

\* Not right  $\Delta$ , no use Pythag thm or Sin/Cos/Tan

Law of Sines    Law of cosines

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

$$\frac{\sin 52}{50} = \frac{\sin 62}{?}$$

$$? \cdot \sin 52 = 50 \sin 62$$

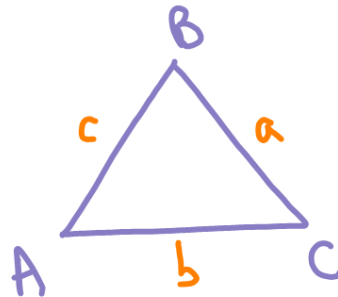
$$? \cdot \frac{\sin 52}{\sin 52} = \frac{44.1}{\sin 52} \quad ? = 56'$$

## 7.7 Extra: Law of Sines & Cosines

\* For all triangles (not just right)

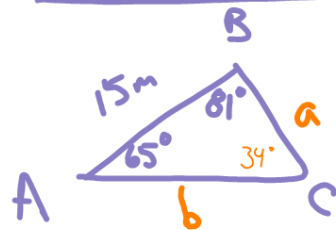
### Law of Sines

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



(relates angle to the opposite side)

### Find the missing sides



1<sup>st</sup>. Find angle C

$$180 - 81 - 65 = 34^\circ$$

2<sup>nd</sup> - Use  $\angle C$  &  $c$  to find  $a$  &  $b$

$$\frac{\sin 34^\circ}{15} = \frac{\sin 65^\circ}{a}$$

$$a \sin 34 = 15 \sin 65$$

$$a = 24.1 \text{ m}$$

$$\frac{\sin 34^\circ}{15} = \frac{\sin 81^\circ}{b}$$

$$b \sin 34 = 15 \sin 81$$

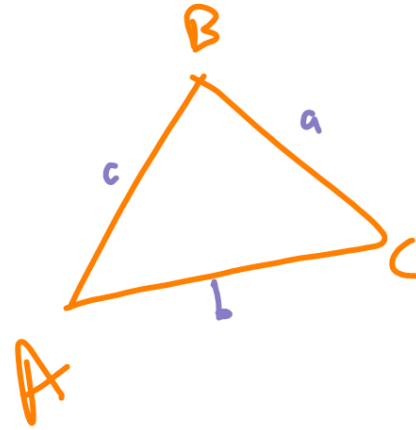
$$b = 26.4$$

## Law of Cosines

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

$$b^2 = a^2 + c^2 - 2ac \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$



Find the missing angles

