## 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.

$△ABC≅△FED$



$PZJM≅LYXB$



Triangle $ABC$ is congruent to triangle $FED$.

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

$△JKL≅△QRS$



$ABCDE≅PQRST$



Triangle $JKL$ is congruent to triangle $QRS$.

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 $ATMH$.





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