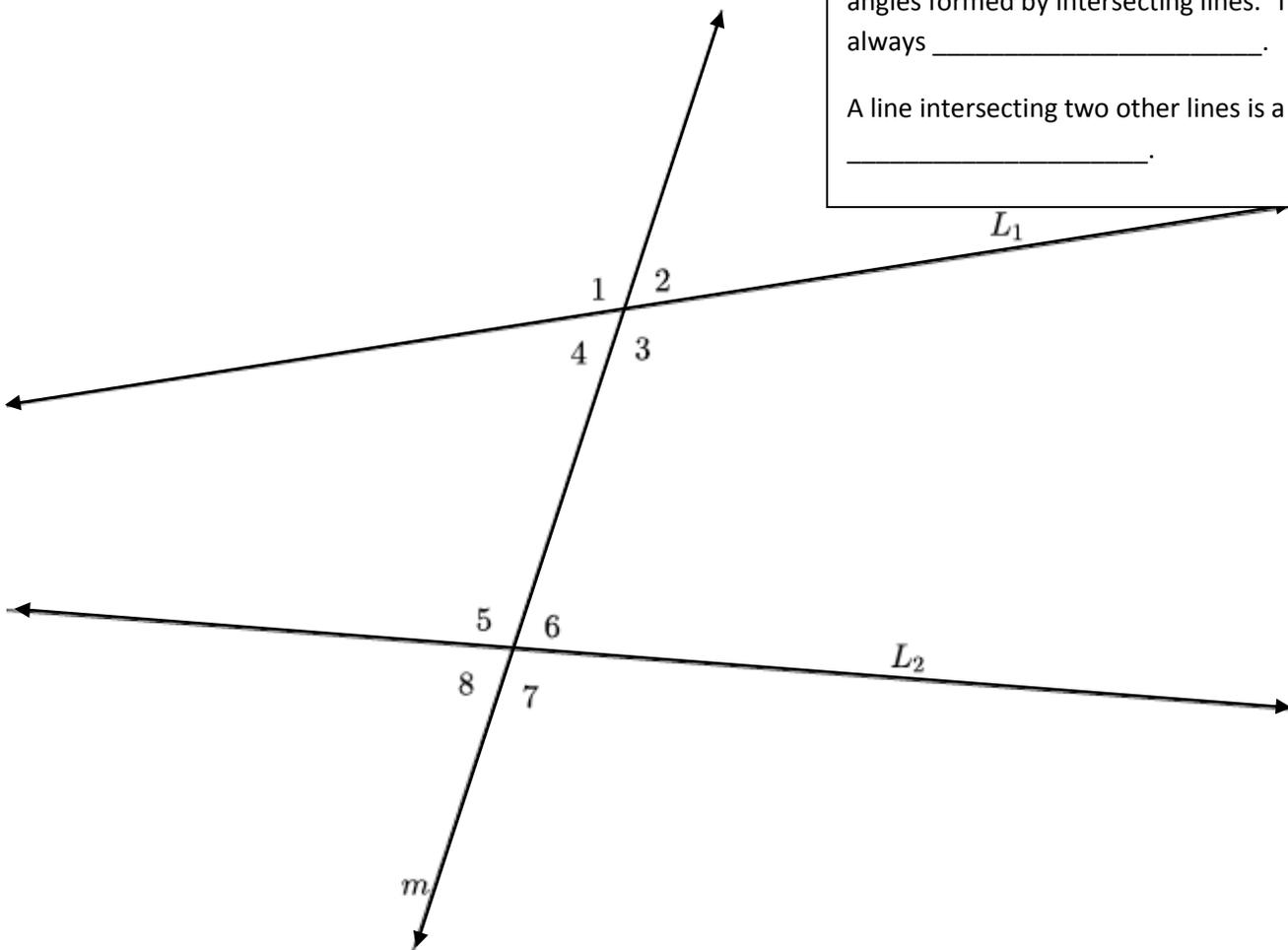
In the figure below, L_1 is not parallel to L_2 , and m is a transversal. Use a protractor to measure angles 1–8. Which, if any, are equal? Explain the transformation that maps the equal angles to each other. (Use your transparency, if needed).

Notes:

Two figures are _____ if they can be mapped onto each other using one or more transformations.

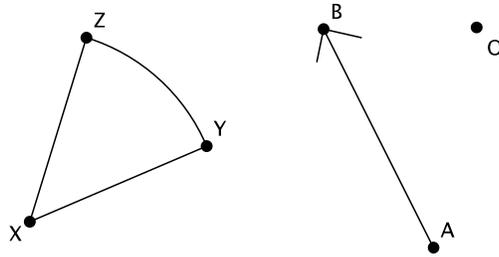
_____ angles are opposite angles formed by intersecting lines. They are always _____.

A line intersecting two other lines is a _____.



Exercise 1

Perform the sequence of a translation followed by a rotation of Figure XYZ , where T is a translation along a vector \overrightarrow{AB} and R is a rotation of d degrees (you choose d) around a center O . Label the transformed figure $X'Y'Z'$. Will $XYZ \cong X'Y'Z'$?



