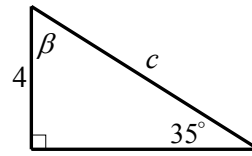**Panel 1:**

To solve a right triangle means to find the missing lengths of its sides and the measurements of its angles.

Panel 2:

Use the figure. If $a = 4$ and $\alpha = 35°$, find $b, c,$ and β.

$\tan 35° = \dfrac{4}{b}$

$b = 4 / \tan 35° \approx 5.71$

$\beta = 90° - 35° = 55°$

$\sin 35° = \dfrac{4}{c}$

$c = 4 / \sin 35° \approx 6.97$

Panel 3:

A 25 foot ladder is leaning against a wall and forms an angle of $70°$ with the ground. How high up the wall is the top of the ladder?
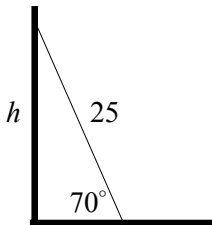
$\sin 70° = \dfrac{h}{25}$

$h = 25 \sin 70°$

$h \approx 23.5$ feet

Panel 4:

Yola just planted a Hybrid Elm. The nursery claims the tree grows 12 feet per year. Yola wants to verify the claim. She walks 100 feet from the base of the tree and, using a transit that is 2 feet off the ground, determines the angle of elevation is 5.7º. One year later, the angle of elevation 100 feet from the tree is 11.9º. Is the nursery's claim true?
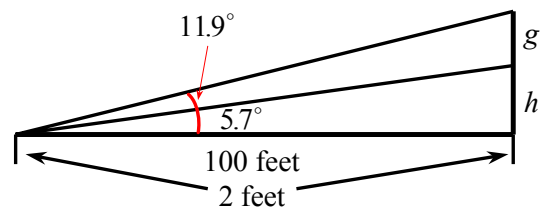
Panel 5:

$h = 100 \tan 5.7° \approx 9.98$ feet

$\tan 11.9° = \dfrac{h + g}{100}$

$h + g = 100 \tan 11.9°$

$g = 100 \tan 11.9° - h$

$g = 21.07 - 9.98 = 11.09$ feet

Height of tree after 1 year: $2 + 9.98 + 11.09 = 23.07$ feet

Panel 6:

h = height of tree above transit

g = growth of tree during first year

$\tan 5.7° = \dfrac{h}{100}$ $\tan 11.9° = \dfrac{h + g}{100}$