

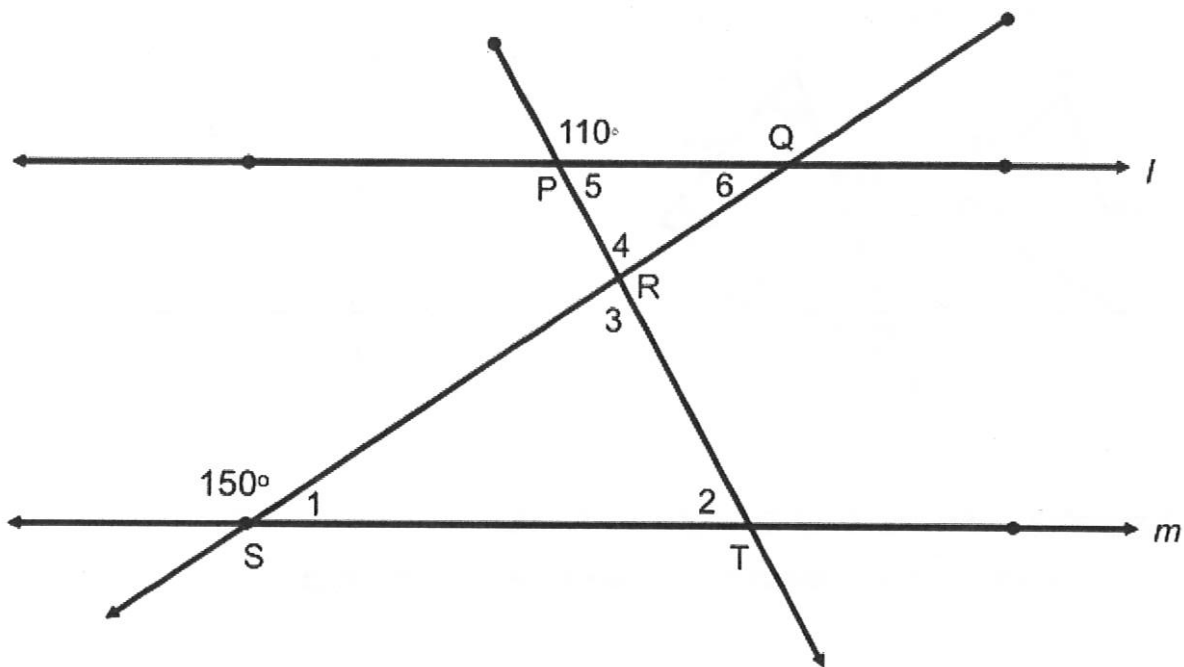
Name: \_\_\_\_\_

Date: \_\_\_\_\_

M8-U2/3: Notes #5 – Similar Triangles (AA Theorem) Class: \_\_\_\_\_

### Warm-Up

Determine the measures of the numbered angles. Color congruent angles the same color.  
Line  $l$  is parallel to line  $m$ .

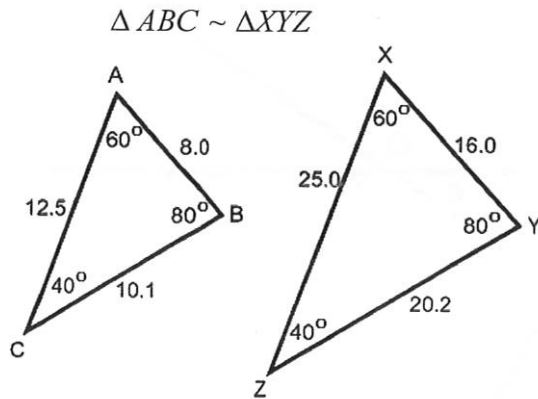


### Similar Figures

a. Two triangles that are similar have \_\_\_\_\_.

AND

b. Corresponding sides are \_\_\_\_\_.



