Name:_____ Date:_____

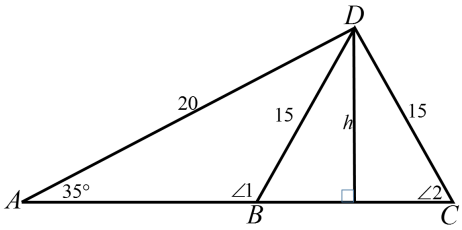
Pre-Calculus 11: HW 2.3b Ambiguous Case of Sine Law

1. Given each equation, solve for all values of θ where $0 \le \theta \le 360^\circ$. Note: There are two angles!!

a) $\sin\theta = \frac{2}{3}$ $\theta_1 =$ ____ $\theta_2 =$ ____	b) $\sin\theta = \frac{4}{5}$ $\theta_1 =$ ____ $\theta_2 =$ ____	c) $\sin\theta = -0.55$ $\theta_1 =$ ____ $\theta_2 =$ ____
d) $\sin\theta = \frac{-\sqrt{2}}{2}$ $\theta_1 =$ ____ $\theta_2 =$ ____	e) $\sin\theta = \frac{-\sqrt{3}}{2}$ $\theta_1 =$ ____ $\theta_2 =$ ____	f) $\sin\theta = \frac{4}{\sqrt{7}}$ $\theta_1 =$ ____ $\theta_2 =$ ____

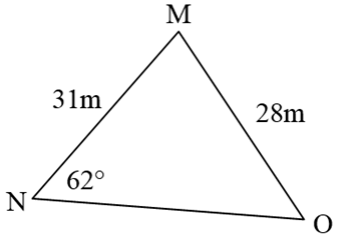
2. Given each triangle, find the missing values and show all your work

a) Find the value of $\angle 1$, $\angle 2$, h, BC, *and* AB



$\angle 1 =$ _____ $\angle 2 =$ _____ $h =$ _____ $BC =$ _____ $AB =$ _____

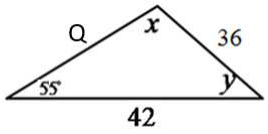
b) Find the value of $\angle MON, \angle OMN,$ *and* $\overline{ON}$



$\angle MON =$ _____ (ACUTE) $\angle OMN =$ _____ $ON =$ _____

$\angle MON =$ _____ (OBTUSE) $\angle OMN =$ _____ $ON =$ _____

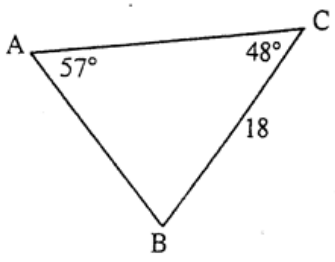
e)



$\angle x =$ _____ (ACUTE) $\angle y =$ _____ $Q =$ _____

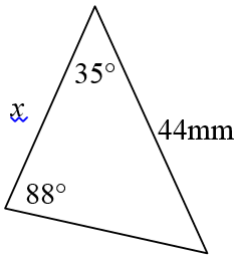
$\angle x =$ _____ (OBTUSE) $\angle y =$ _____ $Q =$ _____

3. Find the area of the following triangle. Note the area of a triangle is $A = b \times h \times 0.5$:

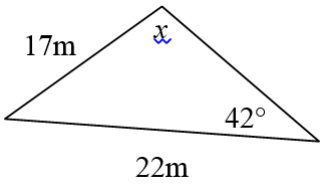


4. Given each of the following triangles, indicate whether if there would be an ambiguous case. State the reason why or why not: Solve for "x".

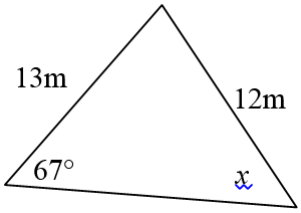
a)



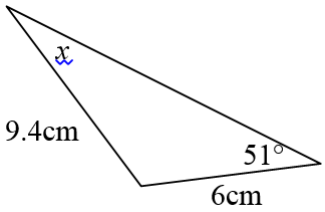
b)



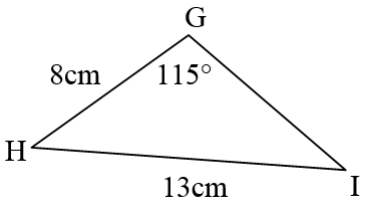
c)



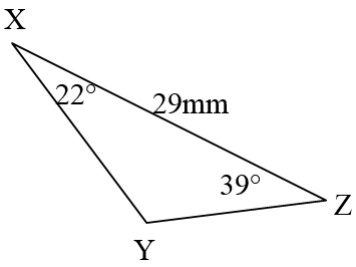
d)



e)



f)



5. A lighthouse at point Q is 20 km from a yacht at point R and 16 km from a sailboat at point S. From the yacht, the lighthouse and the sailboat are separated by an angle of $39°$

a) Is it necessary to consider the ambiguous case? Explain.

b) Sketch all possible diagrams for this situation.

c) Determine all possible the distances from the yacht to the sailboat, to the nearest tenth of a kilometre.

6. Jason and Sammy are part of a scientific team studying clouds. The team is about to launch a weather balloon into an active part of the cloud. Jason's rope is 15.4 m long and makes an angle of $42°$ with the ground. Belle's rope is 12.9 m long.

a) Is it necessary to consider the ambiguous case? Explain.

b) Sketch all possible diagrams for this situation.

c) Determine all possible the distances between Jason and Sammy to the nearest tenth of a meter.