Module 2a: Relationships Between Triangles

Math Practice(s):

-Reason abstractly & quantitatively

-Construct viable arguments & critique the reasoning of others

Learning Target(s):

-Explore the relationship between sides and angles in a triangle.

Homework:

HW #7: 2a #1-12

Aug 8-12:20 PM

Warm-up

1. Determine the value of x that makes each proportion a true statement.

A. $\frac{x}{12} = \frac{2}{3}$

$3 \cdot x = 2 \cdot 12$

$\frac{3x}{3} = \frac{24}{3}$

$x = 8$

B. $\frac{6}{8} = \frac{24}{x}$

$6x = 8 \cdot 24$

$\frac{6x}{6} = \frac{192}{6}$

$x = 32$

C. $\frac{x+2}{25} = \frac{3}{5}$

$5(x+2) = 3 \cdot 25$

$5x + 10 = 75$

$-10 \quad -10$

$\frac{5x}{5} = \frac{65}{5}$

$x = 13$

D. $\frac{17-2x}{7} = \frac{x-3}{2}$

$2(17-2x) = 7(x-3)$

$34 - 4x = 7x - 21$

$+4x \quad +4x$

$+21 \quad +21$

$\frac{55}{11} = \frac{11x}{11}$

$x = 5$

E. $\frac{x^2}{36} = \frac{1}{4}$

$\frac{4x^2}{4} = \frac{36}{4}$

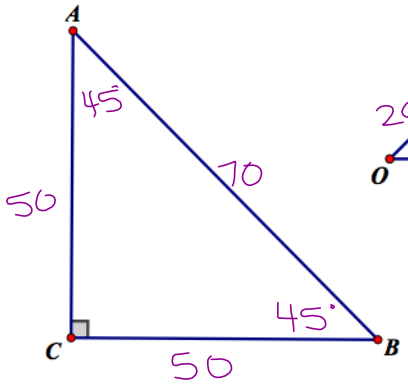
$\sqrt{x^2} = \sqrt{9}$

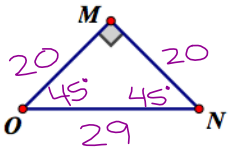
$x = \pm 3$

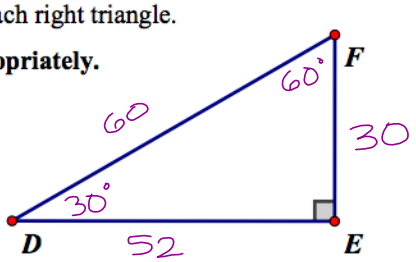
Analyzing the measures of various triangles

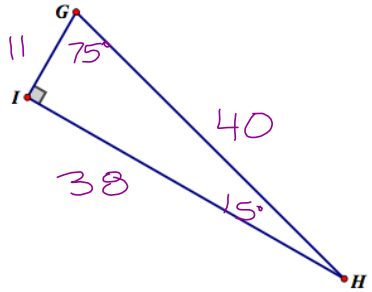
Eight right triangles are shown below. Work with a partner to complete the following tasks:

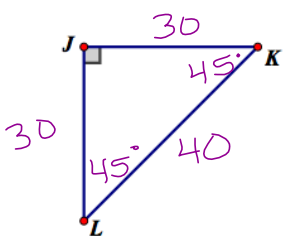
- Determine the measure of the acute angles in each right triangle. Use a protractor to determine the measure of one acute angle; then, use what you know about the sum of the angles in a triangle to determine the measure of the other acute angle.
- Determine the lengths, in millimeters, of all three sides of each right triangle.
- **Label the angles and sides lengths on each triangle appropriately.**

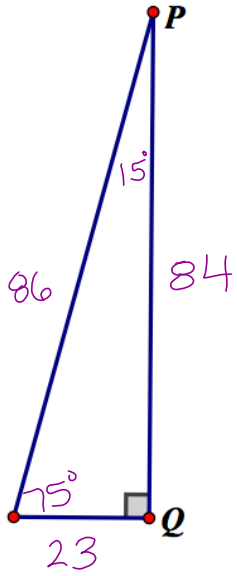


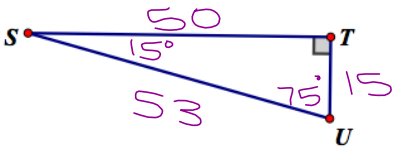


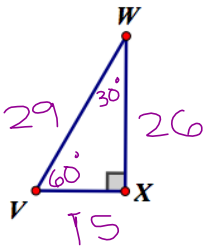












Analyze the measurements in the table above to help fill in the blank so that the following statement is true about any triangle:

In ΔKLM, if $m\angle K < m\angle L$, then the length of the side opposite angle K is less than the length of the side opposite angle L.

In other words...

The shortest side is opposite the smallest angle.

The longest side is opposite the largest angle.

Group the triangles from the previous page by common characteristics. In the space below, give a brief description of each group, and name the triangles in that group. Try to group them in as many ways as possible.

30°-60°-90°

△DEF

△VWX

45°-45°-90°

△ABC

△JKL

△MNO

15°-75°-90°

△GHI

△PQR

△STU

Isosceles

△ABC

△JKL

△MNO

Scalene

△DEF

△GHI

△PQR

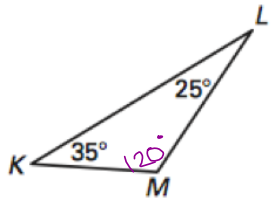
△STU

△VWX

Practice

List the sides in order from shortest to longest.

1.

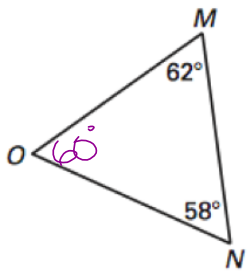


$35+25+m\angle M=180$
$60+m\angle M=180$
$m\angle M=120^\circ$

$(\angle L, \angle K, \angle M)$

$\overline{KM}, \overline{LM}, \overline{LK}$

2.

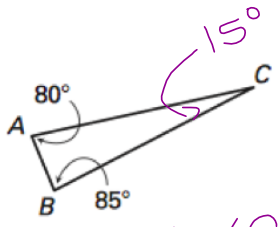


$62+58+m\angle O=180$
$120+m\angle O=180$
$m\angle O=60$

$(\angle N, \angle O, \angle M)$

$\overline{MO}, \overline{MN}, \overline{ON}$

3.



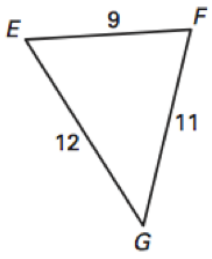
$80+85+m\angle C=180$
$165+m\angle C=180$
$m\angle C=15^\circ$

$(\angle C, \angle A, \angle B)$

$\overline{AB}, \overline{BC}, \overline{CA}$

List the angles in order from smallest to largest.

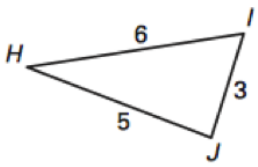
4.



$(\overline{EF}, \overline{FG}, \overline{EG})$

$\angle G, \angle E, \angle F$

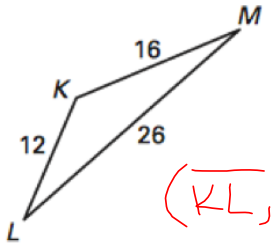
5.



$(\overline{IJ}, \overline{HJ}, \overline{HI})$

$\angle H, \angle I, \angle J$

6.



$(\overline{KL}, \overline{KM}, \overline{LM})$

$\angle M, \angle L, \angle K$