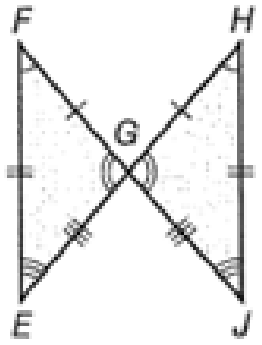
Get out your homework and have it ready to check!

Classwork - Corresponding Side, Scale Factor, and Similarity

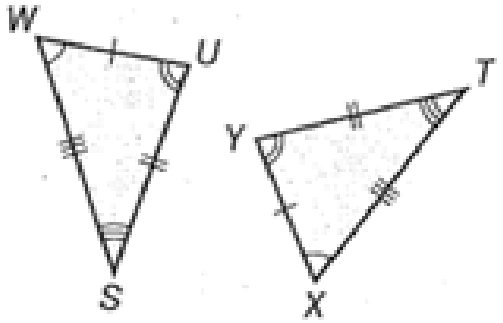
Write congruence statements comparing the corresponding parts in each set of congruent figures. Make sure to use the correct signs show above.

1.

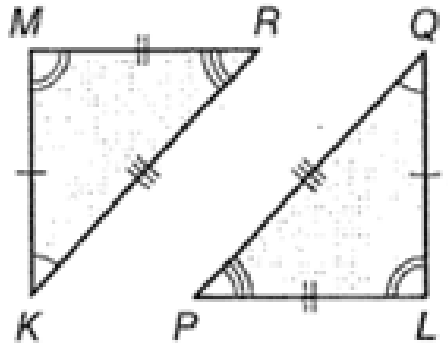


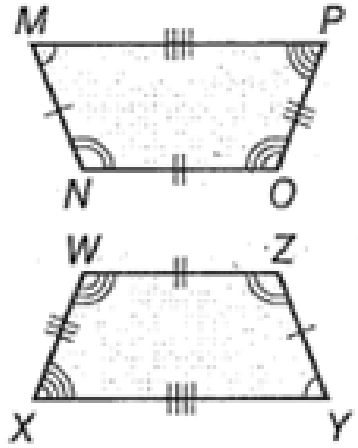
Sides	Angles
1) $\overline{FG} \cong \overline{HG}$	1) $\angle E \cong \angle J$
2) $\overline{EF} \cong \overline{HJ}$	2) $\angle F \cong \angle H$
3) $\overline{EG} \cong \overline{JG}$	3) $\angle G \cong \angle G$

2.



Sides	Angles
1) $\overline{WU} \cong \overline{XY}$	1) $\angle W \cong \angle X$
2) $\overline{US} \cong \overline{TY}$	2) $\angle U \cong \angle Y$
3) $\overline{WS} \cong \overline{TX}$	3) $\angle S \cong \angle T$

3. 

4. 

Sides

1) $\overline{MK} \cong \overline{QL}$
2) $\overline{MR} \cong \overline{PL}$
3) $\overline{KR} \cong \overline{QP}$

Angles

1) $\angle M \cong \angle L$
2) $\angle K \cong \angle Q$
3) $\angle R \cong \angle P$

Sides

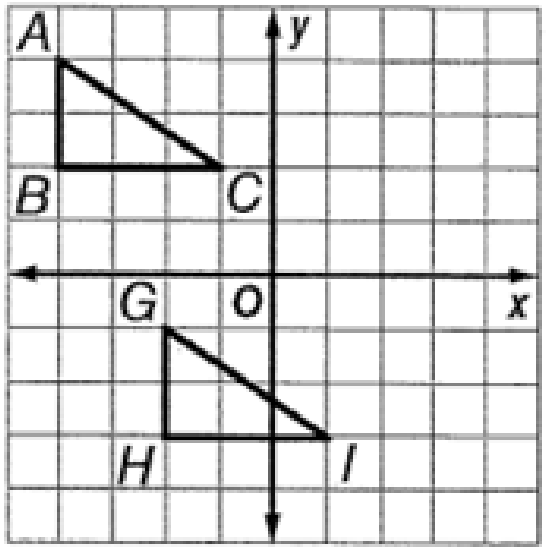
1) $\overline{MN} \cong \overline{YZ}$
2) $\overline{NO} \cong \overline{WZ}$
3) $\overline{OP} \cong \overline{WX}$
4) $\overline{MP} \cong \overline{XY}$

Angles

1) $\angle M \cong \angle Y$
2) $\angle N \cong \angle Z$
3) $\angle O \cong \angle W$
4) $\angle P \cong \angle X$

$\Delta ABC \cong \Delta GHI$

5. Triangles *ABC* and *GHI* are congruent. Write congruence statements comparing the corresponding parts. Then determine which transformation(s) map ΔABC onto ΔGHI.

