Law of Sines and Law of Cosines

Name:_____

Date:	

Solve the following equations for x.

1. $\dfrac{\sin(68°)}{x} = \dfrac{\sin(37°)}{3}$

2. $\dfrac{\sin(24°)}{8} = \dfrac{\sin(x)}{3.75}$

$x = $ __4.6219__

$x = $ __10.9912__ or __169.0088__

3. $23^2 = 37^2 + 18^2 - 2(37)(18)\cos(x)$

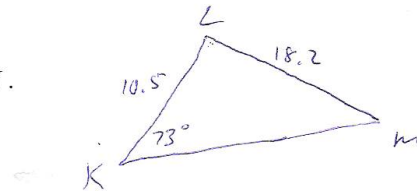4. $x^2 = 10^2 + 8^2 - 2(10)(8)\cos(60°)$

$x = $ __29.09__°

$x = $ __10.05__

Find each measure using the given measures of $\triangle KLM$.

5. In $\triangle KLM$; $m = 10.5$, $k = 18.2$, and $m\angle K = 73°$. Find $m\angle M$.

$$\frac{\sin M}{10.5} = \frac{\sin 73}{18.2}$$

$m\angle M = $ __33.5__°

6. In $\triangle KLM$; $m\angle L = 88°$, $m\angle K = 31°$, and $m = 5.4$. Find l.

$m\angle m = 61°$

$$\frac{\sin 61°}{5.4} = \frac{\sin 88°}{l}$$

$l = $ __6.17__

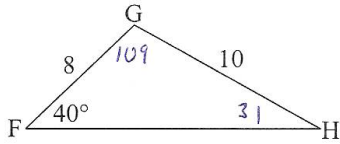7. In $\triangle KLM$; $m = 11$, $l = 17$, and $m\angle K = 59°$. Find k.

$k^2 = 11^2 + 17^2 - 2(11)(17)\cos 59$

$k = $ __14.74__

Law of Sines and Law of Cosines   Name:_____

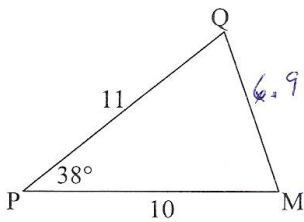*Solve each triangle by finding all of the missing side lengths and angle measures..*

8.

$$\frac{\sin 40}{10} = \frac{\sin H}{8} \qquad \frac{\sin 40}{10} = \frac{\sin 109}{g}$$

$$m\angle H = 31°$$

$$g \approx 14.71$$

$m\angle H = 31°$
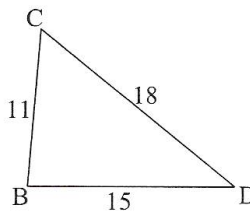
$m\angle G = 109°$

$FH = 14.71$

9.

$$x^2 = 11^2 + 10^2 - 2(11)(10)\cos 38$$

$$x \approx 6.8$$

$$m\angle M \approx 78.9$$

$$m\angle Q \approx 63.1$$
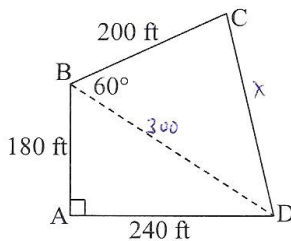
$$\frac{\sin M}{11} = \frac{\sin 38}{6.9}$$

10.

$$m\angle B = 86.2°$$

$$m\angle C = 56.3°$$

$$m\angle D = 37.5$$

$$18^2 = 15^2 + 11^2 - 2(15)(11)\cos B$$

$$\frac{\sin 86.2}{18} = \frac{\sin C}{15}$$

11. Ms. Jenkins is buying some property that is shaped like quadrilateral *ABCD* below. Find the perimeter of the property.

$$180^2 + 240^2 = (BD)^2 \qquad x^2 = 200^2 + 300^2 - 2(200)(300)\cos 60$$

$$300 = BD \qquad\qquad x = 264.6$$

Perimeter is   884.6 ft