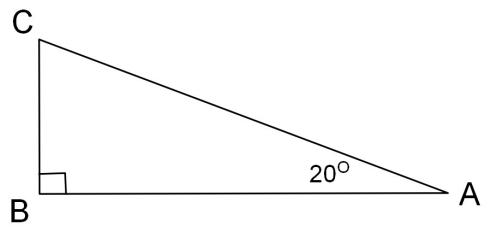
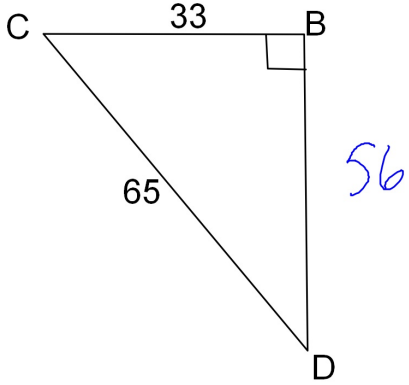
Sec 8-3: The Tangent Ratio



$$\text{Tan}\angle A = \frac{BC}{AB} = \frac{\text{Leg opposite Angle A}}{\text{Leg adjacent to Angle A}}$$

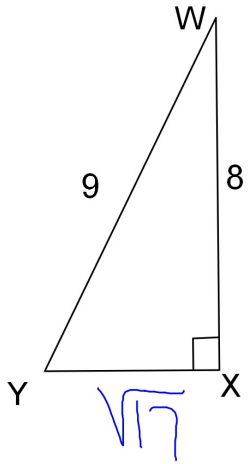
Find each as a ratio:



Tan C= $\frac{56}{33}$

Tan D= $\frac{33}{56}$

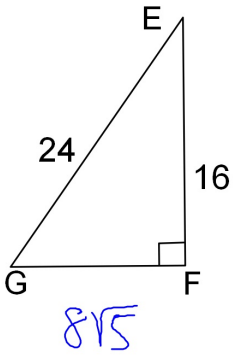
Find each as a ratio: Give answer in simplified radical form



Tan W = $\frac{\sqrt{17}}{8}$

Tan Y = $\frac{8}{\sqrt{17}} \cdot \frac{\sqrt{17}}{\sqrt{17}} = \frac{8\sqrt{17}}{17}$

Find each as a ratio: Give answer in simplified radical form

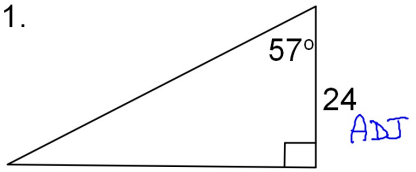


Tan E = $\frac{8\sqrt{5}}{16} = \frac{\sqrt{5}}{2}$

Tan G = $\frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$

Find the length of the missing side to the nearest hundredth.

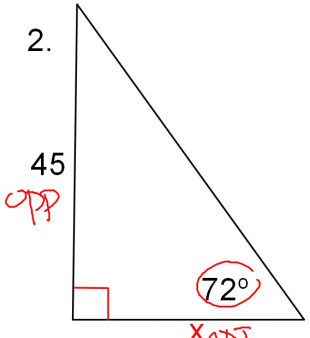
1.



$36.96 = x$ OPP

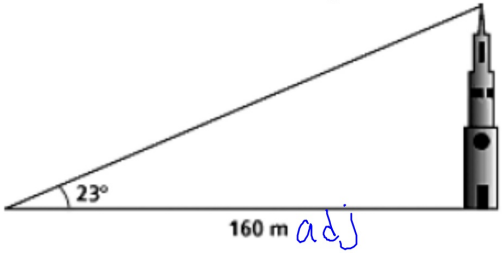
$24 \cdot \tan 57° = \frac{x}{24} \cdot$

2.



$\tan 72 = \frac{45}{x}$ $= 14.6$

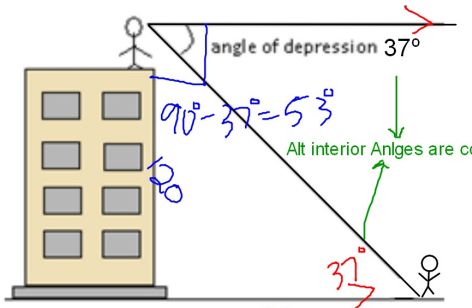
You stand 160m from a tower and measure the angle from the ground to the top of the tower as 23°. Use the Tangent Ratio to find the height of the tower.



$= 67.91$

$\tan 23° = \frac{h}{160}$

You are on the top of a 120 foot tall building and see your friend on the ground with an angle of depression of 37°. How far away from the building is your friend?



$\tan 53° = \frac{x}{120}$

$\tan 37° = \frac{120}{x}$

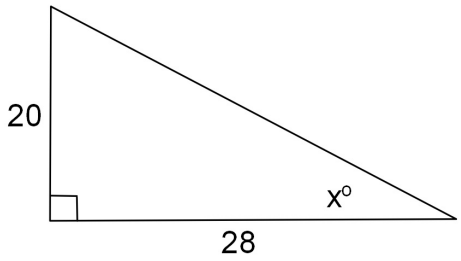
$= 159$

If TanX = 0.45 how would you find x?

$X = \tan^{-1}(0.45)$

$24.2°$

Find the value of x to the nearest tenth.

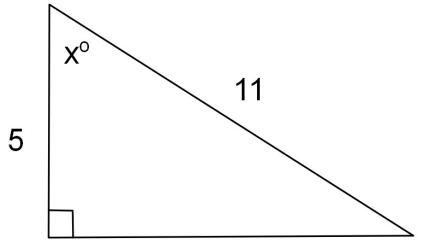


$\tan X = \frac{20}{28}$

$\tan^{-1}\left(\frac{20}{28}\right)$

$35.5°$

Find the value of x to the nearest tenth.



$\tan X = \frac{\sqrt{96}}{5}$

$\tan^{-1}\left(\frac{\sqrt{96}}{5}\right)$

$x = 62.96°$

$\tan^{-1}\left(\sqrt{(96)}/5\right)$