Example 1: Solve the right triangle.
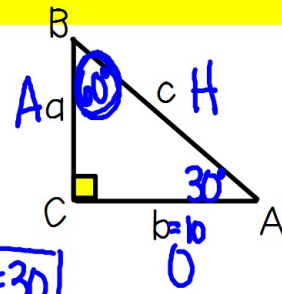
a.) $B = 60^0$, $b = 10$

Step 1: Find the third angle.

$90-60$ or $180-90-60$

$\boxed{m\angle A = 30}$

Step 2: Use SOH CAH TOA to find side that matches the angle you found in Step 1. $\dfrac{\tan 60°}{1} = \dfrac{10}{a}$

$\dfrac{a \tan 60°}{\tan 60°} = \dfrac{10}{\tan 60°}$ $\boxed{a = 5.77}$

Step 3: Use Pythagorean Theorem to find third side.

$\sqrt{10^2 + 5.77^2} = \sqrt{c^2}$

$\boxed{c = 11.55}$

---

b.) $a = 25$, $b = 37$
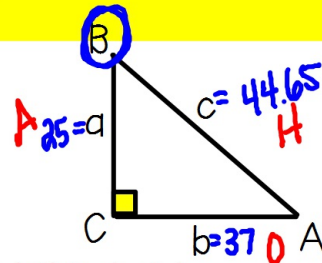
$c = 44.65$

Step 1: Use Pythagorean Theorem to find third side.

$c = \sqrt{25^2 + 37^2}$ $c = 44.65$

Step 2: Use SOH CAH TOA to find side largest angle.

$\tan B = \dfrac{37}{25}$ [2nd] [tan] $(37 \div 25)$

$\boxed{m\angle B = 55.95°}$

Step 3: Find the third angle.

$90 - 55.95$

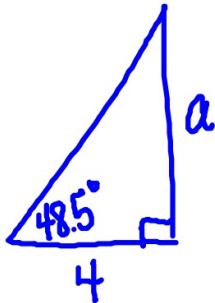$\boxed{m\angle A = 34.05°}$

Example 2: Find the altitude of the isosceles triangle.

a.) $\theta = 48.5^0$, b = 8 inches

$\tan 48.5 = \dfrac{a}{4}$

$a = 4 \tan 48.5$

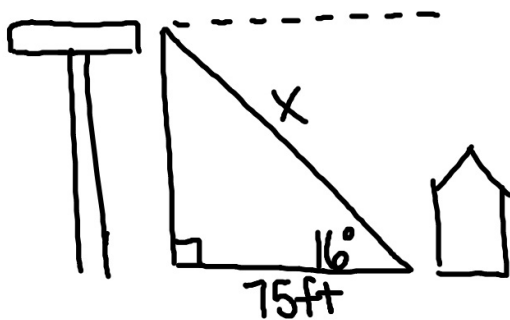$\boxed{a = 4.52 \text{ in}}$

48.5°
4
a

θ   θ
b
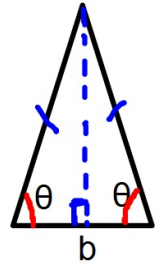
Example 3: An electrician is running wire from the electric box on a house to a utility pole 75 feet away. The angle of elevation to the connection on the pole is 16^0. How much wire does the electrician need?
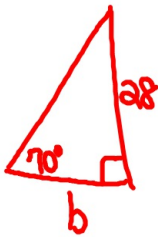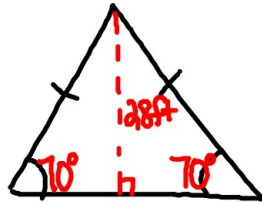
x
16°
75ft

$\cos 16^0 = \dfrac{75}{x}$

$\dfrac{x \cos 16}{\cos 16} = \dfrac{75}{\cos 16}$

$\boxed{x = 78.02 \text{ ft}}$

Example 4: The front of an A-frame cottage has the shape ofan isosceles triangle. It stands 28 feet high and the angle of elevation of its roof is 70°. What is the width of the cottage at its base?

$$\tan 70 = \frac{28}{b}$$

$$b = \frac{28}{\tan 70}$$

$$b = 10.19 ft$$

base = 10.19 + 10.19

base : 20.38 ft