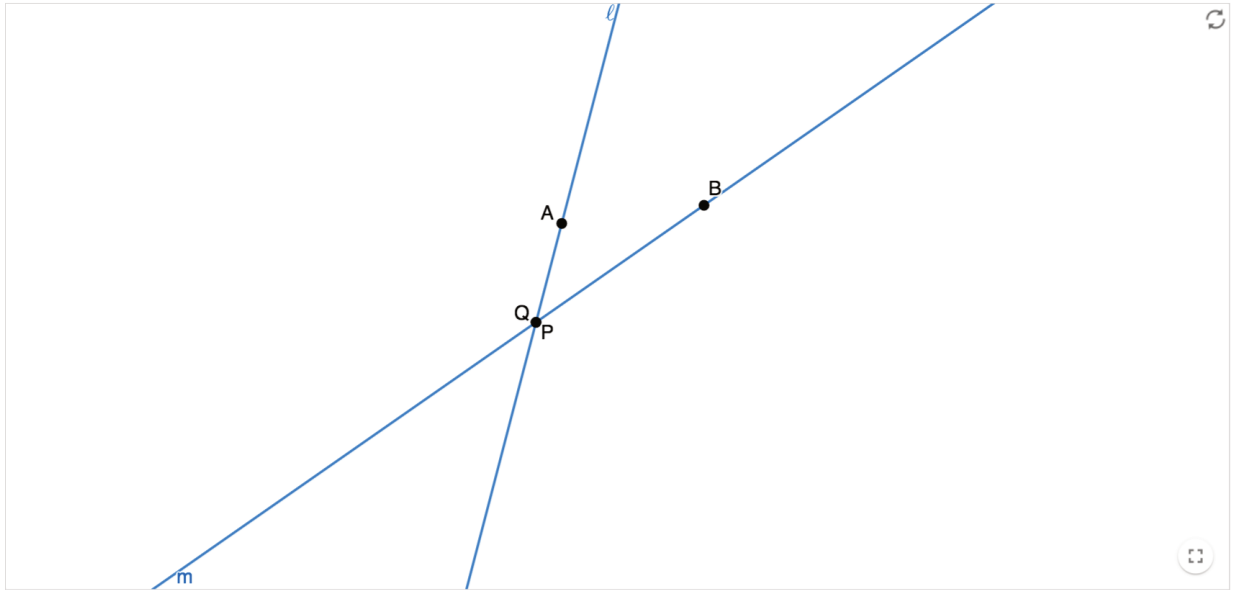


Unit 2 Lesson 7: Angle-Side-Angle Triangle Congruence

1 Notice and Wonder: Assertion (Warm up)

Images for Launch



Student Task Statement

Assertion: Through 2 distinct points passes a unique line. Two lines are said to be *distinct* if there is at least 1 point that belongs to one but not the other. Otherwise, we say the lines are the same. Lines that have no point in common are said to be *parallel*.

Therefore, we can conclude: given 2 distinct lines, either they are parallel, or they have exactly 1 point in common.

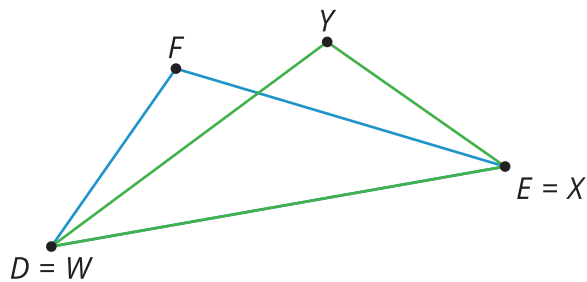
What do you notice? What do you wonder?

2 Proving the Angle-Side-Angle Triangle Congruence Theorem

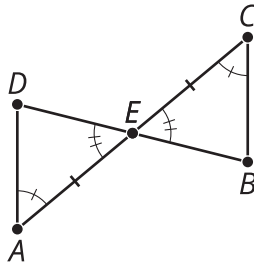
Student Task Statement

1. Two triangles have 2 pairs of corresponding angles congruent, and the corresponding sides between those angles are congruent. Sketch 2 triangles that fit this description.
2. Label the triangles WXY and DEF , so that angle W is congruent to angle D , angle X is congruent to angle E , and side WX is congruent to side DE .
3. Use a sequence of rigid motions to take triangle WXY onto triangle DEF . For each step, explain how you know that one or more vertices will line up.

Activity Synthesis



$\angle A \cong \angle C$, $\overline{AE} \cong \overline{EC}$, $\angle DEA \cong \angle BEC$, so $\triangle DEA \cong \triangle BEC$

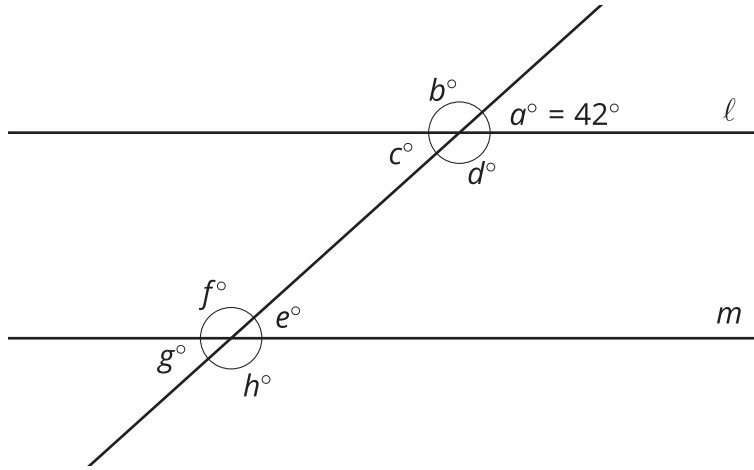


3 Find the Missing Angle Measures (Optional)

Student Task Statement

Lines ℓ and m are parallel. $a = 42$. Find b , c , d , e , f , g , and h .

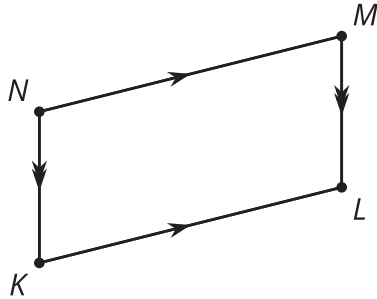
$\ell \parallel m$



4 What Do We Know For Sure About Parallelograms?

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$\overline{NM} \parallel \overline{KL}$, $\overline{NK} \parallel \overline{ML}$, so $MNKL$ is a parallelogram



Student Task Statement

Quadrilateral $ABCD$ is a **parallelogram**. By definition, that means that segment AB is parallel to segment CD , and segment BC is parallel to segment AD .

1. Sketch parallelogram $ABCD$ and then draw an auxiliary line to show how $ABCD$ can be decomposed into 2 triangles.
2. Prove that the 2 triangles you created are congruent, and explain why that shows one pair of opposite sides of a parallelogram must be congruent.

Activity Synthesis

$MNKL$ is a **parallelogram** so $\overline{NM} \cong \overline{KL}$, $\overline{NK} \cong \overline{ML}$

