

Pd ___ (7) (4)

Show that $\angle 1 + \angle 2 + \angle 3 = 180^\circ$, if line l and m are parallel but by two transversals.

$\angle 1 = \angle 4$
Alt Int

$\angle 5 = \angle 2$
Corresponding

$\angle 3 + \angle 4 + \angle 5 = 180$

$\angle 3 + \angle 1 + \angle 2 = 180$

Line

Pd ___ (7) (5)

2. Given that $m \angle 1$ is 130° . Line l & m are parallel, find the measure of angle 3.

Pd ___ (7) (4)

Find the measure of angle 1, if $m \angle 2$ is 70° .

Pd ___ (7) (6)

2. Find the measure of angle 5, if $m \angle 2$ is 120° and line l and m are perpendicular.

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1. Solve, then answer the questions below.

a. $4x - 8 = 6x + 3$

b. How many solutions does this equation have?

2. Solve, then answer the questions below.

a. $\frac{1}{3}(-6x - 9) = -3x - 15 - 2x$

b. How many solutions does this equation have?

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1. Solve, then answer the questions below.

a. $-3x - 11 - 4x = -\frac{3}{4}(8 + 16x)$

b. How many solutions does this equation have?

2. Solve, then answer the questions below.

a. twice a number minus seven is eight greater than three times a number

b. How many solutions does this equation have?

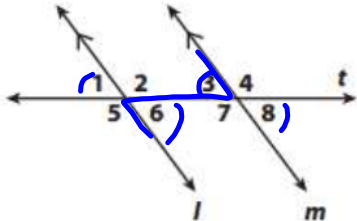
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Math 8

Triangles and Parallel Line Quiz

Use the figure for Exercises 1 and 2.



1. Which angle pair is a pair of alternate exterior angles?

- A $\angle 5$ and $\angle 6$
- B $\angle 6$ and $\angle 7$
- C $\angle 5$ and $\angle 4$
- D $\angle 5$ and $\angle 2$

2. Which of the following angles is **not** congruent to $\angle 3$?

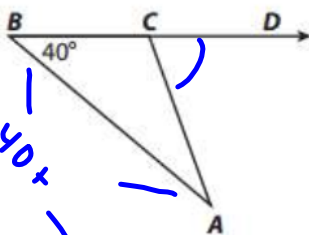
- A $\angle 1$
- B $\angle 2$
- C $\angle 6$
- D $\angle 8$

3. The measures, in degrees, of the three angles of a triangle are given by $2x + 1$, $3x - 3$, and $9x$. What is the measure of the smallest angle?

- A 13°
- B 27°
- C 36°
- D 117°

$2(13) + 1 = 27$
 $3(13) - 3 = 36$
 $9(13) = 117$
 $x = 13$

4. Which is a possible measure of $\angle DCA$ in the triangle below?



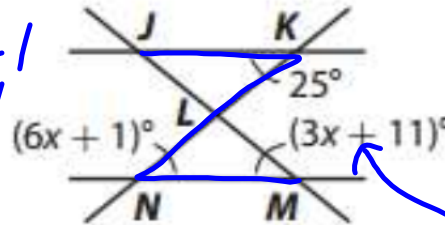
- A 36°
- B 38°
- C 40°
- D 70°

7. Two transversals intersect two parallel lines as shown.

$$25 = 6x + 1$$

$$\begin{array}{r} -1 \\ \hline 24 = 6x \\ \hline 6 \end{array}$$

$$x = 4$$



$$3(4) + 1$$

$$12 + 1$$

$$13$$

a. What is the value of x ?

b. What is the measure of $\angle LMN$?

c. What is the measure of $\angle KLM$?

d. Which two triangles are similar? How do you know?