$$\angle A \cong \angle \underline{\hspace{2cm}}$$

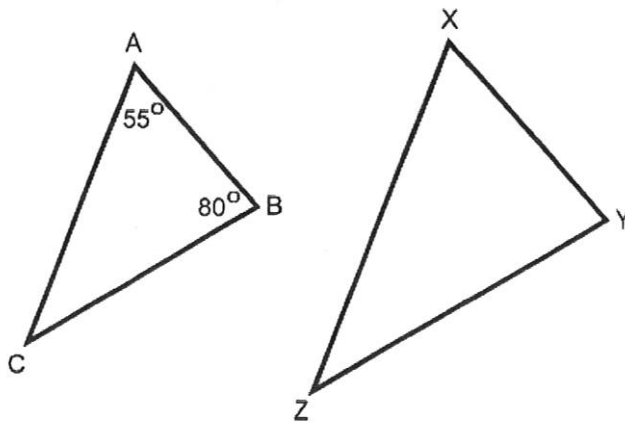
$$\angle \underline{\hspace{2cm}} \cong \angle Y$$

$$\angle C \cong \angle \underline{\hspace{2cm}}$$

$$\frac{AB}{XY} = \frac{BC}{YZ} \quad \frac{8.0}{\underline{\hspace{2cm}}} = \frac{\underline{\hspace{2cm}}}{20.2}$$

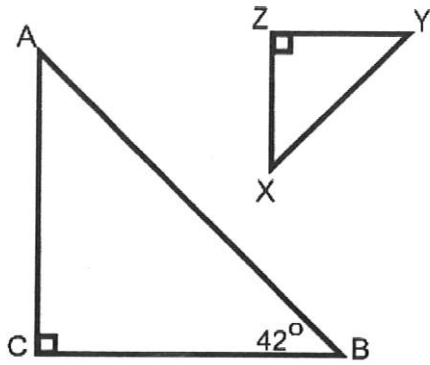
### Example 1: Stating that 2 Triangles are Similar

$\Delta ABC \sim \Delta XYZ$ , Determine all of the angles in each triangle.

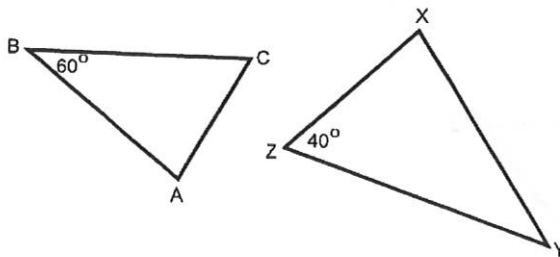


Try It!

- a.  $\triangle ABC \sim \triangle XYZ$ , Determine all of the angles in each triangle.



- b.  $\triangle ABC \sim \triangle XYZ$



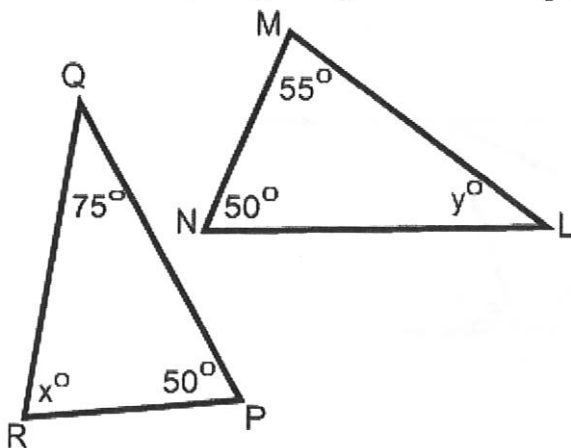
$$m\angle XYZ = \underline{\hspace{2cm}}$$

$$m\angle BCA = \underline{\hspace{2cm}}$$

$$m\angle CAB = \underline{\hspace{2cm}}$$

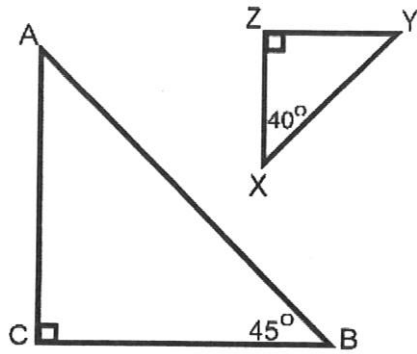
**Example 2: Determining Similarity**

Are the following triangles similar? Explain.

