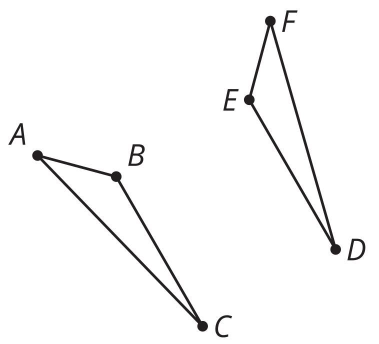
Lesson 2: Congruent Parts, Part 2

- Let’s name figures in ways that help us see the corresponding parts.

2.1: Math Talk: Which Are Congruent?

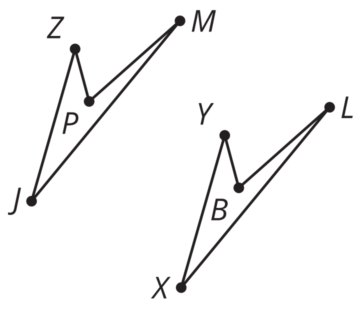
Each pair of figures is congruent. Decide whether each congruence statement is true or false.

$\triangle ABC \cong \triangle FED$



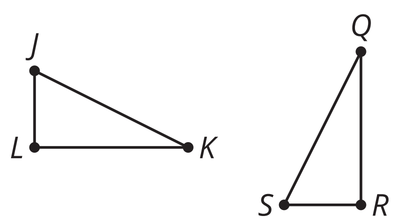
Triangle ABC is congruent to triangle FED.

$PZJM \cong LYXB$



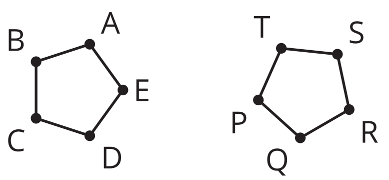
Quadrilateral $PZJM$ is congruent to quadrilateral $LYXB$.

$\triangle JKL \cong \triangle QRS$



Triangle JKL is congruent to triangle QRS.

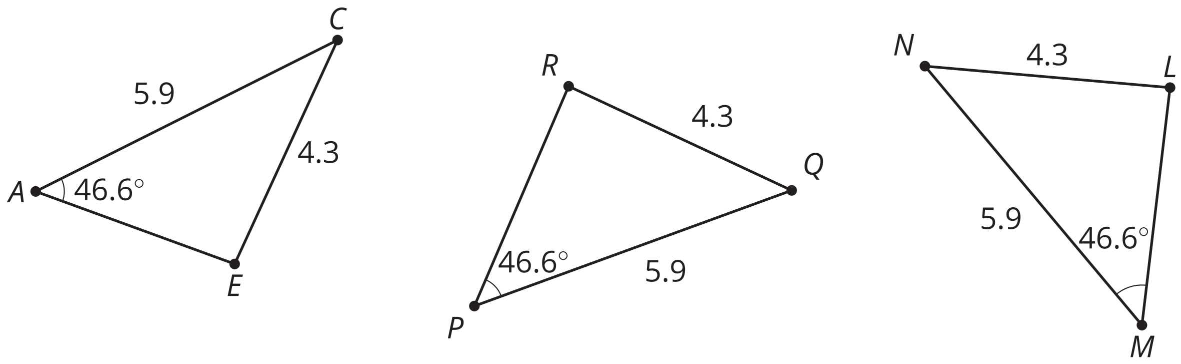
$ABCDE \cong PQRST$



Pentagon $ABCDE$ is congruent to pentagon $PQRST$.

2.2: Which Triangles Are Congruent?

Here are 3 triangles.

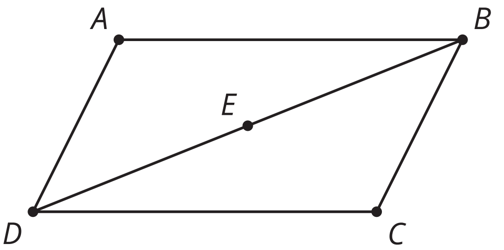


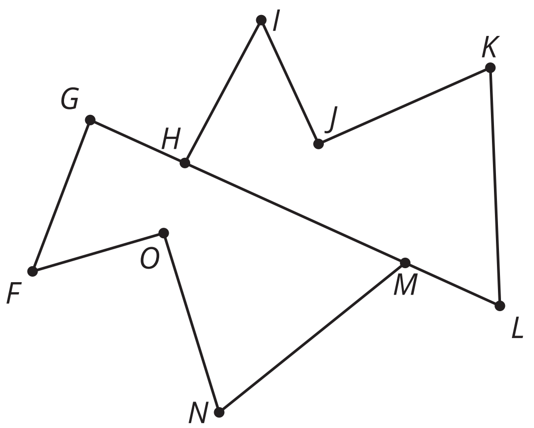
1. Triangle PQR is congruent to which triangle? Explain your reasoning.

2. Show a sequence of rigid motions that takes triangle PQR to that triangle. Draw each step of the transformation.

3. Explain why there can't be a rigid motion from triangle PQR to the other triangle.

2.3: Are These Parts Congruent?





1. Triangle ABD is a rotation of triangle CDB around point E by 180°. Is angle ADB congruent to angle CDB? If so, explain your reasoning. If not, which angle is ADB congruent to?

2. Polygon $HIJKL$ is a reflection and translation of polygon $GFONM$. Is segment KJ congruent to segment NM? If so, explain your reasoning. If not, which segment is NM congruent to?

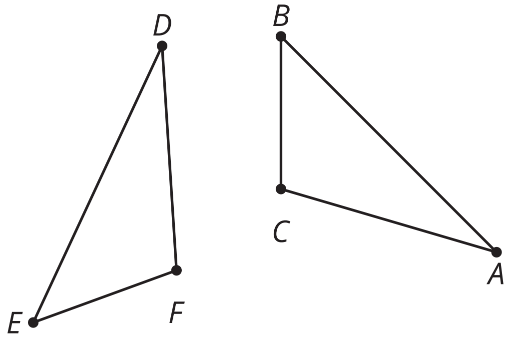
3. Quadrilateral $PQRS$ is a rotation of polygon $VZYW$. Is angle QRS congruent to angle ZYW? If so, explain your reasoning. If not, which angle is QRS congruent to?

Are you ready for more?

Suppose quadrilateral $PQRS$ was both a rotation of quadrilateral $VZYW$ and also a reflection of quadrilateral $YZVW$. What can we conclude about the shape of our quadrilaterals? Explain why.

Lesson 2 Summary

Naming congruent figures so it's clear from the name which parts correspond makes it easier to check whether 2 figures are congruent and to use corresponding parts. In this image, segment AB appears to be congruent to segment DE. Also, segment EF appears to be congruent to segment BC. So, it makes more sense to conjecture that triangle ABC is congruent to triangle DEF than to conjecture triangle ABC is congruent to triangle FDE.



If we are told quadrilateral $MATH$ is congruent to quadrilateral $LOVE$, without even looking at the figures we know:

- Angle M is congruent to angle L.
- Angle A is congruent to angle O.
- Angle T is congruent to angle V.
- Angle H is congruent to angle E.
- Segments MA and LO are congruent.
- Segments AT and OV are congruent.
- Segments TH and VE are congruent.
- Segments HM and EL are congruent.

Quadrilaterals $MATH$ and $LOVE$ can be named in many different ways so that they still correspond—such as $ATHM$ is congruent to $OVEL$ or $THMA$ is congruent to $VELO$. But $ATMH$ is congruent to $LOVE$ means there are different corresponding parts. Note that quadrilateral $MATH$ refers to a different way of connecting the points than quadrilateral $ATMH$.