IM 9–12 MATH v.1

Unit 2
Congruence

GEOMETRY

Lesson 15

Congruence for Quadrilaterals

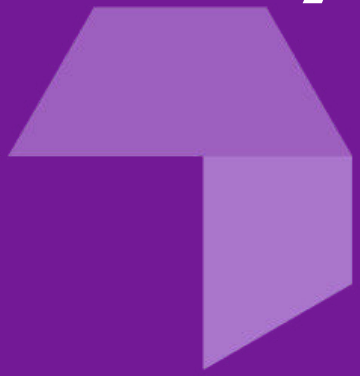
Illustrative Mathematics®

Kendall Hunt

Learning Goal

Let's investigate how congruence for quadrilaterals is similar to and different from congruence for triangles.

Geometry



True or . . . Sometimes True?: Parallelograms

Warm-up

Given that *ABCD* is a parallelogram.

1. What must be true?
2. What could possibly be true?
3. What definitely can't be true?

Floppy Quadrilaterals

Jada is learning about the triangle congruence theorems: Side-Side-Side, Angle-Side-Angle, and Side-Angle-Side. She wonders if there are any theorems like these for parallelograms.

1. If 2 parallelograms have all 4 pairs of corresponding sides congruent, do the parallelograms have to be congruent? If so, explain your reasoning. If not, use the tools available to show that it doesn't work.
2. In parallelograms $ABCD$ and $EFGH$, segment AB is congruent to segment EF, segment BC is congruent to segment FG, and angle ABC is congruent to angle EFG. Are $ABCD$ and $EFGH$ congruent? If so, explain your reasoning. If not, use the tools available to show that it doesn't work.

Make Your Own Congruence Theorem

Come up with another criteria that is enough to be sure that 2 parallelograms are congruent. Try to use as few measurements as you can. Be prepared to convince others that your shortcut works.

Congruence for Quadrilaterals

Lesson Synthesis

Reflect back on all that you have learned about congruence.

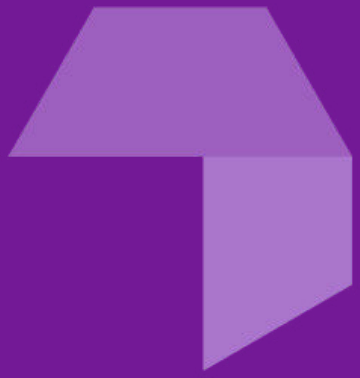
You know how to prove:

- Points
- Segments
- Triangles
- Some quadrilaterals are congruent

- I can use rigid transformations to prove quadrilaterals are congruent.
- I can write conjectures about quadrilateral congruence.

Learning Targets

Geometry



Rectangles are Special

Cool-down

Side-Side Rectangle Congruence Theorem: If we know 2 corresponding pairs of adjacent sides are congruent in a pair of rectangles, then the rectangles must be congruent.

Explain how you know the Side-Side Rectangle Congruence Theorem must be true.