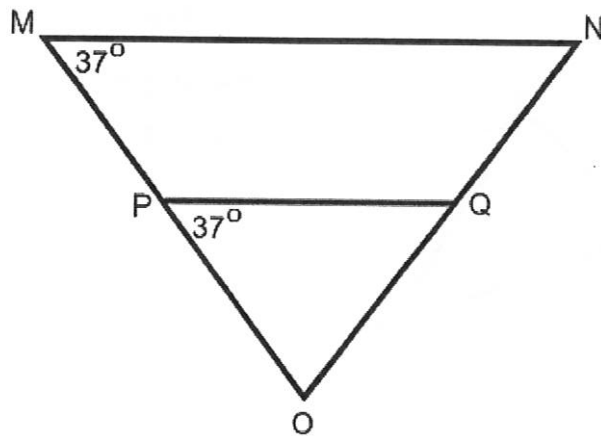


Try It!:

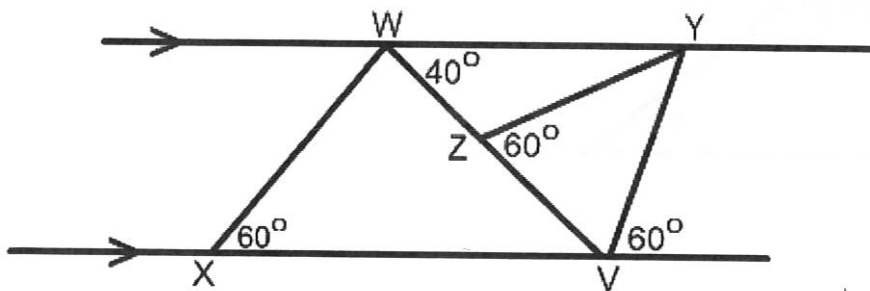
- a. Are the following triangles similar? Explain.



- b. Are the following triangles similar? Explain.



- c. Are any triangles in the diagram below similar? Explain.



Activity  
2.5

Start Thinking!

For use before Activity 2.5

How can you use proportions to help plant a garden?

Activity  
2.5

Warm Up

For use before Activity 2.5

Tell whether the ratios form a proportion.

1.  $\frac{2}{5}, \frac{10}{25}$

2.  $\frac{7}{14}, \frac{21}{28}$

3.  $\frac{12}{21}, \frac{15}{30}$

4.  $\frac{15}{24}, \frac{35}{36}$

5.  $\frac{6}{8}, \frac{15}{20}$

6.  $\frac{36}{8}, \frac{63}{14}$

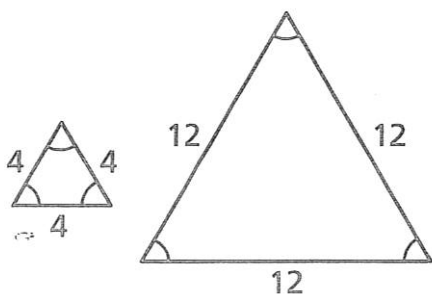
**Lesson 2.5** Start Thinking!  
For use before Lesson 2.5

Explain how to determine if two figures are similar.

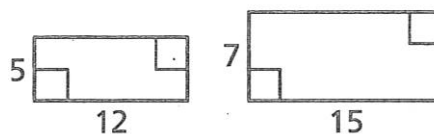
**Lesson 2.5** Warm Up  
For use before Lesson 2.5

Tell whether the two figures are similar.  
Explain your reasoning.

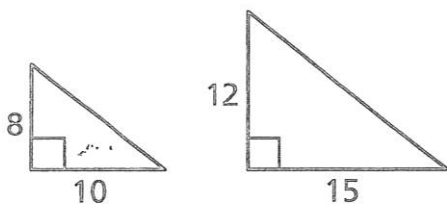
1.



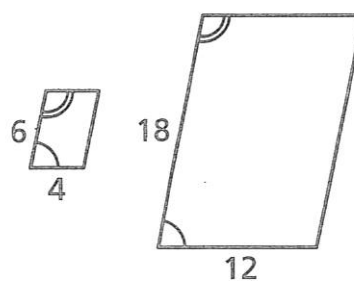
2.



3.



4.





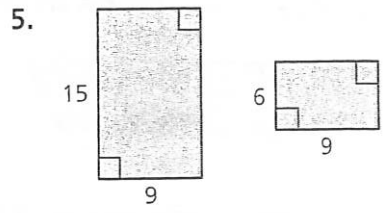
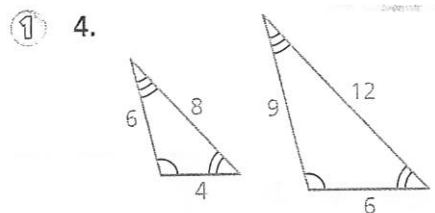
## Vocabulary and Concept Check

- VOCABULARY** How are corresponding angles of two similar figures related?
- VOCABULARY** How are corresponding side lengths of two similar figures related?
- CRITICAL THINKING** Are two figures that have the same size and shape similar? Explain.