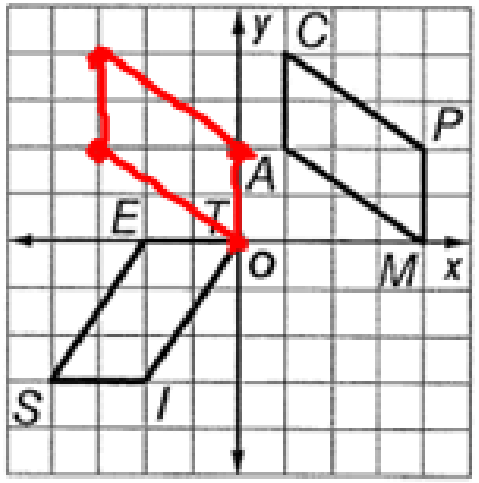


Sides	Angles
1) $\overline{AB} \cong \overline{GH}$	1) $\angle A \cong \angle G$
2) $\overline{AC} \cong \overline{GI}$	2) $\angle B \cong \angle H$
3) $\overline{BC} \cong \overline{HI}$	3) $\angle C \cong \angle I$

Transformation(s) → Translated 2 units right and 5 units down

$(x, y) \rightarrow (x+2, y-5)$

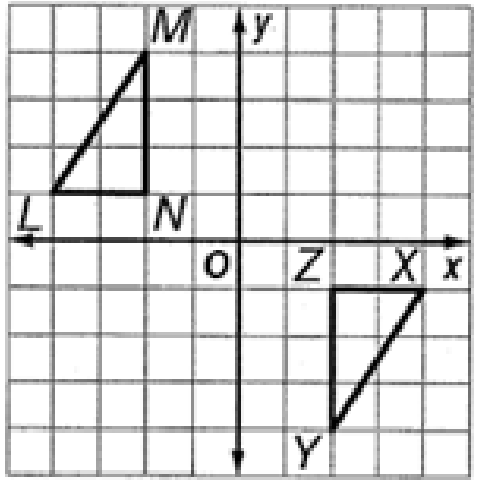
6. Parallelograms CAMP and SITE are congruent. Write congruence statements comparing the corresponding parts. Then determine which transformation(s) map parallelogram CAMP onto parallelogram SITE.



Sides	Angles
1) $\overline{CA} \cong \overline{ST}$	1) $\angle C \cong \angle S$
2) $\overline{AM} \cong \overline{IT}$	2) $\angle A \cong \angle I$
3) $\overline{MP} \cong \overline{TE}$	3) $\angle M \cong \angle T$
4) $\overline{CP} \cong \overline{SE}$	4) $\angle P \cong \angle E$

Transformation(s) → Translate the image 4 units to the left and rotate the image 90° counterclockwise or 270° clockwise about the origin.

7. Triangles *LMN* and *XYZ* are congruent. Write congruence statements comparing the corresponding parts. Then determine which transformation(s) map ΔLMN onto ΔXYZ.



Sides	Angles
1) $\overline{LM} \cong \overline{XY}$	1) $\angle L \cong \angle X$
2) $\overline{MN} \cong \overline{YZ}$	2) $\angle M \cong \angle Y$
3) $\overline{LN} \cong \overline{XZ}$	3) $\angle N \cong \angle Z$

Transformation(s) → Rotate the image 180° clockwise about the origin.

