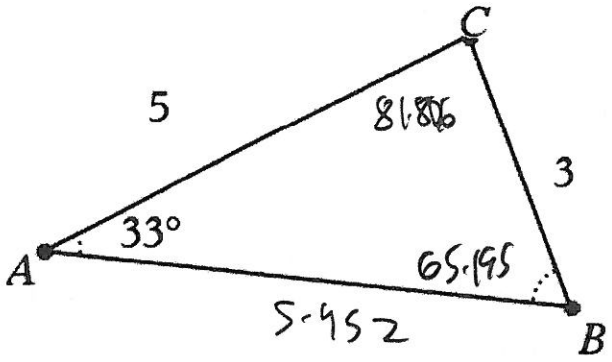
Name_____Summative Assessment Law of Sines and Cosines Period _____

SOLVE EACH TRIANGLE based on the GIVEN INFORMATION, if TWO triangles are present, then state BOTH Answers.

Show your work in a clear manner. Approximate to at least two decimal places

$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ $\quad \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ $\quad \cos A = \frac{b^2+c^2-a^2}{2bc}$ $\quad a^2 = b^2 + c^2 - 2bc \cdot cosA$



Triangle ABC (if angle B is acute)
Show work for Angle B

$\frac{\sin B}{5} = \frac{\sin 33}{3}$

$\sin B = \frac{5\sin 33}{3}$

$B = \sin^{-1}\left(\frac{5\sin 33}{3}\right) \approx 65.194$

Angle B = 65.194 Angle C = 81.806

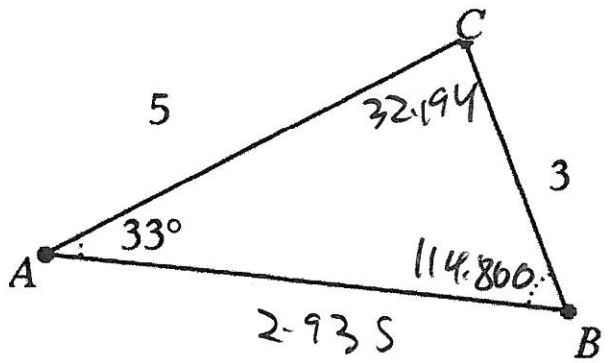
$180 - 65.194 - 33$

Show work for side c

$\frac{c}{\sin 81.806} = \frac{3}{\sin 33}$

$c = \frac{3\sin 81.806}{\sin 33}$

≈ 5.452



Triangle ABC (if angle B' is obtuse)
Show work for Angle B'

$180 - B = B'$

$B' = 180 - 65.194$

$= 114.806$

Since $114.806 + 33 < 180$ 2nd $\triangle$ exists

Angle B' = 114.806 Angle C' = 32.194

$180 - 114.806 - 33$

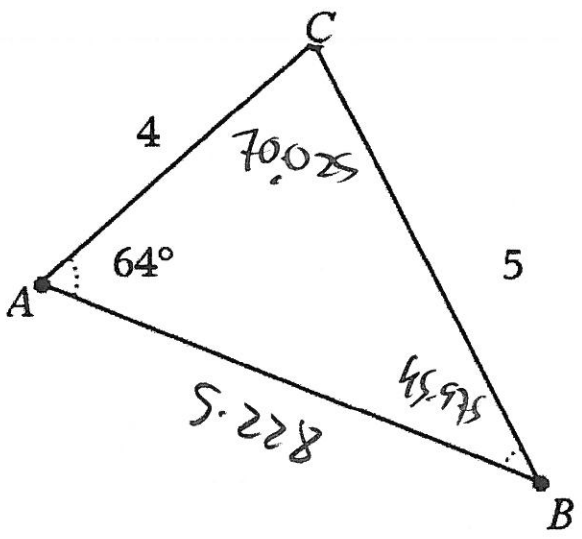
Show work for side c'

$\frac{c}{\sin 32.194} = \frac{3}{\sin 33}$

$c = \frac{3\sin 32.194}{\sin 33}$

$= 2.935$

SOLVE EACH TRIANGLE based on the GIVEN INFORMATION, if TWO triangles are present, then state BOTH Answers.



Triangle ABC (if angle B is acute)
Show work for Angle B

$\frac{\sin B}{4} = \frac{\sin 64}{5}$

$\sin B = \frac{4 \sin 64}{5}$

$B = \sin^{-1}\left(\frac{4 \sin 64}{5}\right) \approx 45.975$

Angle B = 45.975 Angle C = 70.025

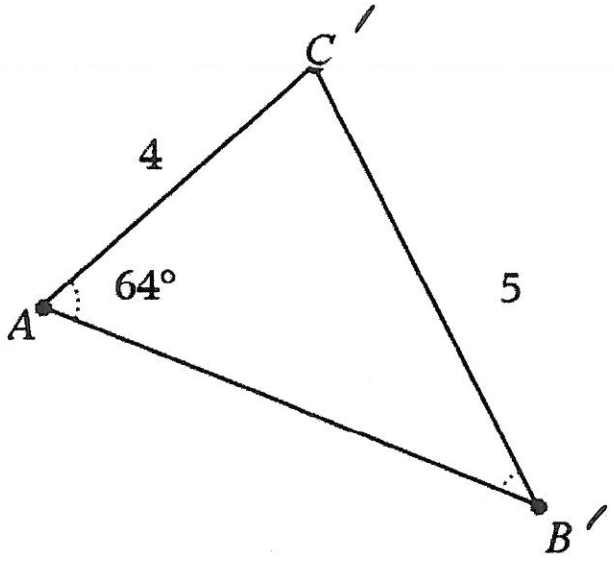
$180 - 45.975 - 64$

Show work for side c

$\frac{c}{\sin 70.025} = \frac{5}{\sin 64}$

$c = \frac{5 \sin 70.025}{\sin 64}$

$= 5.228$



Triangle ABC (if angle B' is obtuse)
Show work for Angle B'

