Trigonometry Apps

Essential Question:

How do I find missing side lengths and angles using trigonometry?

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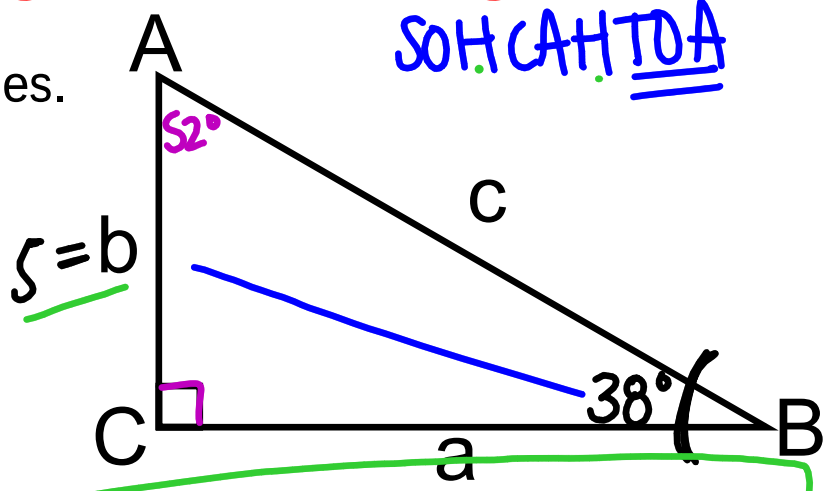
Solving Right Triangles

Find all missing sides & angles.

1. b = 5

m<B = 38°



SOH CAH TOA

$\tan 38 = \frac{5}{a}$

$a \tan 38 = 5$

$\frac{a \tan 38}{\tan 38} = \frac{5}{\tan 38}$

$a \approx 6.400$

$\sin 38 = \frac{5}{c}$

$c = \frac{5}{\sin 38} \approx 8.121$

$a = 6.400$ $c = 8.121$

$m\angle A = 52°$ $m\angle C = 90°$

$180 - 90 - 38$

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Solving Right Triangles

Find all missing sides & angles.