## Practice and Problem Solving

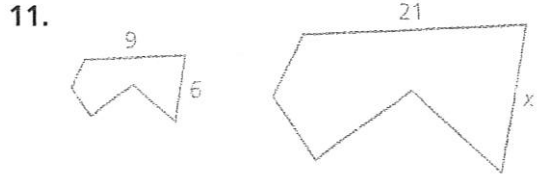
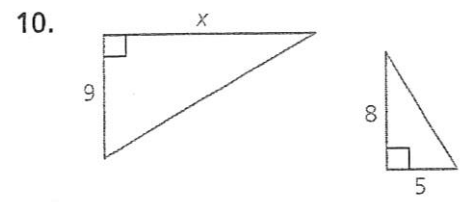
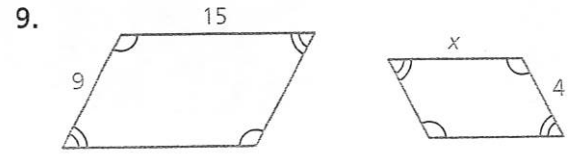
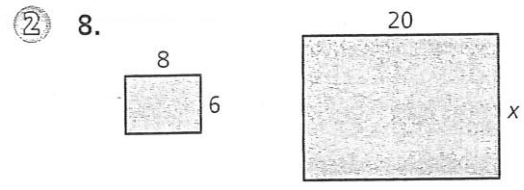
Tell whether the two figures are similar. Explain your reasoning.



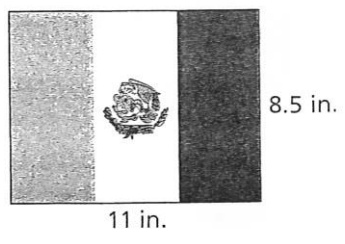
In a coordinate plane, draw the figures with the given vertices. Which figures are similar? Explain your reasoning.

- |  |   |
|--|---|
| 6. Rectangle A: $(0, 0), (4, 0), (4, 2), (0, 2)$ | 7. Figure A: $(-4, 2), (-2, 2), (-2, 0), (-4, 0)$ |
| Rectangle B: $(0, 0), (-6, 0), (-6, 3), (0, 3)$  | Figure B: $(1, 4), (4, 4), (4, 1), (1, 1)$        |
| Rectangle C: $(0, 0), (4, 0), (4, 2), (0, 2)$    | Figure C: $(2, -1), (5, -1), (5, -3), (2, -3)$    |

The figures are similar. Find  $x$ .



- MEXICO** A Mexican flag is 63 inches long and 36 inches wide. Is the drawing at the right similar to the Mexican flag?
- DESKS** A student's rectangular desk is 30 inches long and 18 inches wide. The teacher's desk is similar to the student's desk and has a length of 50 inches. What is the width of the teacher's desk?



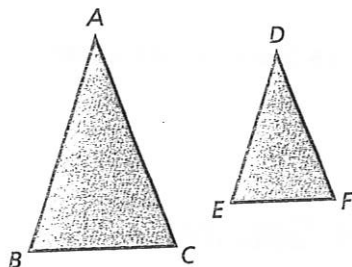
**2.5**

**Practice A**

1. Name the corresponding angles and the corresponding sides of the similar figures.

Sides

Angles

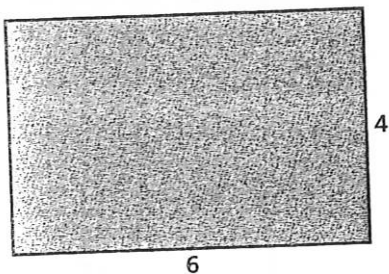


2. Tell whether the two figures are similar. Explain your reasoning.

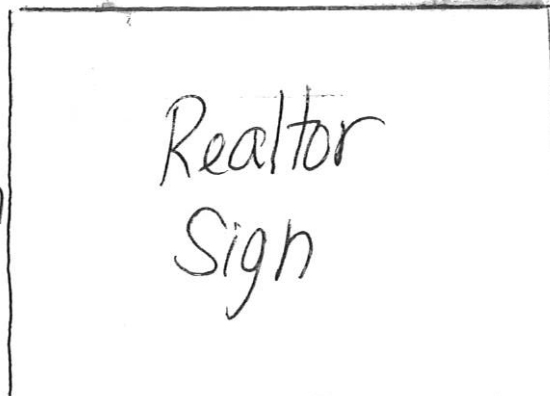


3. The rectangular traffic sign is 18 inches wide and 8 inches tall. The rectangular realtor sign is 27 inches wide and 10 inches tall. Are the signs similar?

