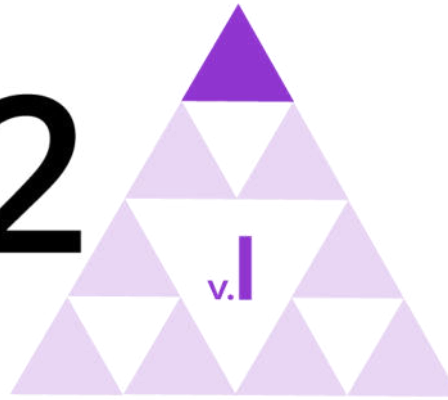


IM 9–12 MATH



Unit 2 Congruence



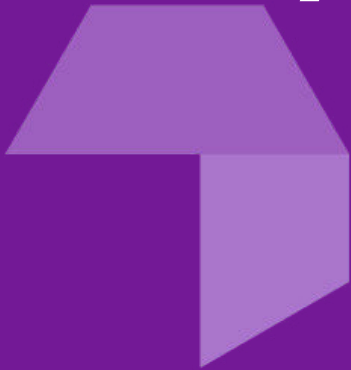
Lesson 5

Points, Segments, and Zigzags

Learning Goal

Let's figure out when
segments are congruent.

Geometry



What's the Point?



Warm-up

If A is a point on the plane and B is a point on the plane, then A is congruent to B .

Try to prove this claim by explaining why you can be certain the claim must be true, or try to disprove this claim by explaining why the claim cannot be true. If you can find a counterexample in which the “if” part (hypothesis) is true, but the “then” part (conclusion) is false, you have disproved the claim.

What's the Segment?

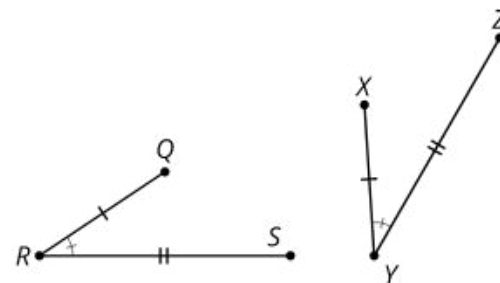


Prove the conjecture: If AB is a segment in the plane and CD is a segment in the plane, then AB is congruent to CD .

Zig Then Zag



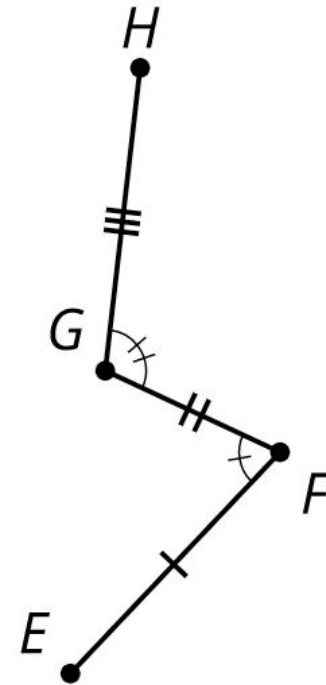
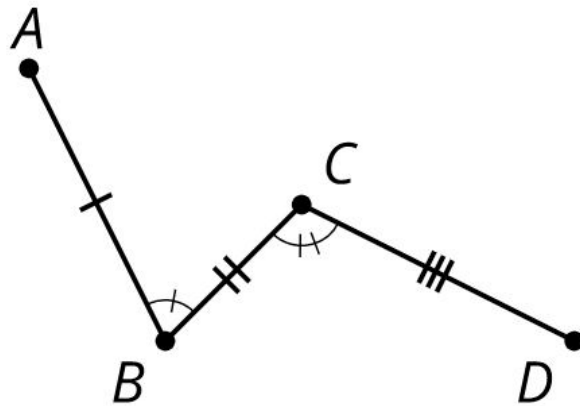
$$\overline{QR} \cong \overline{XY}, \overline{RS} \cong \overline{YZ}, \angle R \cong \angle Y$$



1. Here are some statements about 2 zigzags. Put them in order to write a proof about figures QRS and XYZ .
 - 1: Therefore, figure QRS is congruent to figure XYZ .
 - 2: S' must be on ray YZ since both S' and Z are on the same side of XY and make the same angle with it at Y .
 - 3: Segments QR and XY are the same length, so they are congruent. Therefore, there is a rigid motion that takes QR to XY . Apply that rigid motion to figure QRS .
 - 4: Since points S' and Z are the same distance along the same ray from Y , they have to be in the same place.
 - 5: If necessary, reflect the image of figure QRS across to be sure the image of S , which we will call S' , is on the same side of XY as Z .



2. Take turns with your partner stating steps in the proof that figure $ABCD$ is congruent to figure $EFGH$.





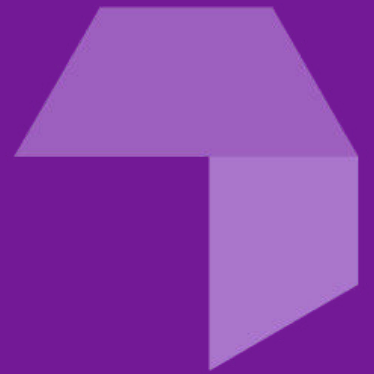
Look at the drawn zigzags.

Contribute one statement at a time to prove the zigzags are congruent.

I can write a proof that segments of the same length are congruent.

Learning Targets

Geometry





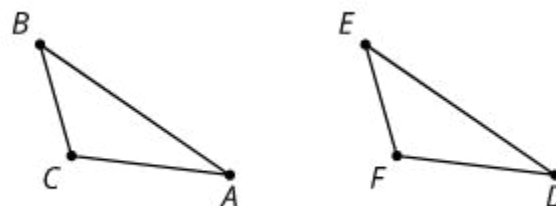
Conjecture: Any 2 circles in the plane are congruent.

Do you agree or disagree with the conjecture? If you agree, explain how you know. If you disagree, edit the conjecture so it will always be true.



corresponding

For a rigid transformation that takes one figure onto another, a part of the first figure and its image in the second figure are called corresponding parts. We also talk about corresponding parts when we are trying to prove two figures are congruent and set up a correspondence between the parts to see if the parts are congruent.



In the figure, segment AB corresponds to segment DE , and angle BCA corresponds to angle EFD .



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