Lesson Summary

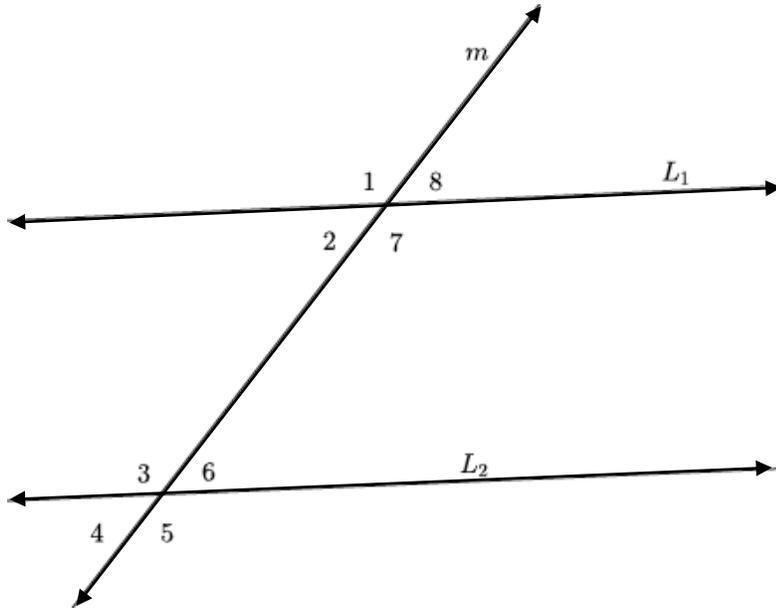
Given that sequences enjoy the same basic properties of basic rigid motions, we can state three basic properties of congruence:

- (C1) A congruence maps a line to a line, a ray to a ray, a line segment to a line segment, and an angle to an angle.
- (C2) A congruence preserves lengths of line segments.
- (C3) A congruence preserves degrees of angles.

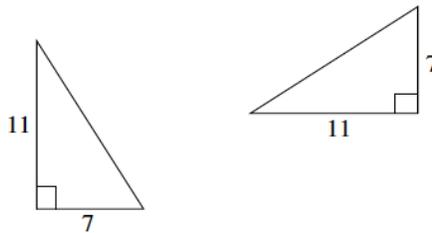
The notation used for congruence is \cong .

Homework Homework Homework Homework Homework

1. Name all pairs of vertical angles and the transversal in the picture below.

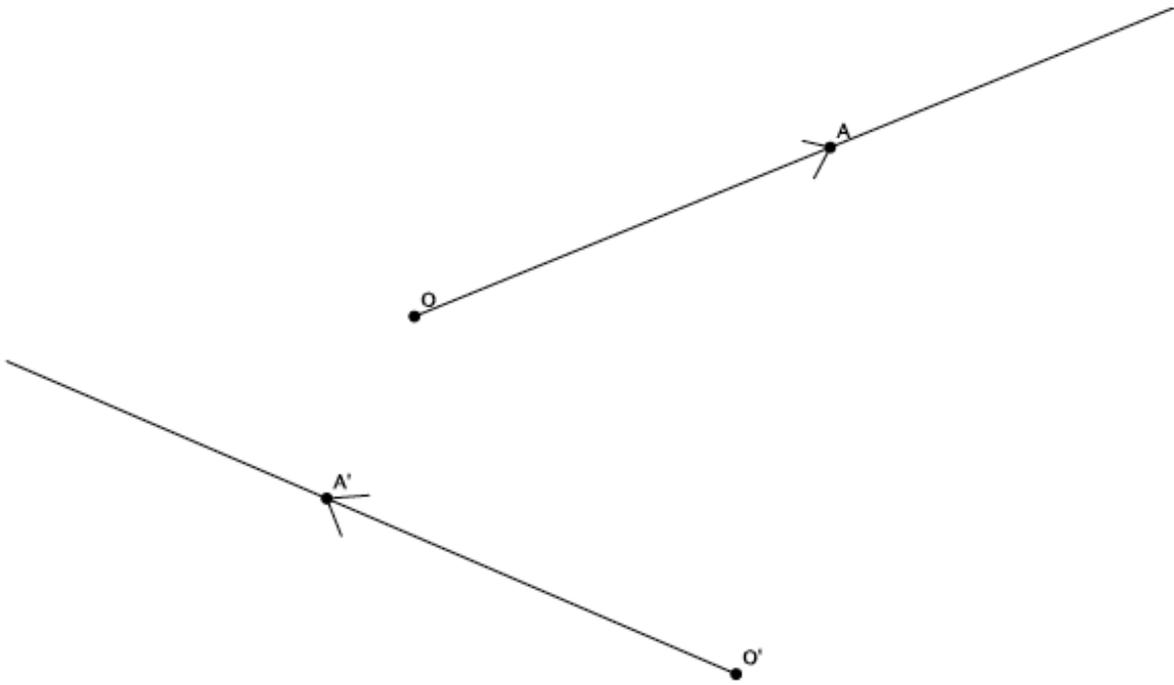


2. Are the two right triangles shown below congruent? If so, describe the congruence that would map one triangle onto the other.



3.

- a. Given two rays, \overrightarrow{OA} and $\overrightarrow{O'A'}$, describe the congruence that maps \overrightarrow{OA} to $\overrightarrow{O'A'}$.



- b. Describe the congruence that maps $\overrightarrow{O'A'}$ to \overrightarrow{OA} .

