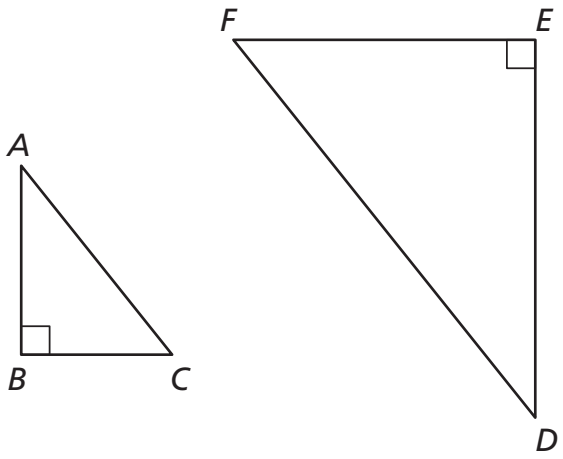
5.2 Start Thinking

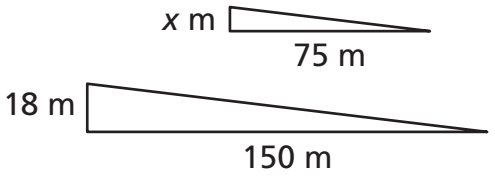
Use a ruler and a protractor to measure the side lengths and angles of each triangle. What are the corresponding sides and angles? Describe how to get $\triangle DEF$ from $\triangle ABC$.



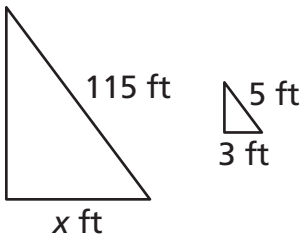
5.2 Warm Up

The triangles are similar. Use proportions to find *x*.

1.



2.



5.2 Cumulative Review Warm Up

1. Graph $\overline{XY}$ with endpoints $X(-2, 0)$ and $Y(5, -6)$ and its image after the transformations.

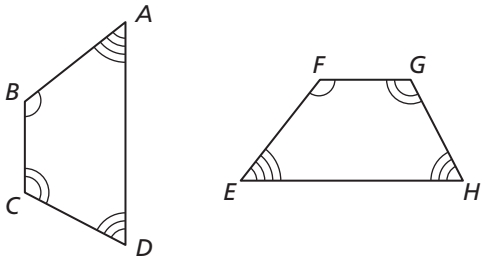
Translation: $(x, y) \rightarrow (x, y - 3)$

Rotation: $90°$ counterclockwise about the origin

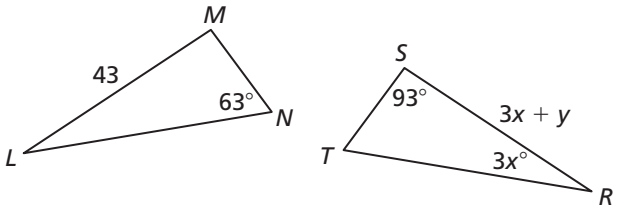
Name_____ Date _____

5.2 Practice A

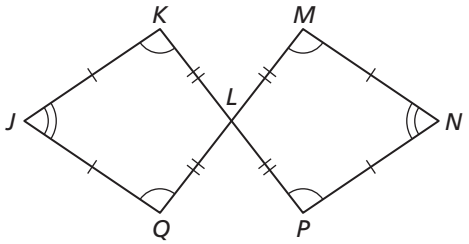
1. In the figure, $ABCD \cong EFGH$. Identify all pairs of congruent corresponding parts. Then write another congruence statement for the polygons.



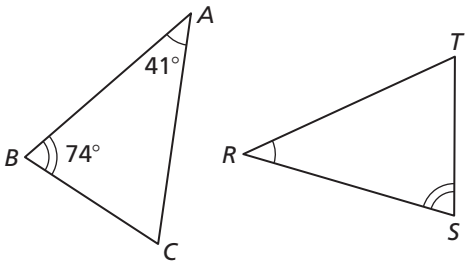
2. In the figure, $\triangle LMN \cong \triangle RST$. Find the values of x and y.



3. Show that the two quadrilaterals are congruent.



4. Find $m\angle T$. Explain your reasoning.

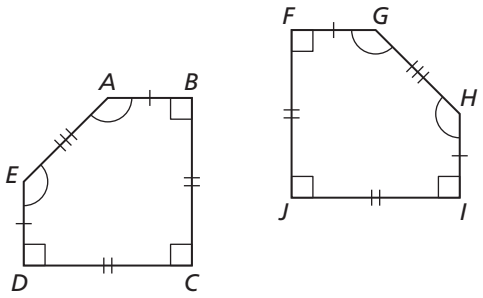


5. The congruence statements $\triangle ABC \cong \triangle DEF$, $\triangle ABC \cong \triangle EFD$, and $\triangle ABC \cong \triangle FDE$ are all valid. What must be true about $\triangle ABC$ and $\triangle DEF$?