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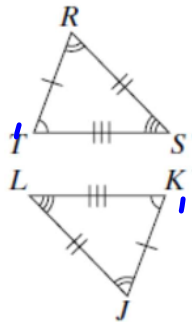
M8-U2: Notes #5 – Similarity (proportionality)

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Example 1: Congruent Figures *exactly the same*

≡

a. Two triangles that are congruent have 3 equal angles
3 equal sides



$$\begin{aligned} \angle T &\cong \angle K & \overline{TR} &\cong \overline{KJ} \\ \angle R &\cong \angle J & \overline{RS} &\cong \overline{JL} \\ \angle S &\cong \angle L & \overline{ST} &\cong \overline{LK} \end{aligned}$$

Therefore: $\Delta TRS \cong \Delta KJL$

Example 2: Similar Figures

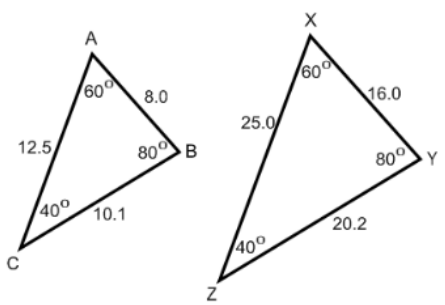
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a. Two triangles that are similar have 3 equal angles

AND

b. Corresponding sides are in proportion

$\Delta ABC \sim \Delta XYZ$

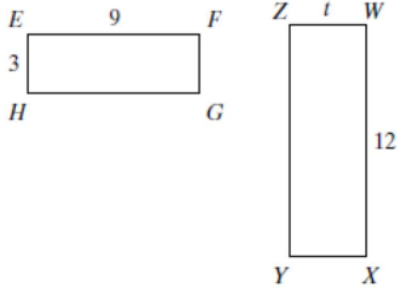


$$\begin{aligned} \angle A &\cong \angle X \\ \angle B &\cong \angle Y \\ \angle C &\cong \angle Z \end{aligned}$$

$$\frac{AB}{XY} = \frac{BC}{YZ} \quad \frac{8.0}{16} = \frac{10.1}{20.2}$$

Example 3: Finding missing lengths

Given that rectangle EFGH is similar to rectangle WXYZ, find t .



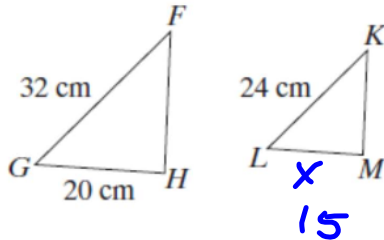
$$\frac{\text{Big}}{\text{little}} = \frac{12}{9} \rightarrow \frac{t}{3}$$

$$\frac{36}{9} = \frac{9t}{9}$$

$$4 = t$$

Try It!

a) In the figure, $\Delta FGH \sim \Delta KLM$. Find LM .



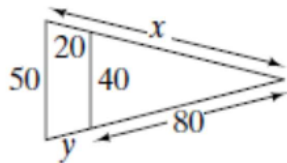
$$\frac{\text{Big}}{\text{little}} = \frac{32}{24} \rightarrow \frac{20}{x}$$

$$\frac{480}{32} = \frac{32x}{32}$$

$$\boxed{15 = x}$$

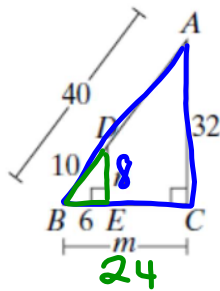
Example 4: Overlapping Similar Triangles

The following figures are similar polygons. Find the unknown lengths.



Try It!:

The following figures are similar polygons. Find the unknown lengths.



$$\frac{\text{Big}}{\text{little}} = \frac{32}{n} \neq \frac{40}{10}$$

$$\frac{\text{Big}}{\text{little}} = \frac{m}{6} \neq \frac{40}{10}$$

$$\frac{320}{40} = \frac{40}{n}$$

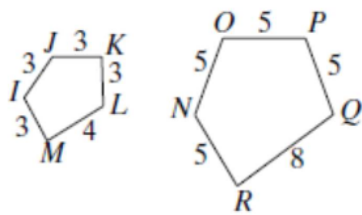
$$8 = n$$

$$\frac{240}{10} = \frac{10m}{10}$$

$$\boxed{24 = m}$$

Example 5: Determining Similarity using Proportions

Tell whether the pair of polygons is similar. Explain why or why not.



$$\frac{\text{Big}}{\text{little}} = \frac{5}{3} \quad \frac{8}{4} = 2$$

No, not similar
b/c the sides are not in proportion!