4. The given rectangle needs to be modified.



- a. Each side length is increased by 2.  
Is the new rectangle similar to the original?



5. Which of the following card dimensions are similar rectangles?

2 in. by 5 in.

3 in. by 6 in.

1 in. by 3 in.

1 in. by 2.5 in.

27in



# 2.5

## Practice B

1. In a coordinate plane, draw the figures with the given vertices. Which figures are similar? Explain your reasoning.

Rectangle A: (0, 0), (3, 0), (3, 2), (0, 2)

Rectangle B: (0, 0), (1, 0), (1, 3), (0, 3)

Rectangle C: (0, 0), (2, 0), (2, -3), (0, -3)

2. A rectangular index card is 6 inches long and 4 inches wide. A rectangular note card is 1.5 inches long and 1 inch wide. Are the cards similar?
3. Given  $\square PQR \sim \square TUV$ . Name the corresponding angles and the corresponding sides.

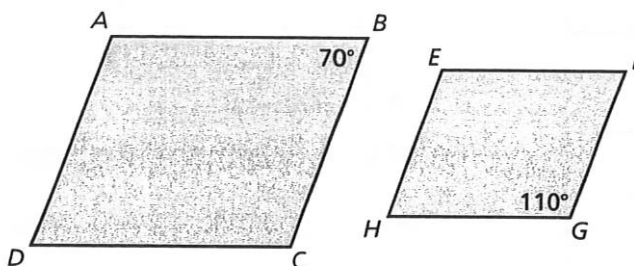
The two parallelograms are similar. Find the degree measure of the angle.

4.  $\angle A$

5.  $\angle H$

6.  $\angle D$

7.  $\angle F$



8. Is it possible for the following figures to be similar? Explain.
- A stop sign and a speed limit sign
  - A cell phone and a test paper
  - A yield sign and a home plate
  - A laptop and a swimming pool
9. Can you draw two triangles each having two  $45^\circ$  angles and one  $90^\circ$  angle that are *not* similar? Justify your answer.
10. You have a triangle that has side lengths of 6, 9, and 12.
- Give the side lengths of a similar triangle that is smaller than the given triangle.
  - Give the side lengths of a similar triangle that is larger than the given triangle.
  - Each side length is increased by 30%. Is the new triangle similar to the original?

# 2.5 Puzzle Time

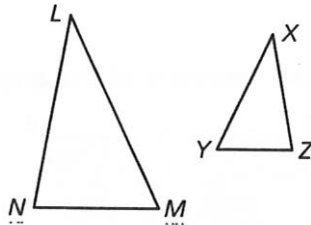
## Did You Hear About...

A	B	C	D	E	F
G	H	I	J	K	

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

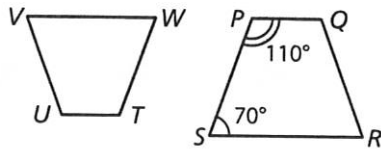
side <i>LM</i> ALWAYS
side <i>YZ</i> FALLING
side <i>PR</i> CAR
90° UNDER
∠ <i>X</i> THE
∠ <i>L</i> FLAT
∠ <i>M</i> WHEELS
60° FOR
side <i>XY</i> KEPT
side <i>PQ</i> HOW
side <i>VW</i> TWO
70° IT

In Exercises A–F, use the two similar triangles.



- A. What is  $\angle L$ 's corresponding angle?
- B. What is  $\angle M$ 's corresponding angle?
- C. What is  $\angle N$ 's corresponding angle?
- D. What is side *LM*'s corresponding side?
- E. What is side *MN*'s corresponding side?
- F. What is side *LN*'s corresponding side?

In Exercises G–K, use the two similar trapezoids.



- G. What is the measure of  $\angle T$ ?
- H. What is the measure of  $\angle W$ ?
- I. What is side *PQ*'s corresponding side?
- J. What is side *RS*'s corresponding side?
- K. What is side *QR*'s corresponding side?

80° EVER
∠ <i>Y</i> BICYCLE
side <i>MN</i> PEDALS
∠ <i>Z</i> THAT
side <i>PS</i> THEY'RE
110° BECAUSE
side <i>UV</i> TIRED
side <i>LN</i> SO
∠ <i>N</i> WERE
180° WHO
side <i>XZ</i> OVER
side <i>TU</i> WAS