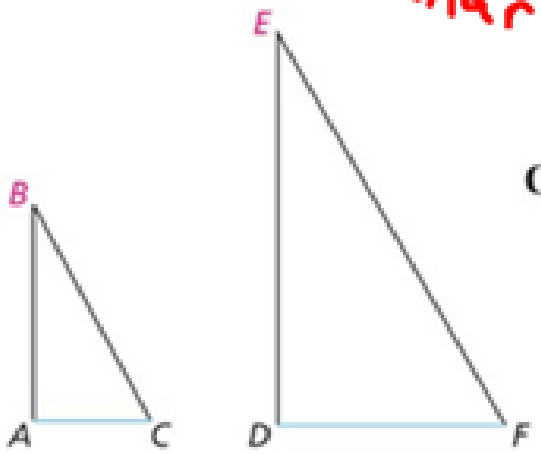
In the rest of this unit we will work with scale drawings that are smaller or larger than the original. You will also learn more about what it means for figures to be similar.

When you study similar figures, you often compare their sides and angles. To compare the parts correctly, mathematicians use the terms ***corresponding sides*** and ***corresponding angles***. In every pair of ***similar figures***, each side of one figure has a corresponding side in the other figure. Also, each angle has a corresponding angle.

$\triangle ABC$ is similar to $\triangle DEF$

$\triangle ABC \sim \triangle DEF$

Similar



Corresponding angles

B and E

A and D

C and F

Corresponding sides

AC and DF

AB and DE

BC and EF

Writing Ratios using Corresponding Sides

Ratio comparing $\triangle ABC$ to $\triangle DEF \rightarrow \frac{\triangle ABC}{\triangle DEF}$

$\triangle ABC : \triangle DEF$

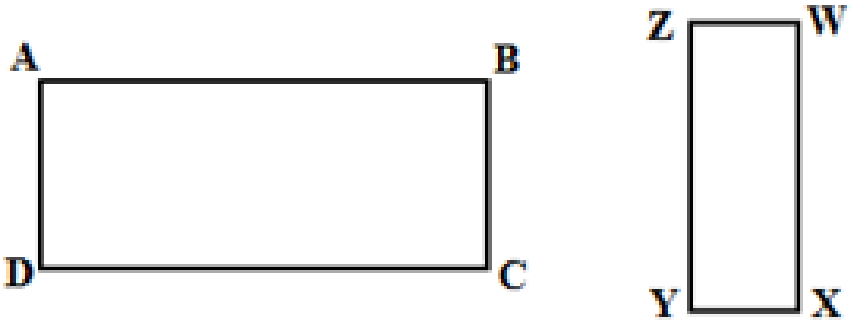
Any side that is part $\triangle ABC$ goes on top because it is listed first in the ratio. Sides from $\triangle DEF$ go on the bottom of the ratio.

$$\frac{AC}{DF} = \frac{AB}{DE} = \frac{BC}{EF}$$

Finding corresponding sides can be difficult when the figures are in different positions (been transformed). You can use the order and place of the angles in the description to help find corresponding angles.

Rectangle $ABCD$ is similar to Rectangle $WXYZ$

$ABCD \sim WXYZ$



Use $\boldsymbol{ABCD \sim WXYZ}$ to answer the following questions.

$\angle A$ is the 1st angle listed in Rectangle $ABCD$. What is the first angle listed in Rectangle $WXYZ$?

$\angle A$ corresponds with $\angle$ W

$\angle B$ is the 2nd angle listed in Rectangle $ABCD$. What is the second angle listed in Rectangle $WXYZ$?

$\angle B$ corresponds with $\angle$ X

Name the other two pairs of corresponding angles.

$\angle$ C **corresponds with $\angle$** Y

$\angle$ D **corresponds with $\angle$** Z

Name the corresponding sides of the two rectangles. Use the same thinking you used to find the corresponding angles you listed in the box on the right to help.

1) Side AB corresponds with Side WX.
2) Side BC corresponds with Side XY.
3) Side CD corresponds with Side YZ.
4) Side AD corresponds with Side WZ.

Write the corresponding sides as equivalent ratios.