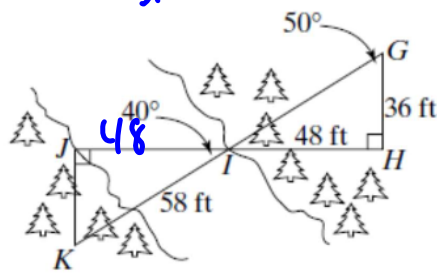
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M8-U2: HW #5 – Similarity (proportionality)

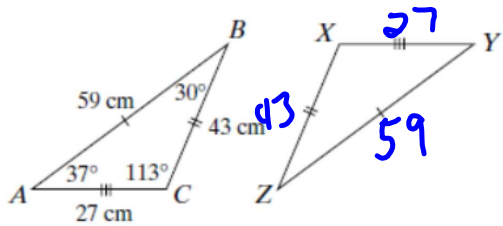
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- #1. A surveyor drew the diagram at the right to find the distance from J to I across the canyon. $\triangle GHI \cong \triangle KJI$. What is the distance \overline{JI} ?

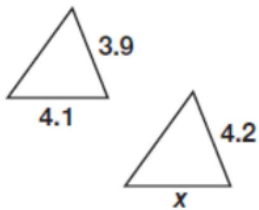


$\overline{JI} = 48 \text{ ft}$
 b/c sides are \cong

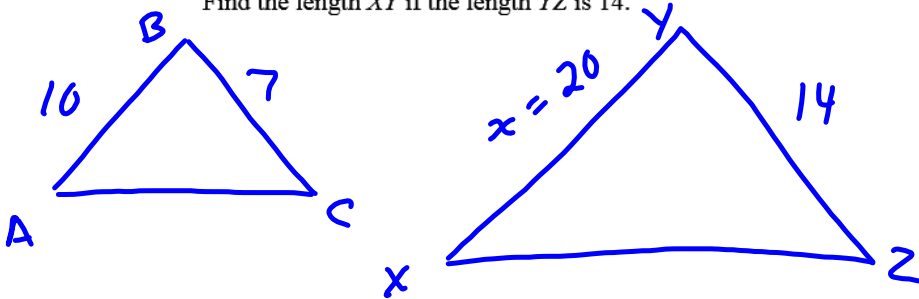
- #2. Find the missing measures for $\triangle XYZ$.



- #3. Each pair of figures is similar. Find the length of x .



#4. $\triangle ABC$ is similar to $\triangle XYZ$. The length AB is 10. The length BC is 7. Find the length XY if the length YZ is 14.

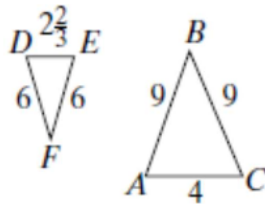


$$\frac{\text{Big}}{\text{little}} = \frac{14}{7} = \frac{x}{10}$$

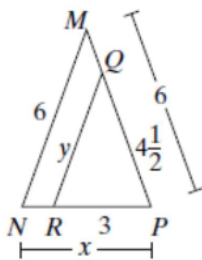
$$\frac{140}{7} = \frac{x}{1}$$

$$\boxed{20 = x}$$

#5. Tell whether the pair of polygons is similar. Explain why or why not.



#6. The following figures are similar polygons. Find the unknown lengths.



Spiral:

#7. Solve the following proportion: $\frac{x-3}{5} = \frac{x+2}{4}$.

$$4(x-3) = 5(x+2)$$

~~#8.~~ Simplify the following: $4 \times \left(\frac{1}{3} - \frac{2}{3}\right)^2 \div \left(\frac{5}{9}\right)$

#9. Kaitlin earns \$6.50 for each hour she works. On Friday she worked for 3 hours. She also worked on Saturday. If she earned a total of \$52.00 for the two days of work, how many hours did she work on Saturday?