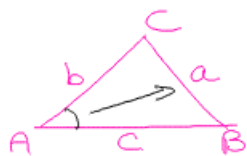


Section 5.5 : The law of Sines



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

- A, B and C are angles of triangle ABC
- a side opposite to angle A
b " " " " B.
c " " " " C.

Ex 1 $\triangle ABC$ $\angle A = 36^\circ$ $\angle B = 48^\circ$ $a = 8$

Solve the triangle → Find all missing sides & angles.



AAS → angle angle side

$$\angle C = 180^\circ - 36^\circ - 48^\circ = 96^\circ$$

Law of sines:

$$\frac{\sin 36^\circ}{a} = \frac{\sin 48^\circ}{b} = \frac{\sin 96^\circ}{c}$$

$$\frac{\sin 36^\circ}{8} = \frac{\sin 48^\circ}{b}$$

$$\frac{b \sin 36^\circ}{\sin 36^\circ} = \frac{8 \sin 48^\circ}{\sin 36^\circ} =$$

$$b = \frac{8 \sin 48^\circ}{\sin 36^\circ}$$

$$\frac{\sin 36^\circ}{8} = \frac{\sin 96^\circ}{c}$$

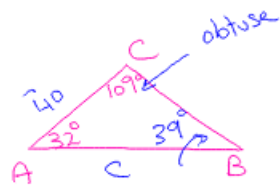
$$\frac{c \sin 36^\circ}{\sin 36^\circ} = \frac{8 \sin 96^\circ}{\sin 36^\circ}$$

$$c = \frac{8 \sin 96^\circ}{\sin 36^\circ}$$

$$c = 13.54$$

$$b = 10.11$$

EX 2



$$\begin{aligned}\angle A &= 32^\circ \\ \angle C &= 109^\circ \\ b &= 40\end{aligned}$$

$$\text{ASA.} \quad \frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

$$\frac{\sin 32^\circ}{a} = \frac{\sin 39^\circ}{40} \rightarrow a = 33.68$$

$$\frac{\sin 39^\circ}{40} = \frac{\sin 109^\circ}{c}$$

$$c \approx 60.1$$

p 439 (1-8)