2. a = 4

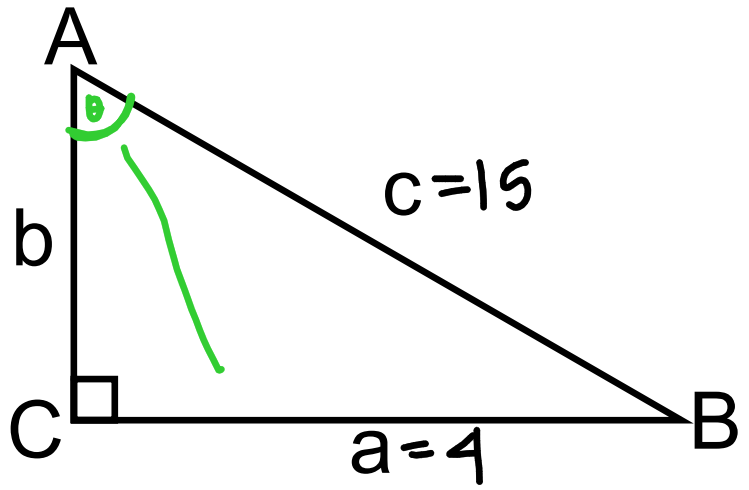
c = 15

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

$4^2+b^2=15^2$

$\sqrt{b^2}=\sqrt{209}$

$b\approx 14.456$



$\sin A=\frac{4}{15}$

$A=\sin^{-1}\left(\frac{4}{15}\right)\approx 15.466^\circ$

$b=14.456$

$m\angle A=15.466^\circ$ $m\angle B=75^\circ$ $m\angle C=90^\circ$

$180-90-15.466$

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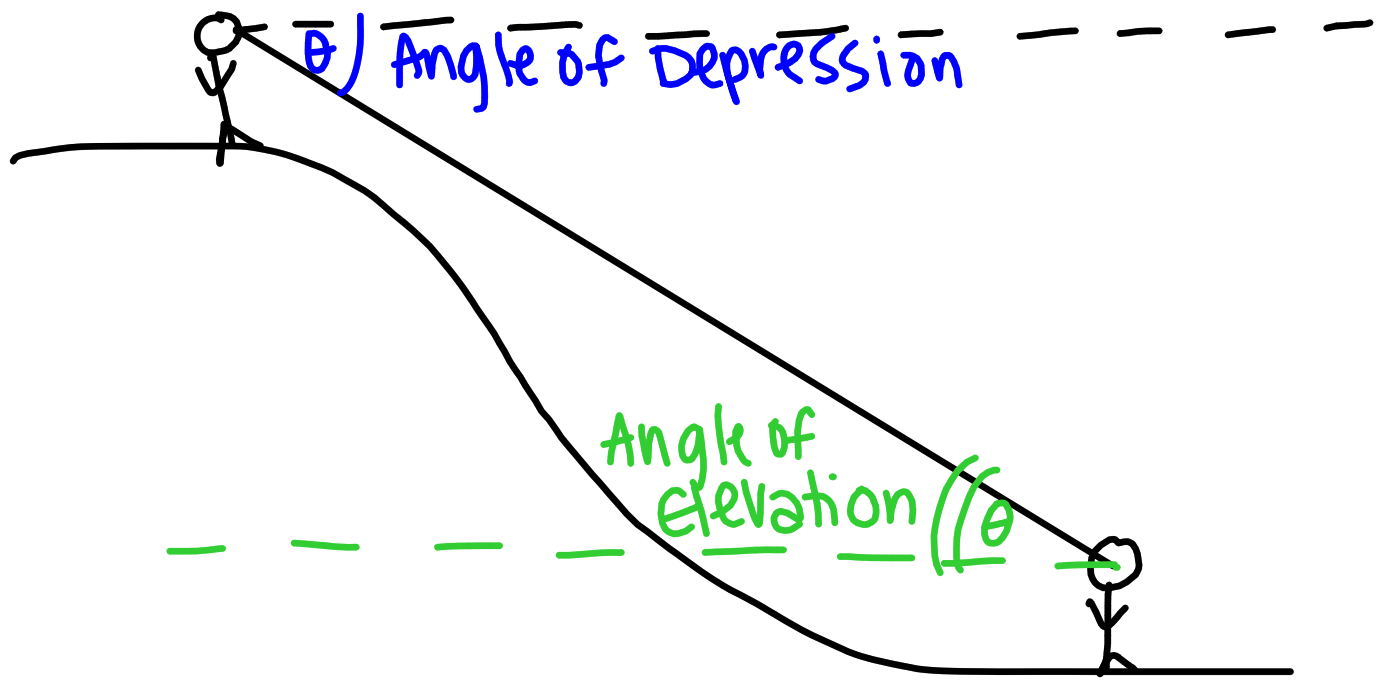
Angle of Elevation/Depression



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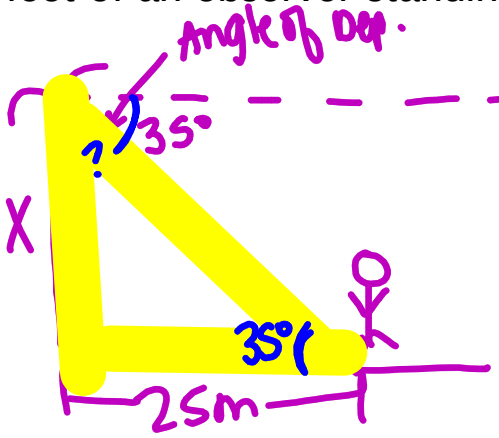
Angle of Elevation/Depression

ex3. A bird sits on top of a lamppost. The angle of depression from the bird to the feet of an observer standing 25m away is 35°. How tall is the lamppost?



$\tan 35 = \frac{x}{25}$

$25 \cdot \tan 35 \approx 17.505\text{m}$