Pre Calculus
Review 5.5 to 5.6

Name: Mr. Leckie
Block: _____

Calculator Allowed-SHOW ALL WORK FOR CREDIT

Find the area of each triangle.

1. $a = 5$ cm, $b = 12$cm, $c = 13$cm

$s = \frac{5+12+13}{2} = \frac{30}{2} = 15$

$A = \sqrt{15(15-5)(15-12)(15-13)}$

$A \approx 30 \text{ cm}^2$

2. $c = 3.58$m, $b = 6.8$m, $A = 39°$

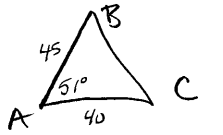
$A = \frac{1}{2}bc\sin A$

$A = \frac{1}{2}(6.8)(3.58)\sin(39°)$

$A \approx 7.660 \text{ m}^2$

Solve each triangle. If there is no solution, explain why. If there are two triangles, solve BOTH!

3. $b = 40$, $c = 45$, $A = 51°$



SAS → 1 Δ

$a^2 = 40^2 + 45^2 - 2(40)(45)\cos(51°)$

$a \approx 36.871$

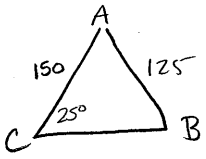
$40^2 = a^2 + 45^2 - 2a(45)\cos B$

$\cos^{-1}\left(\frac{40^2 - a^2 - 45^2}{-2a(45)}\right) = B$

$57.469° \approx B$

$71.531 \approx C$

4. $c = 125$, $b = 150$, $C = 25°$



ASS
↓
Look for 0, 1, or 2 Δs!

$\frac{\sin 25}{125} = \frac{\sin B}{150}$

$B = \sin^{-1}\left(\frac{150\sin(25)}{125}\right)$

$B_1 \approx 30.474°$ → or → $180 - B_1 = B_2$

$149.526° = B_2$

$A_1 \approx 124.526°$

$5.474° \approx A_2$

$\frac{\sin 25}{125} = \frac{\sin A_1}{a_1}$

$\frac{\sin A_2}{a_2} = \frac{\sin 25}{125}$

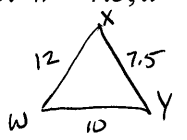
$a = \frac{125\sin A}{\sin 25}$

$a_2 = \frac{125\sin(A_2)}{\sin 25}$

$a \approx 243.679$

$a_2 \approx 28.213$

5. $w = 7.5$, $x = 10$, $y = 12$



SSS → 1 Δ

$12^2 = 10^2 + 7.5^2 - 2(10)(7.5)\cos Y$

$\cos^{-1}\left(\frac{12^2 - 10^2 - 7.5^2}{-2(10)(7.5)}\right) = Y$

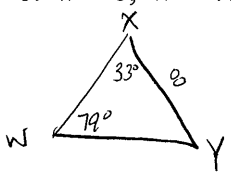
$85.316° \approx Y$

$10^2 = 7.5^2 + 12^2 - 2(7.5)(12)\cos X$

$\cos^{-1}\left(\frac{10^2 - 7.5^2 - 12^2}{-2(7.5)(12)}\right) = X$

$56.155° \approx X$ ⇒ $W \approx 38.529°$

6. $w = 8$, $W = 79°$, $X = 33°$



AAS → 1 Δ

$\angle Y = 68°$

$\frac{\sin 79}{8} = \frac{\sin 33}{x}$

$x = \frac{8\sin(33)}{\sin(79)} \approx 4.439$

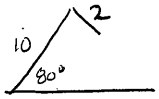
$\frac{\sin 79}{8} = \frac{\sin 68}{y}$

$y = \frac{8\sin(68)}{\sin(79)} \approx 7.556$

7. Given an example where three parts of a triangle are given, but no triangle can be formed. Explain your answer including a diagram.

option #1 ... ASS

where the 2ND side is too short



option #2 ... SSS where the sum of the 2 smallest sides is smaller than the 3RD side

(ex) $a = 10$, $b = 12$, $c = 25$

For questions 8-9, do NOT copy a question on any of the worksheets for 5.5 or 5.6!! you may choose whether or not a diagram is given in the problem. Make your own problem!!

8. Create a new application question that whose solution is found using the Law of Sines. Then, solve your problem.

SHARE w/ SOMEONE ELSE FOR PRACTICE!

9. Create a new application question that whose solution is found using the Law of Cosines. Then, solve your problem.