Compare Rectangle $ABCD$ to Rectangle $WXYZ \rightarrow \frac{ABCD}{WXYZ}$

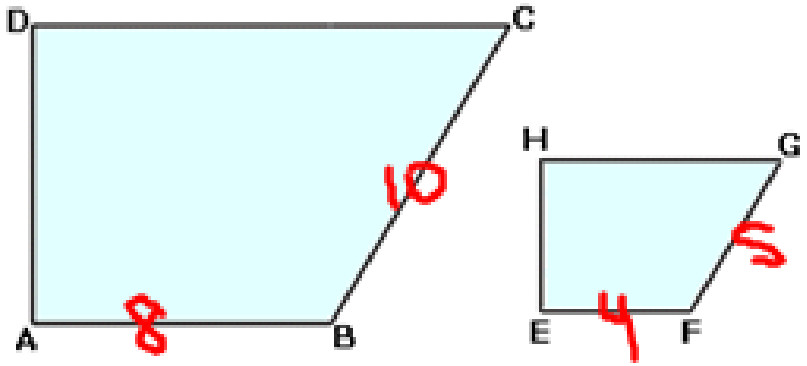
A) $\frac{AB}{WX} = \frac{BC}{XY}$

B) $\frac{CD}{YZ} = \frac{AD}{WZ}$

C) $\frac{CD}{YZ} = \frac{AB}{WX}$

1) Find the corresponding sides for the following polygons.

A) Quadrilateral $ABCD \sim$ Quadrilateral $EFGH$



Find all 4 of the ~~corresponding~~ sides and write them as a ratio comparing $ABCD$ to $EFGH$.

Corresponding Sides → Ratio

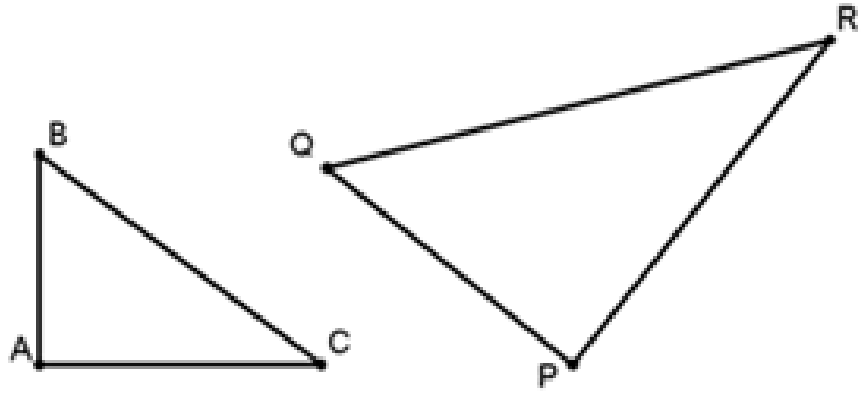
Side AB and Side EF → $\frac{AB}{EF}$

Side BC and Side FG → $\frac{BC}{FG}$

Side CD and Side GH → $\frac{CD}{GH}$

Side AD and Side EH → $\frac{AD}{EH}$

B) $\triangle ABC \sim \triangle PQR$



Find all 3 of the corresponding sides and write them as a ratio comparing $\triangle ABC$ to $\triangle PQR$.

Corresponding Sides → Ratio

Side AB and Side PQ → $\frac{AB}{PQ}$

Side BC and Side QR → $\frac{BC}{QR}$

Side AC and Side PR → $\frac{AC}{PR}$

2) Determine the following information for the two similar triangles. $\triangle ABC \sim \triangle MNO$

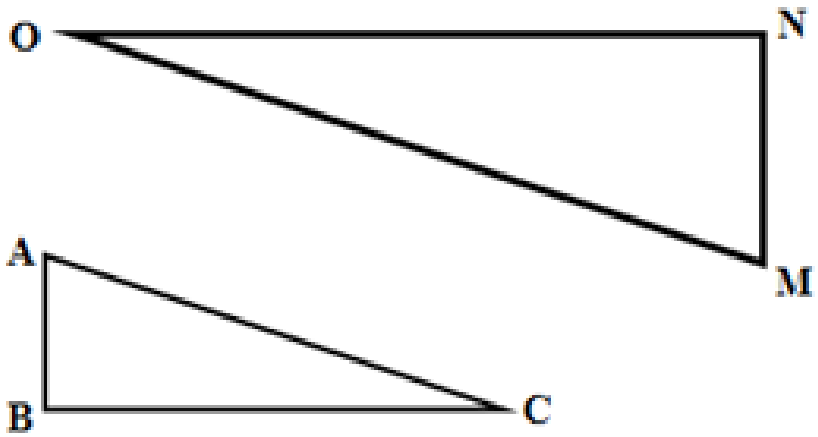
A) Use a protractor to find the angle measurements for all 3 angles for both triangles.