$180 - B = B'$

$B' = 180 - 45.975$

$= 134.025$

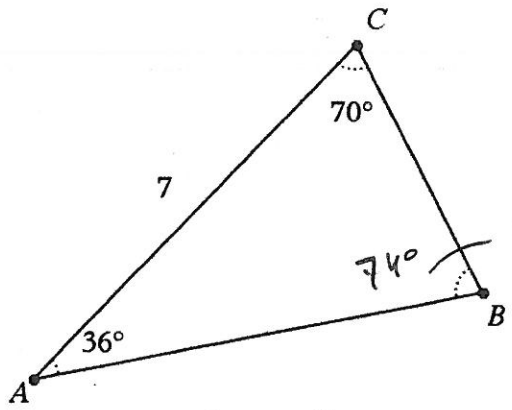
Angle B' = 134.025 Angle C' = _____

Show work for side c'

Since $134.025 + 64 > 180$

2nd $\triangle$ impossible

Determine the missing angle or side lengths stated related to each triangle



180 − 70 − 36

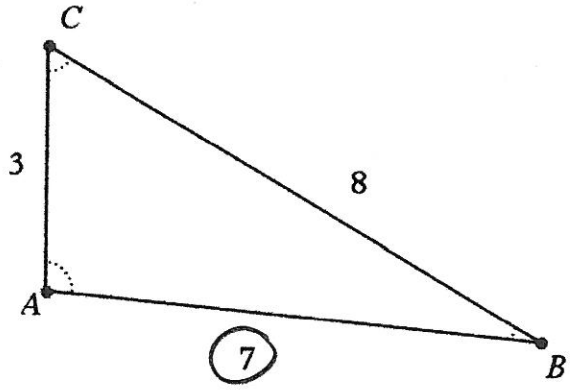
$$\frac{AB}{\sin 70} = \frac{7}{\sin 74}$$

$$AB = \frac{7 \sin 70}{\sin 74}$$

$$\approx 6.843$$

Find Side AB = 6.843

Determine the missing angle or side lengths stated related to each triangle



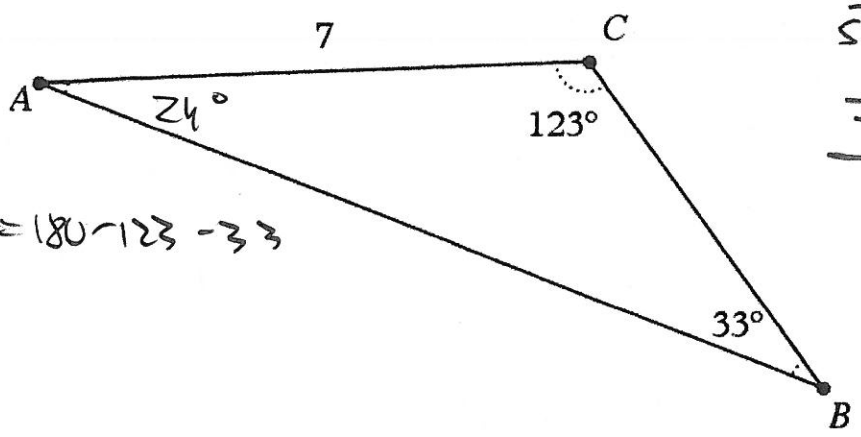
$$\cos C = \frac{3^2 + 8^2 - 7^2}{2(3)(8)}$$

$$C = \cos^{-1}\left(\frac{3^2 + 8^2 - 7^2}{2(3)(8)}\right)$$

$$\approx 60^\circ$$

Find Angle C = 60°

Determine the missing angle or side lengths stated related to each triangle



$A = 180 - 123 - 33$

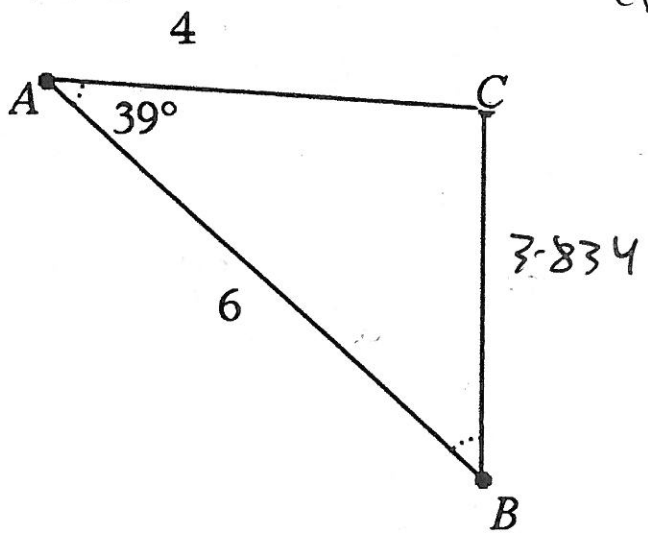
$\frac{7}{\sin 33} = \frac{c}{\sin 123}$

$\frac{7 \sin 123}{\sin 33} = c$

$10.779 = c$

Find Side AB = 10.779

Determine the missing angle or side lengths stated related to each triangle



$CB = \sqrt{4^2 + 6^2 - 2(4)(6)\cos 39}$

$= 3.834$

$\cos C = \frac{4^2 + 3.834^2 - 6^2}{2(4)(3.834)}$

$\approx 99.951°$

Find Angle C = 99.951° Find side BC = 3.834

Hyp $4^2 + 3.834^2 = 30.699556$

hypotenuse $= \sqrt{30.699556}$

5.541

But $6 > 5.541$

so Δ obtuse