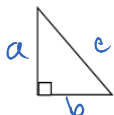


Review: Trigonometry

Pythagorean Theorem

The Pythagorean Theorem is used to find a missing *side length* in a **right triangle**.

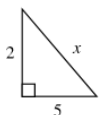


$$a^2 + b^2 = c^2$$

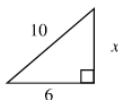
$$c = \frac{\text{hypotenuse}}{1}$$

The hypotenuse is the longest side of a right triangle, always across from the right angle.

Calculate the missing side in each triangle.

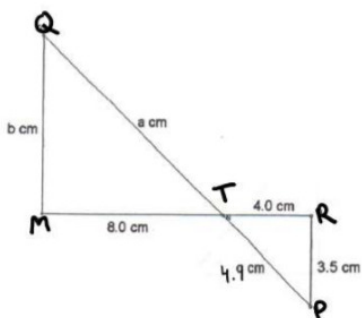


$$\begin{aligned} 2^2 + 5^2 &= x^2 \\ 4 + 25 &= x^2 \\ \sqrt{29} &= \sqrt{x^2} \\ 5.4 &= x \end{aligned}$$



$$\begin{aligned} 6^2 + x^2 &= 10^2 \\ 36 + x^2 &= 100 \\ x^2 &= 64 \\ x &= 8 \end{aligned}$$

Similar Triangles



$$\Delta QMT \sim \Delta PRT$$

$$\frac{QM}{PR} = \frac{MT}{RT} = \frac{QT}{PT}$$

$$\frac{b}{3.5} = \frac{8.0}{4.0} = \frac{a}{4.9}$$

$$\frac{b}{3.5} = \frac{8}{4}$$

$$\frac{8}{4} = \frac{a}{4.9}$$

$$4b = 28$$

$$39.2 = 4a$$

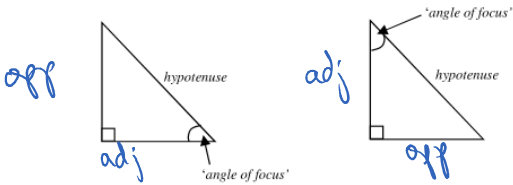
$$b = 7$$

$$9.8 = a$$

Trigonometry

Your calculator must be in degree (DEG) mode for trigonometry.

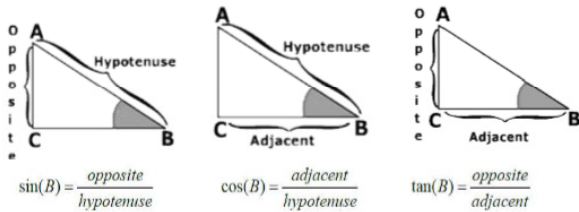
The primary trigonometric ratios are used to find *side lengths* or *angle measures* in **right triangles**.



Hypotenuse – across from the right angle
opposite Side – across from the slope angle
adjacent Side – adjacent to the slope angle

To solve primary trigonometric problems:

1. Choose the 'angle of focus' (the angle given or required). → *always acute (never 90°)*
2. Label the sides (opposite, adjacent and hypotenuse). → *Label just Two*
3. Choose the appropriate trig ratio based on the information you have → **SOH-CAH-TOA**.
4. Sub in known values and solve for unknown.



Reminders:

- when solving for a side, use sin, cos or tan on your calculator + *cross mult.*
- when solving for an angle, use \sin^{-1} , \cos^{-1} or \tan^{-1} on your calculator

Calculate the missing side or angle indicated in each triangle.

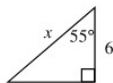


$$\sin 32 = \frac{x}{10}$$

$$\frac{0.5299}{1} = \frac{x}{10}$$

$$10(0.5299) = x$$

$$5.3 = x$$

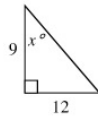


$$\cos 55 = \frac{6}{x}$$

$$\frac{0.5736}{1} = \frac{6}{x}$$

$$\frac{0.5736x}{0.5736} = \frac{6}{0.5736}$$

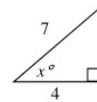
$$x = 10.5$$



$$\tan x = \frac{12}{9}$$

$$x = \tan^{-1}\left(\frac{12}{9}\right)$$

$$x = 53^\circ$$



$$\cos x = \frac{4}{7}$$

$$x = \cos^{-1}\left(\frac{4}{7}\right)$$

$$x = 55^\circ$$