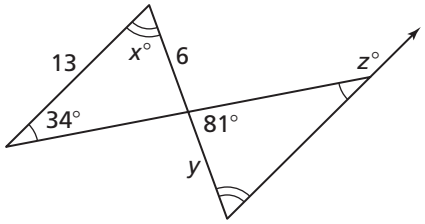
Name _____ Date _____

5.2 Practice B

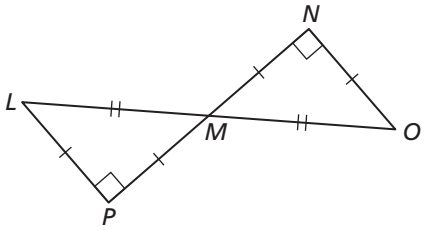
1. In the figure, $ABCDE \cong HIJFG$. Identify all pairs of congruent corresponding parts. Then complete the congruence statement: $ABCDE \cong G$_____.



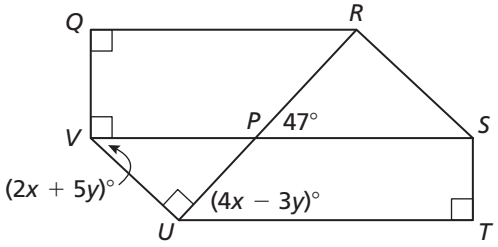
2. Find the values of x, y, and z.



3. Show that the two triangles are congruent.



4. In the figure, $RSTU \cong UVQR$. Find the values of x and y and $m\angle RST$. Explain your reasoning.



5. Draw a rectangle and label it $ABCD$. Draw diagonal $\overline{AC}$. Are the two triangles formed congruent? Explain.

Name_____ Date _____

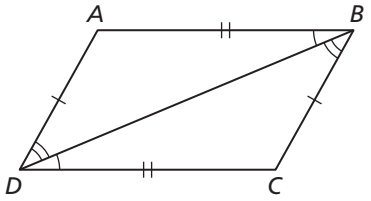
5.2 Enrichment and Extension

Congruent Polygons

In Exercises 1 and 2, use the diagram to complete a two-column proof.

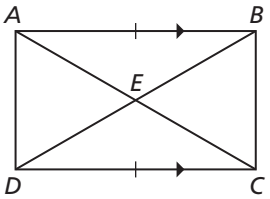
1. **Given:** $\angle ABD \cong \angle CDB$, $\angle ADB \cong \angle CBD$, $\overline{AD} \cong \overline{BC}$, and $\overline{AB} \cong \overline{DC}$

   Prove: $\triangle ABD \cong \triangle CDB$

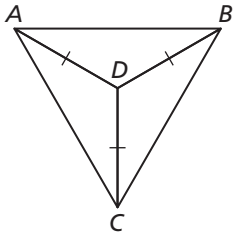


2. **Given:** $\overline{AB} \parallel \overline{DC}$, $\overline{AB} \cong \overline{DC}$, E is the midpoint of $\overline{AC}$ and $\overline{BD}$.

   Prove: $\triangle AEB \cong \triangle CED$



3. In the diagram below, $\triangle ADB \cong \triangle CDA \cong \triangle CDB$.



   a. Is $\triangle ABC$ equilateral? Explain your reasoning.

   b. The sum of the measures of $\angle ADB$, $\angle CDA$, and $\angle CDB$ is 360°. Find $m\angle BDC$.

   c. Find $m\angle DBC$ and $m\angle DCB$.

   d. Explain why the angle measures in part (c) are equal.

   e. Explain why $\triangle ABC$ is equiangular.

Name _____ Date _____

5.2 Puzzle Time

What Did The Grouchy Baker Make?

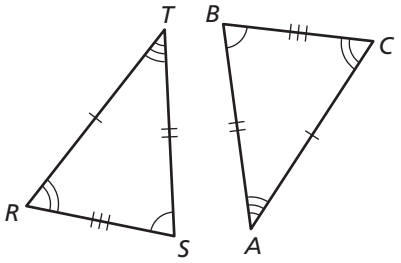
Write the letter of each answer in the box containing the exercise number.

Complete the statement.

1. A rigid motion maps each part of a figure to a(n) _____ part of its image.
2. If two angles of one triangle are congruent to two angles of another triangle, then the _____ angles are also congruent.

Identify the congruent corresponding part, given that $\triangle TSR$ and $\triangle ABC$ are congruent.

3. $\overline{SR} \cong$ ___
4. $\angle C \cong$ ___
5. $\overline{BC} \cong$ ___



Complete the exercise using the diagram above, given that $\triangle TSR$ and $\triangle ABC$ are congruent.

6. $m\angle R = 19°$, $m\angle B = 56°$; find $m\angle T$.
7. $m\angle R = 19°$, $m\angle B = 56°$; find $m\angle S$.
8. $m\angle R = 19°$, $m\angle B = 56°$; find $m\angle C$.
9. $BC = 11$, $TR = 20$; find RS.

Answers

K. $\overline{SR}$
H. 65
N. 17°
A. $\overline{BC}$
D. second
T. 115°
C. $\angle R$
O. congruent
M. 29
C. corresponding
N. 15
Y. 32
E. third
R. 56°
O. 79°
B. 105°
S. 19°
A. 11

4	7	3	6		1	9	5	2	8