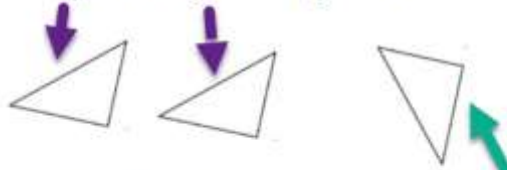


CONGRUENT FIGURES

Figures that have the same size and shape are **congruent figures**

These triangles have the same size and shape so they are congruent.



This triangle is also congruent even though its position has changed.

Unit Overview

In this unit, students will define and identify figures that are congruent, and they will understand the relationship between the corresponding parts of congruent figures.

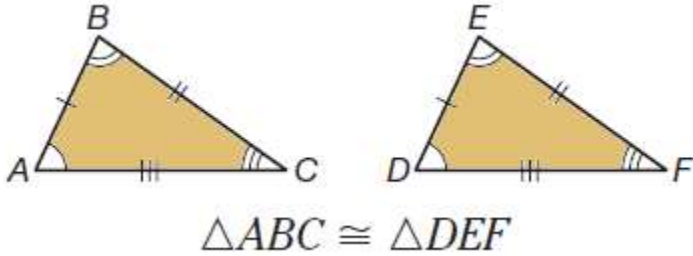
Key Vocabulary

Congruent	Figures that have the same size and shape
Similar	Figures that have the same shape but not the same size
Corresponding Sides	Represent the same side of similar figures
Polygon	Simple closed figure in a plane formed by three or more line segments
Segments	Sides
Vertices	Endpoints

Congruent Figures

Two objects are congruent if they have the same size and shape. The symbol for congruent is \cong . Two figures are congruent if and only if their vertices can be matched so that corresponding parts of the figures are congruent. The corresponding parts are the angles and sides. When writing which figures are congruent, be sure to write the vertices in the same order.

Example – Congruent Angles & Sides

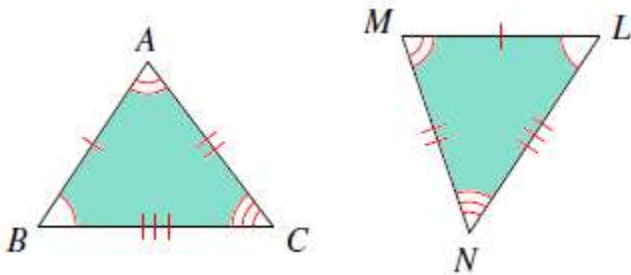


Congruent Angles: $\angle A$ and $\angle D$, $\angle C$ and $\angle F$, $\angle B$ and $\angle E$

Congruent Sides: $AB \cong DE$, $BC \cong EF$, $CA \cong FD$

Let's Practice – Congruent Angles & Sides

1.) The corresponding parts of two congruent triangles are marked in the image below. Write the congruent angles and sides.

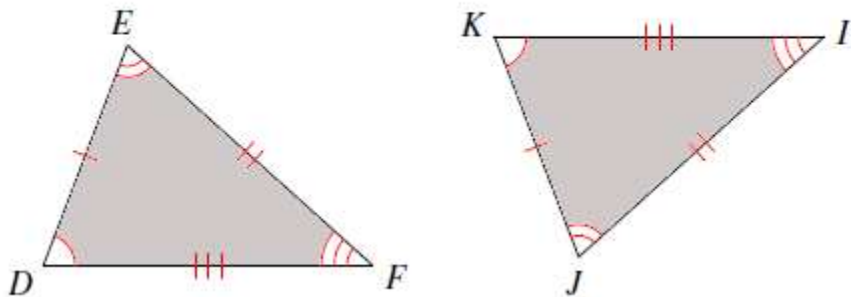


Congruent Angles: $\angle B$ and $\angle L$, $\angle A$ and $\angle M$, $\angle C$ and $\angle N$

Congruent Sides: $AB \cong ML$, $BC \cong LN$, $CA \cong NM$

2.) Complete each congruence statement by naming the corresponding side.

