Law of Sines

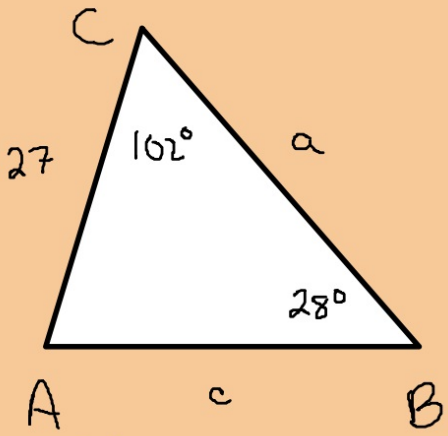
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

- used to solve an oblique triangle
- CASE 1: know 2 sides + 1 angle (ASA, AAS)

Ex 1:
AAS Case

Given: m<C = 102°, m<B = 28°, b = 27

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



$$\frac{a}{\sin 50} = \frac{27}{\sin 28} = \frac{c}{\sin 102}$$

$$\frac{a}{\sin 50} = \frac{27}{\sin 58} \qquad \frac{27}{\sin 58} = \frac{c}{\sin 102}$$

$$a = \frac{27 \sin 50}{\sin 58} \qquad \frac{27 \sin 102}{\sin 58} = c$$

$a \approx 44.1$ | $56.3 = c$

FIND:

$m\angle A = 50$

$a \approx 44.1$

$c \approx 56.3$

$m\angle A + m\angle B + m\angle C = 180$

$m\angle A + 28 + 102 = 180$

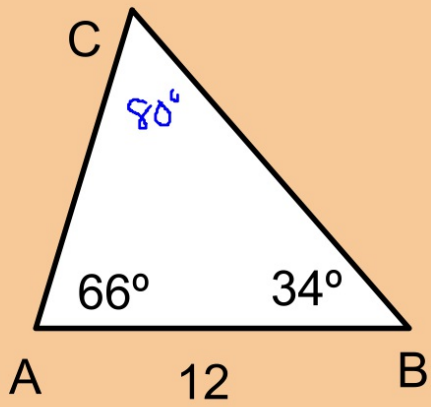
$m\angle A + 130 = 180$

$m\angle A = 50$

Ex 2 -
ASA Case

Given: m<A = 66°, m<B = 34°, c = 12

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



$$\frac{a}{\sin 66} = \frac{b}{\sin 34} = \frac{12}{\sin 80}$$

$$\frac{a}{\sin 66} = \frac{12}{\sin 80} \qquad \frac{b}{\sin 34} = \frac{12}{\sin 80}$$

$$a = \frac{12\sin 66}{\sin 80} \qquad b = \frac{12\sin 34}{\sin 80}$$

$$a \simeq 11.1 \qquad b \simeq 6.8$$

m<C = 80°
b = 6.8
a = 11.1

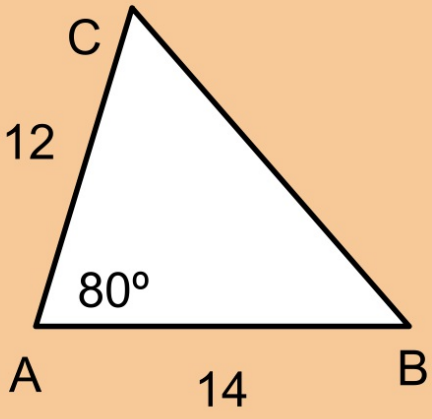
m<C

66 + 34 = 100

180 − 100 = 80

Ex 3 -
SAS Case

Given: m<A = 80º, b = 12, c = 14



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

CAN'T BE SOLVED
USING LAW OF SINES!!

YOU NEED 2 ANGLES,
AND 1 SIDE.

Ex 4 -
AAS Case

Try Example 1, page 496 of your text.

HW: Page 502, #9-23 (odds)