LESSON 9

Congruent Polygons

Review It!

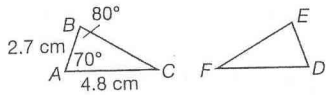
When you work with congruent polygons, remember these words:

polygon a closed figure with 3 or more sides

corresponding angles of polygons angles that are in the same position in each polygon

congruent having exactly the same shape and size

Triangle *ABC* is congruent to triangle *DEF*. Find the measure of $\angle D$ and the length of side *DE*.



Step 1 Identify the corresponding parts.

Imagine folding the page so the triangles match.
Vertices that match are corresponding angles. Sides that match are corresponding sides.

$\angle A$ corresponds to $\angle$_____.

$\angle B$ corresponds to $\angle$_____.

$\angle C$ corresponds to $\angle$_____.

Side *AB* corresponds to side _____.

Side *BC* corresponds to side _____.

Side *AC* corresponds to side _____.

REMEMBER In congruent triangles, corresponding parts have equal measures.

Step 2 Find the measure of $\angle D$ and the length of side *DE*.

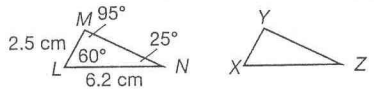
$\angle D$ corresponds to $\angle A$, so the measure of $\angle D$ = _____.

Side *AB* corresponds to side *DE*, so the length of side *DE* = _____.

So, the measure of $\angle D$ = _____ and the length of side *DE* = _____.

Try It!

Use congruent triangles *LMN* and *XYZ* for questions 1–4.



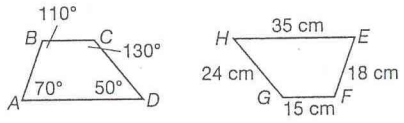
1. What is the measure of $\angle Y$? _____

2. What is the measure of $\angle X$? _____

3. What is the length of side *XY*? _____

4. What is the length of side *XZ*? _____

Use congruent trapezoids *ABCD* and *EFGH* for questions 5–12.



5. What is the measure of $\angle E$? _____

6. What is the measure of $\angle F$? _____

7. What is the measure of $\angle G$? _____

8. What is the measure of $\angle H$? _____

9. What is the length of side *AB*? _____

10. What is the length of side *BC*? _____

11. What is the length of side *CD*? _____

12. What is the length of side *AD*? _____

Ask Yourself

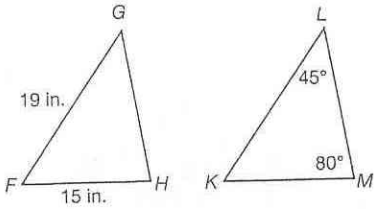
1. $\angle Y$ corresponds to what angle? $\angle M$, or $\angle N$?

5. $\angle E$ corresponds to what angle? $\angle A$, or $\angle B$?

On Your Own!

Circle the best answer for each question.

Use congruent triangles *FGH* and *KLM* for questions 1–3.



1. What is the measure of $\angle G$?

   A. 45°
   B. 55°
   C. 80°
   D. 125°

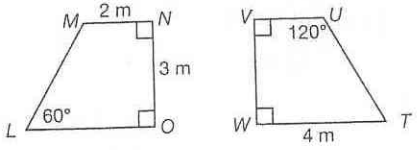
2. What is the length of side *KL*?

   A. 4 in.
   B. 15 in.
   C. 19 in.
   D. 34 in.

3. Which side corresponds to side *KM*?

   A. *LM*
   B. *FH*
   C. *FG*
   D. *GH*

Use congruent trapezoids *LMNO* and *TUVW* for questions 4–6.



4. Which angle corresponds to $\angle N$?

   A. $\angle W$
   B. $\angle U$
   C. $\angle T$
   D. $\angle V$

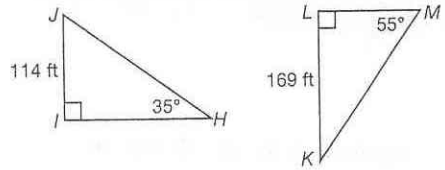
5. What is the length of side *LO*?

   A. 5 m
   B. 4 m
   C. 3 m
   D. 2 m

6. What is the measure of $\angle M$?

   A. 180°
   B. 120°
   C. 60°
   D. 30°

Use congruent triangles *HIJ* and *KLM* for questions 7 and 8.



7. Name the corresponding angles. Name the corresponding sides.

_____

_____

8. Find the measures of angles *K* and *J* and the lengths of sides *HI* and *LM*.

_____

_____

Math Words

Fill in the blanks.

9. Congruent polygons have the same _____ and _____.

10. If two angles are _____, then they have equal measures.

Geometry