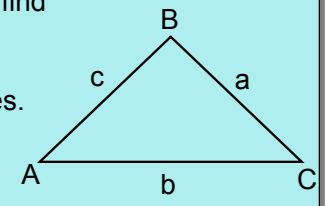
Algebra 2

Section 14-4

Law of Sines

Goal: to apply the Law of Sines to any triangle to find missing side and angle measures.

Law of Sines- used to find angles in any triangle, not just 90 degree ones.

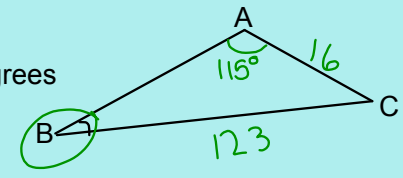


$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

A = 115 degrees

BC = 123

AC = 16



$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Find measure of angle B.

$\frac{16}{\sin B} \times \frac{123}{\sin 115}$

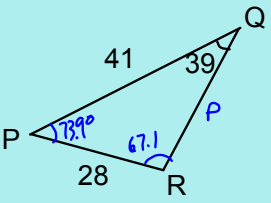
$\frac{16 \cdot \sin 115}{123} = \frac{123 \sin B}{123}$

$.11789... = \sin B$

$\sin^{-1}(\text{Ans})$

$\angle B = 6.7^\circ$

Find side p.



$\frac{28}{\sin 39} \times \frac{41}{\sin R}$

$\frac{41 \cdot \sin 39}{28} = \frac{28 \sin R}{28}$

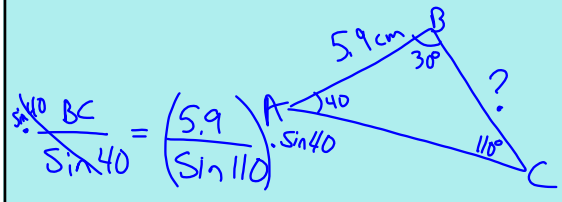
$67.1^\circ \approx R$

$\frac{P}{\sin 73.9} \times \frac{41}{\sin 67.1}$

$\frac{41 \sin 73.9}{\sin 67.1} = \sin 67.1 P$

$42.8 \approx P$

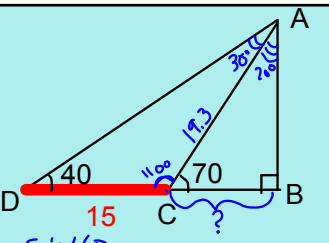
#31. In triangle ABC, A = 40 degrees, B = 30 degrees. Find BC for AB = 5.9cm.



$\frac{BC}{\sin 40} = \frac{5.9}{\sin 110} \cdot \sin 40$

$\overline{BC} = 4.0\text{ cm}$

Find CB



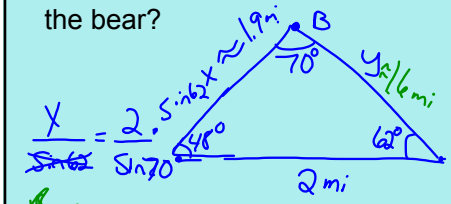
$\frac{AC}{\sin 40} = \frac{15}{\sin 30} \cdot \sin 40$

$AC = 19.3$

$\frac{\sin 20}{} \frac{CB}{\sin 20} = \frac{19.3 \sin 90}{\sin 90}$

$CB = 6.6$

Two wildlife spotters are 2 mi apart on an east-west line. The spotter in the eastern spot sees a bear 62 degrees north of west. The other spotter sees the bear 48 degrees north of east. How far is each spotter from the bear?



$\frac{x}{\sin 62} = \frac{2}{\sin 70} \cdot \sin 62$ $x \approx 1.9$ mi

$\frac{y}{\sin 48} = \frac{2}{\sin 70} \cdot \sin 48$

$y \approx 1.6$ mi

Hwk: pg. 932 - 933

#10 - 20 evens, 28- 32 evens