

sin θ = opp / hyp

cos θ = adj / hyp

tan θ = opp / adj

Unit 2: Trigonometry

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2.2 Calculating Side Lengths

Recall: Up to now if we haven't known 2 side lengths we wouldn't be able to calculate the 3rd.

$$a^2 + b^2 = c^2$$

$$2.5^2 + 3.7^2 = c^2$$

$$\sqrt{19.94} = \sqrt{c^2}$$

C = 4.5 cm

Now, as long as we know 1 side and 1 acute angle, we can determine all side lengths and angles.

Ex.) Calculate x to the nearest tenth.

$$14.2 \cdot \sin 52^\circ = \frac{x}{14.2}$$

x = 11.2 cm

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Ex.) Determine the lengths of AB and AC to the nearest meter.

$$\tan 71^\circ = \frac{c}{147}$$

$$147 \times \tan 71^\circ = c$$

C = 427 m

$$\cos 71^\circ = \frac{147}{b}$$

$$b = \frac{147}{\cos 71^\circ}$$

b = 452 m

$\sin \theta = \frac{\text{opp}}{\text{hyp}}$

$\cos \theta = \frac{\text{adj}}{\text{hyp}}$

$\tan \theta = \frac{\text{opp}}{\text{adj}}$

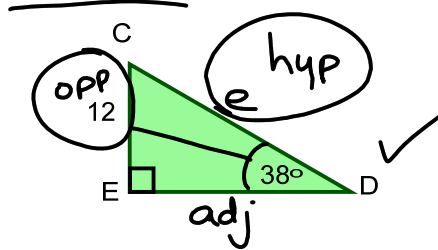
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Ex.) Determine the length of e to the nearest tenth.

$$\sin 38^\circ = \frac{12}{e}$$

$$e = \frac{12}{\sin 38^\circ}$$

$e = 19.5$



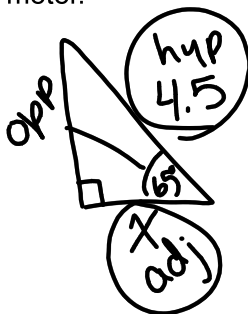
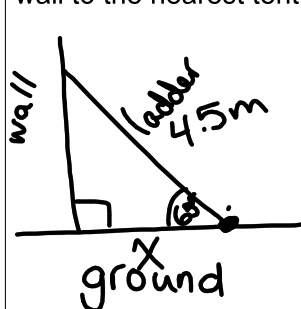
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Ex.) A ladder 4.5 m long reaches the top of a wall. The angle between the ladder and the ground is 65° . Determine the distance between the bottom of the ladder and the wall to the nearest tenth of a meter.



$$\cos 65^\circ = \frac{x}{4.5}$$

$x = 1.9\text{m}$