$\triangle ABC$

$\angle A =$ 70° $\angle B =$ 90° $\angle C =$ 20°

$\triangle MNO$

$\angle M =$ 70° $\angle N =$ 90° $\angle O =$ 20°



B) Determine the three pairs of corresponding angles.

$\angle$ A corresponds with $\angle$ M

$\angle$ B corresponds with $\angle$ N

$\angle$ C corresponds with $\angle$ O

C) What do you notice about the angle measurements and the corresponding angles?

Similar figures have the same angle measurements for corresponding angles.

D) Find all 3 of the corresponding sides and write them as a ratio comparing $\triangle ABC$ to $\triangle MNO$.

Corresponding Sides → **Ratio**

Side _____ and Side _____ → ____

Side _____ and Side _____ → ____

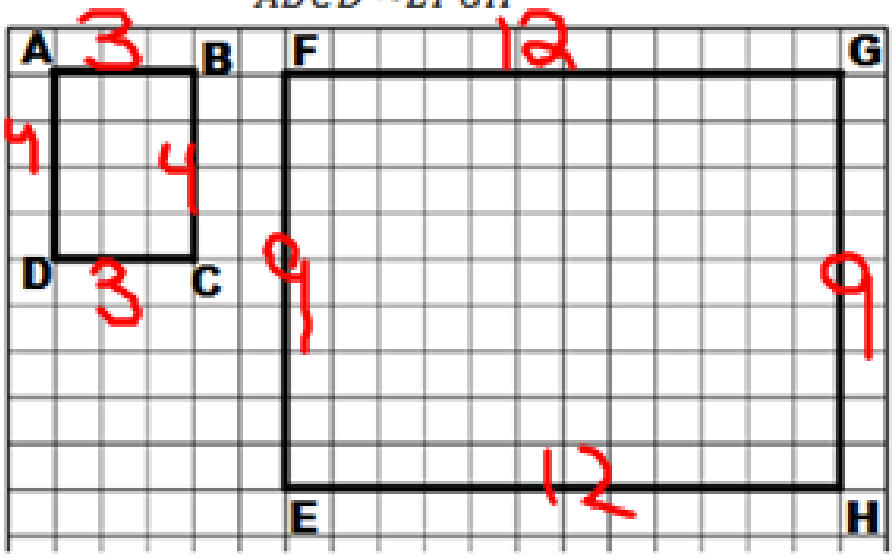
Side _____ and Side _____ → ____

Remember

$old\ side \cdot scale\ factor = new\ side$ Scale Factor Ratio Comparing Corresponding Sides → $\frac{New}{Old}$

1) Find the corresponding sides of the two similar rectangles show below. Then find the scale factor that resulted in the change from Rectangle $ABCD$ to Rectangle $EFGH$.

$ABCD \sim EFGH$



Old: ABCD → New: EFGH

Determine the corresponding sides by comparing the final figure to the original figure.

$\frac{EF}{AB} = \frac{9}{3}$ $\frac{FG}{BC} = \frac{12}{4}$

$\frac{GH}{CD} = \frac{9}{3}$ $\frac{EH}{AD} = \frac{12}{4}$

The scale factor is = 3

I can multiply a side length of $ABCD$ (old) by 3 to find the corresponding side length of $EFGH$ (new).

A) Find the perimeter of both $ABCD$ and $EFGH$. B) What relationship do you see between the two perimeters?