$$\triangle DEF \cong \triangle KJI$$

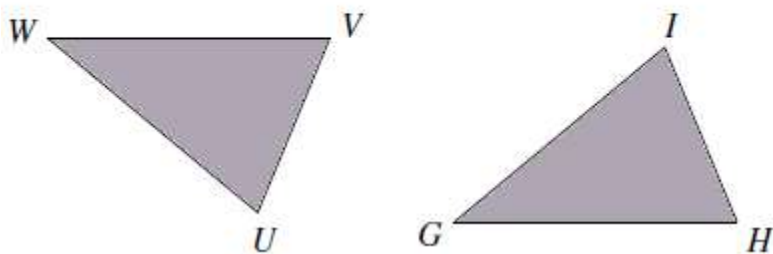


$$\overline{FD} \cong ?$$

$$\overline{FD} \cong \overline{IK}$$

3.) Complete each congruence statement by naming the corresponding angle.

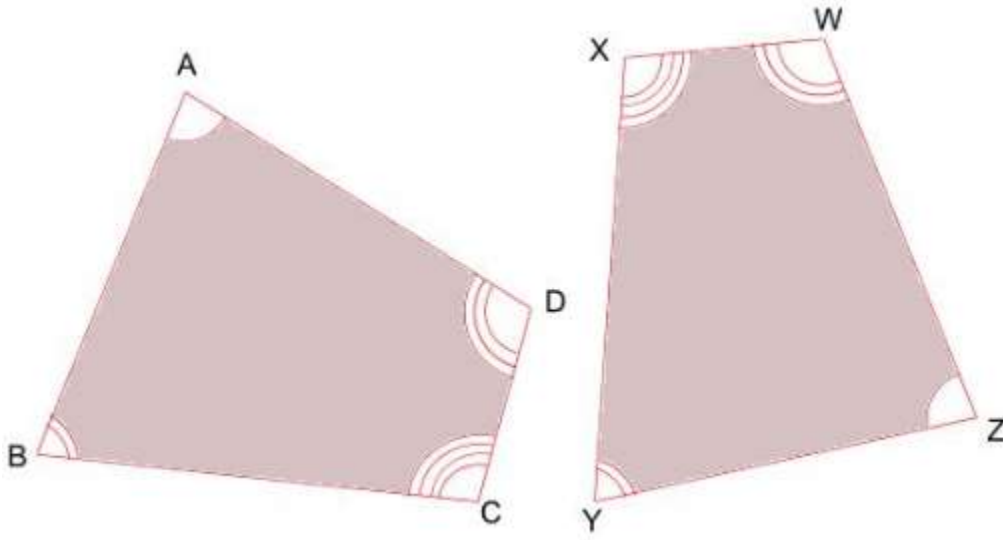
$$\triangle WVU \cong \triangle GHI$$



$$\angle W \cong ?$$

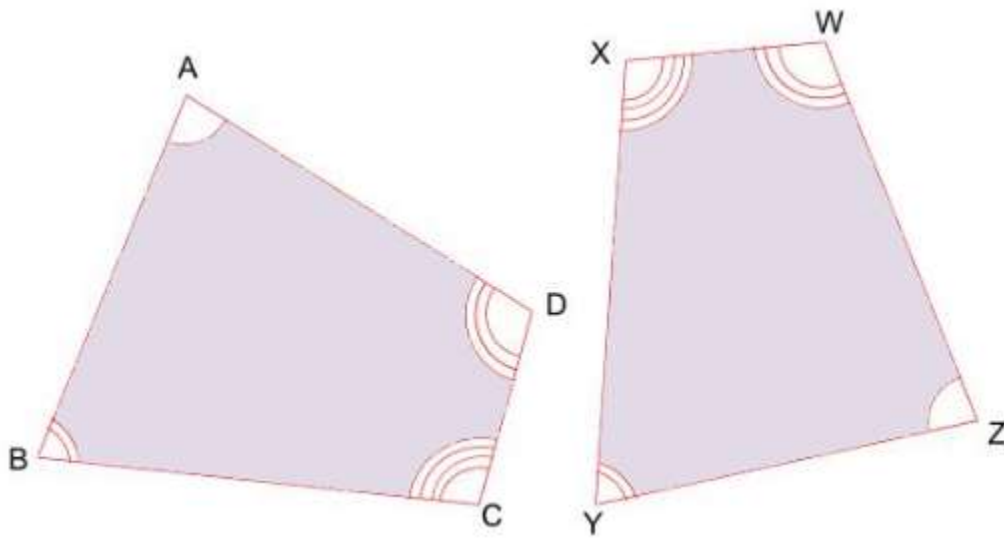
$$\angle W \cong \angle G$$

4.) The two quadrilaterals are congruent. Which angle in quadrilateral $WXYZ$ corresponds to $\angle BCD$ in quadrilateral $ABCD$?



