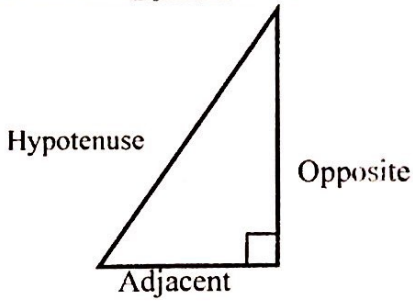
Solving Right Triangles

Let's consider a right triangle, one of whose acute angles is Θ.

The three sides of the triangle are the hypotenuse, the side opposite Θ, and the side adjacent to Θ.

SOH CAH TOA



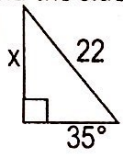
***sin* Θ =** ***cos* Θ =** ***tan* Θ =**

1) In ΔABC, C is a right angle and sin A = $\frac{5}{13}$. Find the values of the remaining trig ratios.

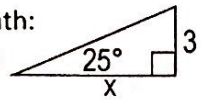
cos A = tan A =

Find the side length to nearest tenth:

2)

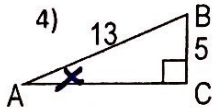


3)



Find the measure of <A and <B to the nearest tenth.

4)



$\sin A = \frac{5}{13}$

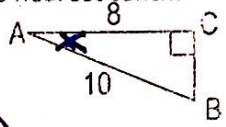
$\sin^{-1}\left(\frac{5}{13}\right) = A$

$22.6° = A$

$B = 90 - 22.6$

$B = 67.4°$

5)



$\cos A = \frac{8}{10}$

$\cos^{-1}\left(\frac{8}{10}\right) = A$

$36.9° = A$

$B = 90 - 36.9$

$B = 53.1°$

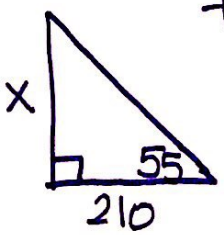
In ΔABC, C is a right angle. Find the remaining sides/angles. Round to tenth

6) c = 17, a = 12

7) c = 60, ∠A = 62°

8) b = 12, ∠B = 28°

10) When the angle of elevation of the sun is 55°, the world's tallest flagpole casts a shadow of 210 feet. Find the height of the flagpole to the nearest foot.

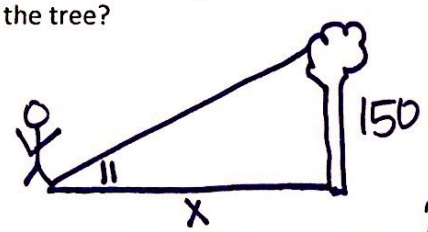


$\tan 55 = \frac{x}{210}$

$210 \tan 55 = x$

$300\text{ft} = x$

11) Suppose you are standing on one bank of a river. A tree on the other side is known to be 150 feet tall. A line from the top of the tree to the ground at your feet makes an angle of 11° with the ground. How far from you is the base of the tree?



$\tan 11 = \frac{150}{x}$

$x = \frac{150}{\tan 11}$

$x = 772\text{ ft}$