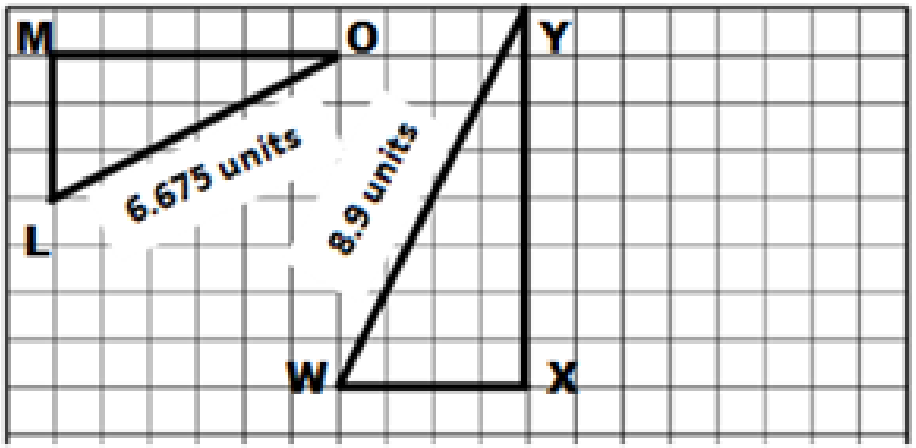
Perimeter of $ABCD$ = _____

Perimeter of $EFGH$ = _____

2) Find the corresponding sides of the two similar rectangles show below. Then find the scale factor that resulted in the change from Triangle WXY to Triangle LMO.

$\triangle LMO \sim \triangle WXY$

Old:_____ → New:_____



Determine the corresponding sides by comparing the final figure to the original figure.

$\frac{\square}{\square} = \frac{\square}{\square}$ $\frac{\square}{\square} = \frac{\square}{\square}$

$\frac{\square}{\square} = \frac{\square}{\square}$ The scale factor is = _____

I can multiply a side length of $\triangle WXY$ (old) by _____ to find the corresponding side length of $\triangle LMO$ (new).

A) Find the perimeter of both $\triangle LMO$ and $\triangle WXY$. B) What relationship do you see between the two perimeters?

Perimeter of $\triangle LMO$ = _____

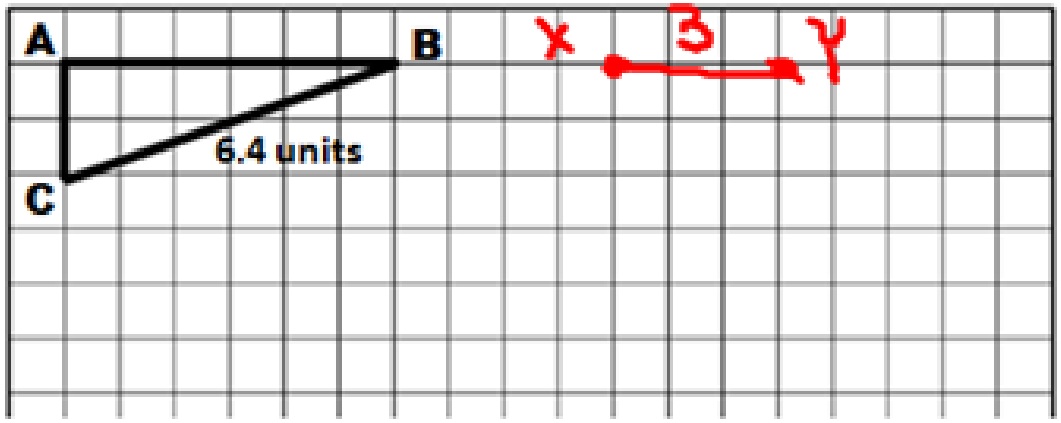
Perimeter of $\triangle WXY$ = _____

3) Triangle ABC is multiplied by a scale factor of $\frac{1}{2}$ (1 to 2) to make the final/new figure of Triangle XYZ.

A) Do you think the new figure will be larger or smaller than the old figure? Why?

Use the scale factor given to draw the new figure.

Label the new figure.



Write the exact side lengths of the new figure $\triangle XYZ$ below in the space provided.

Side XY = _____ Side $YZ = 3.2\ units$ Side XZ = _____

Old: $\triangle ABC$ → New: $\triangle XYZ$

Determine the corresponding sides of the two figures.

$\frac{YZ}{BC}$, $\frac{XY}{AB}$, $\frac{\square}{\square}$

Use scale factor and the lengths of the old figure to find corresponding lengths of the new figure.

Side $BC = 6.4\ units \cdot \frac{1}{2} = 3.2$

Side AB = 6 $units \cdot \frac{1}{2} =$ 3

Side _____ = _____ $units \cdot \frac{1}{2}$ = _____

B) **Use the scale factor and perimeter of $\triangle ABC$** to find the perimeter of the new figure $\triangle XYZ$.