Math 7   **Chapter 10**   **Pre-Test**
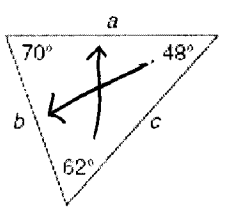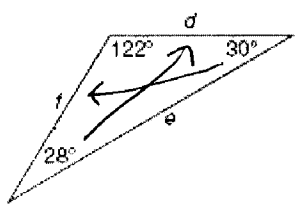
List the side lengths from shortest to longest.

1.

b, a, c

2.

d, f, e

3. Explain why triangles constructed from the same two line segments are not necessarily congruent.

Given only the length of two sides, the angle measures can be adjusted to make an infinite number of different triangles.

4. Triangle *HIJ* is congruent to $\triangle LMN$. The measure of $\angle H$ is 32°, the measure of $\angle I$ is 62°, and the measure of $\angle J$ is 86°. What are $m\angle L$, $m\angle M$, and $m\angle N$? Explain your reasoning.

$\triangle HIJ$
$\triangle LMN$

$m\angle L = 32° = m\angle H$
$m\angle M = 62° = m\angle I$
$m\angle N = 86° = m\angle J$

5. Figure *ABCD* is congruent to figure *EFGH*. Write the corresponding sides and corresponding angles that are congruent.

$\angle A \cong \angle E$ $\overline{AB} \cong \overline{EF}$
$\angle B \cong \angle F$ $\overline{BC} \cong \overline{FG}$
$\angle C \cong \angle G$ $\overline{CD} \cong \overline{GH}$
$\angle D \cong \angle H$, $\overline{DA} \cong \overline{HE}$

6. Larry constructed a triangle that is congruent to $\triangle QRS$. To make sure the new triangle is congruent to $\triangle QRS$, he used $\angle R$, $\angle S$, and the included side. Name the side that Larry used to construct the new triangle.

$\overline{RS}$ is between $\angle R$ and $\angle S$.

Determine whether it is possible to form a triangle using the set of segments with the given measurements. Explain your reasoning.

7. 6 in., 8.9 in., 13.7 in.

$$\begin{array}{r} 8.9 \\ + 6.0 \\ \hline 14.9 \end{array} > 13.7$$

Since the sum of the 2 shortest sides is greater than the third side, these segments can make a triangle.

8. 15 m, 4 m, 10.9 m

$$\begin{array}{r} 10.9 \\ + 4.0 \\ \hline 14.9 \end{array} < 15$$

Since the sum of the two shorter sides is less than the third side these segments would not form a tria

You are given the length of two sides of a triangle. What can you conclude about the length of the third side?
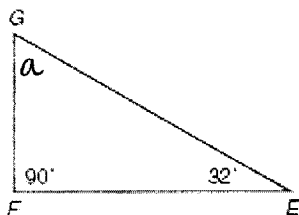
9. 21 in., 12 in.

$$\begin{array}{r} 21 \\ + 12 \\ \hline 33 \end{array}$$

The third side must be less than 33 inches long, and it must be greater than 9 inches long.

1

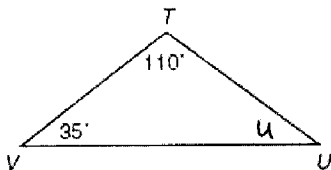Determine the measure of the unknown angle in each triangle. Show your calculations.

Solve for x in each diagram. Show your calculations.

10.

$$32 + 90 + a = 180$$
$$122 + a = 180$$
$$-122 \qquad -122$$
$$a = 58$$

$$m\angle G = 58°$$

11.

$$110 + 35 + u = 180$$
$$145 + u = 180$$
$$-145 \qquad -145$$
$$u = 35°$$

$$m\angle u = 35°$$

12.

exterior angle

Remote Interior Angles (their sum equals the exterior angle)
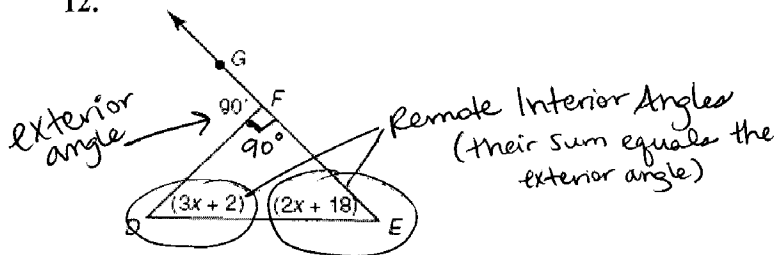
$$3x + 2 + 2x + 18 = 90$$
$$3x + 2x + 2 + 18 = 90$$
$$5x + 20 = 90$$
$$-20 \qquad -20$$
$$\frac{5x}{5} = \frac{70}{5}$$
$$x = 14°$$

$$\begin{array}{r} {}^2 14 \\ \times\ 5 \\ \hline 70 \end{array}$$

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