Lesson 5 Sine or Cosine Law

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Sine Law

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

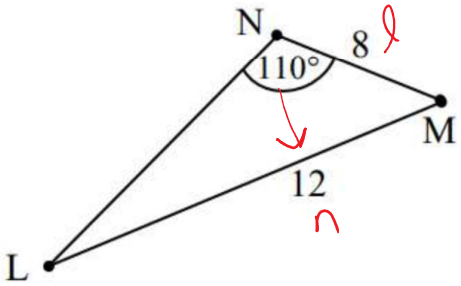
Cosine Law

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\cos A = \frac{b^2+c^2-a^2}{2bc}$$

Example 1

Determine the measure of angle L.



N = 110°
n = 12
l = 8
L = ?

matching pair, use Sine Law

$$\frac{l}{\sin L} = \frac{n}{\sin N}$$

$$\frac{8}{\sin L} = \frac{12}{\sin 110°}$$

$$\frac{8\sin 110°}{12} = \sin L$$

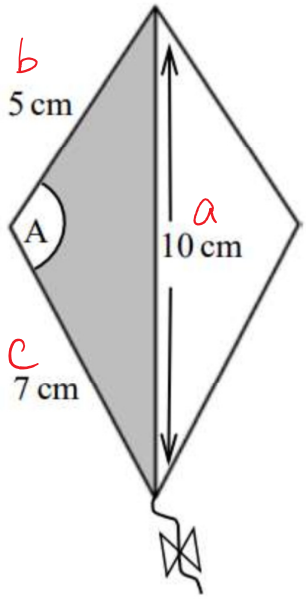
$$0.6264\ldots = \sin L$$

$$\sin^{-1}(0.6264\ldots) = L$$

$$39° = L$$

Example 2

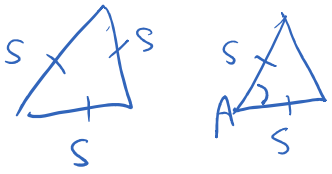
Determine the measure of angle A.



A = ?
a = 10
b = 5
c = 7

no matching pair, use cosine law

* Cosine Law



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(5^2 + 7^2 - 10^2)}{(2 \cdot 5 \cdot 7)}$$

$$\cos A = -0.3714\ldots$$

$$A = 111.8^\circ$$

or

$$112^\circ$$