$\angle WXY$

5.) The two quadrilaterals are congruent. Which side in quadrilateral $WXYZ$ corresponds to BC in quadrilateral $ABCD$?



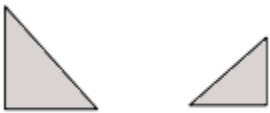
$BC \cong XY$

Congruent v. Similar Figures

There is one major difference between a congruent figure and similar figure. A congruent figure have the same shape and the same size. On the other hand, similar figures have the same shape, but not the same size. They must have the same ratio of side length. Remember, that corresponding parts are the sides or angles that have the same position.

- This symbol \cong means that the figure is congruent.
- This symbol \sim means that the figure is similar.

Example



Step 1 → Determine if the two figures are similar or congruent

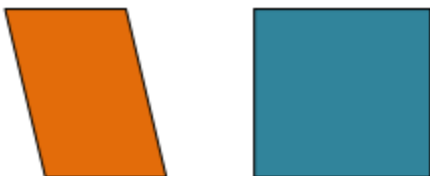
Step 2 → Look at the figures carefully

Step 3 → If the shape is same than they are similar

Step 4 → If the size is also same than they are congruent too

Figure above is Similar

Here is another example. How are the figures below related?

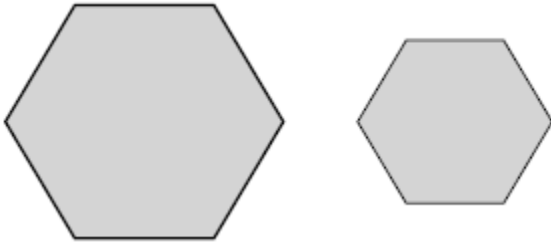


Use the same step strategy above to determine the answer.

The pair of shapes given are not of the same shape or size. The two figures are neither similar nor congruent.

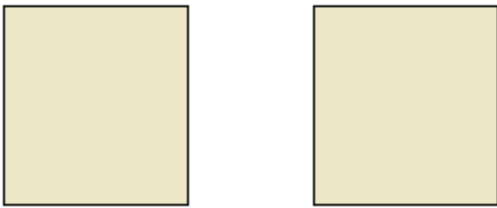
Let's Practice – Congruent v. Similar

6.) Determine if the shapes shown are similar, congruent or neither.



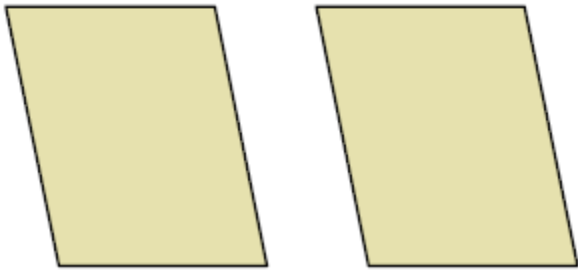
(Similar – has same shape but different size)

7.) Determine if the shapes shown are similar, congruent or neither.



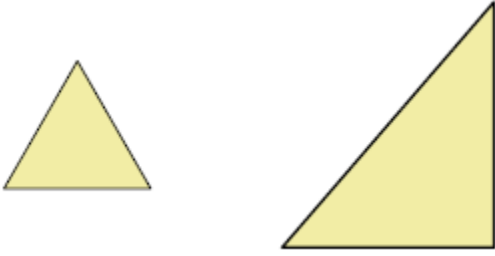
(Congruent – has same shape and size)

8.) Determine if the shapes shown are similar, congruent or neither.



(Congruent – has same shape and size)

9.) Determine if the shapes shown are similar, congruent or neither.



(Neither – different shape and size)

10.) Determine if the shapes shown are similar, congruent or neither.



(Neither – different shape and size)

Summary

Congruent Figures

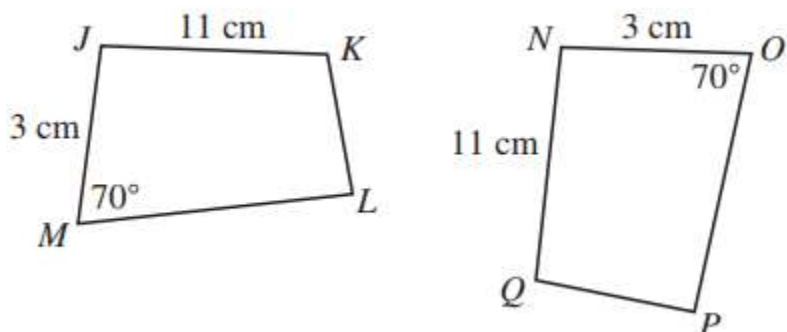
- Same angles
- Same side lengths
- Can be rotated or a mirror image
- Cut-out of one shape will always fit exactly over the other

Similar Figures

- Same angles
- Sides in the same proportion
- Can be rotated or reflected
- One figure is an enlargement of the other

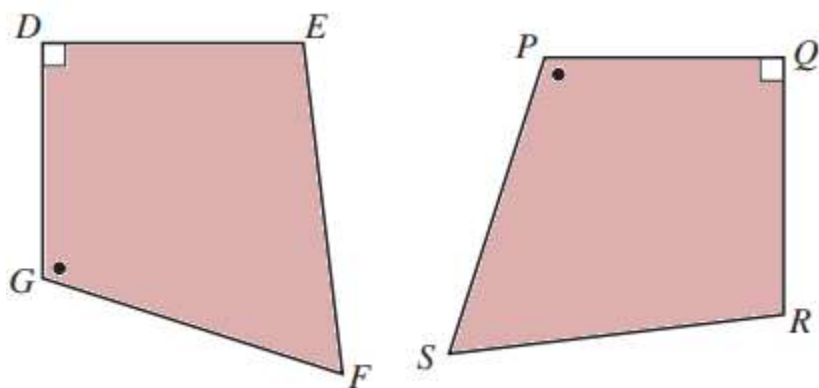
Let's Practice – Summary

11.) If JKLM and NOPQ are congruent quadrilaterals, which angle in JKLM matches with $\angle P$?



$\angle L$

Use the image below to answer questions 12 and 13.



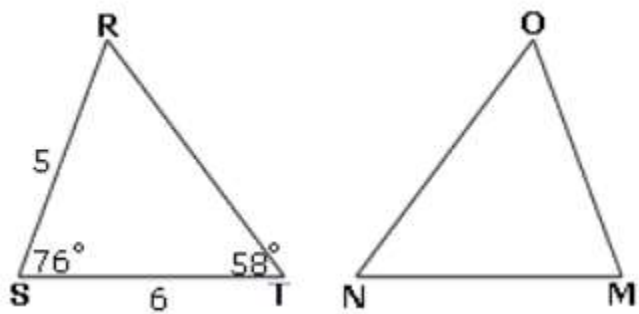
12.) Name all pairs of matching sides for the image above.

$(DE = QR, GF = PS, FE = SR, DG = QP)$

13.) Name all pairs of matching angles.

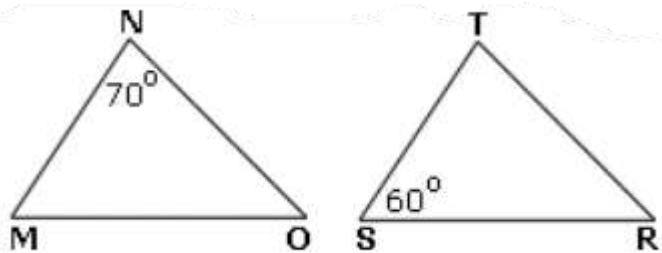
$(\angle D = \angle Q, \angle G = \angle P, \angle F = \angle S, \angle E = \angle R)$

14.) $\triangle MNO$ and $\triangle STR$ are congruent triangles. Find the measure of $\angle O$.



(46°)

15.) $\triangle MNO$ and $\triangle STR$ are congruent triangles. Find the measure of $\angle O$.



(50°)



Below are additional educational resources and activities for this unit.



Click on the icon to the left to practice labeling corresponding parts.



Click on the icon to the left to watch a video about Congruent and Similar Triangles.

[Practice 1: Identify Figures](#)

[Practice 2: Congruent Figures](#)