

Solving Using Trig Ratios

Determining which ratio to use:

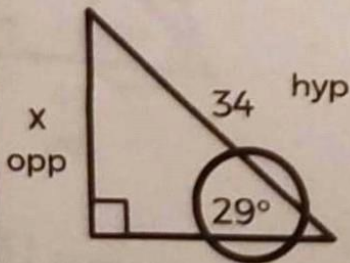
1. Circle the angle
2. Label the sides that are marked in reference to that angle
 - 3 possible pairings:
 - opp and hyp
 - adj and hyp
 - opp and adj
3. Choose the correct function based on the pairing

$$\sin = \frac{\text{opp}}{\text{hyp}} \quad \cos = \frac{\text{adj}}{\text{hyp}} \quad \tan = \frac{\text{opp}}{\text{adj}}$$

4. Set-up and solve your equation for the missing side or angle

$$\text{trig ratio (angle)} = \frac{\text{side}}{\text{side}}$$

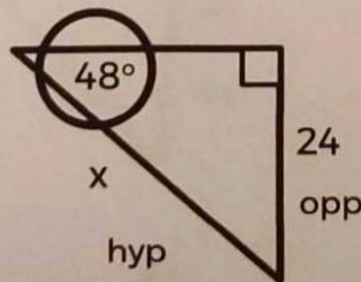
Using Sin:



$$\sin 29 = \frac{x}{34}$$

$$x = 34(\sin 29)$$

$$x = 16.5$$

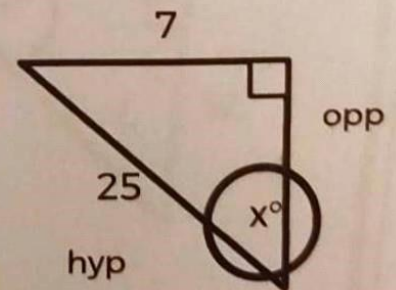


$$\sin 48 = \frac{24}{x}$$

$$x = \frac{24}{\sin 48}$$

$$x = 32.3$$

S-O-H



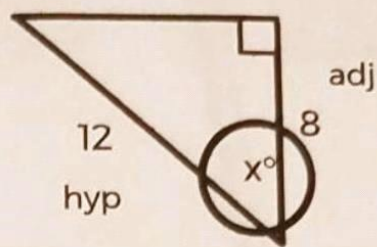
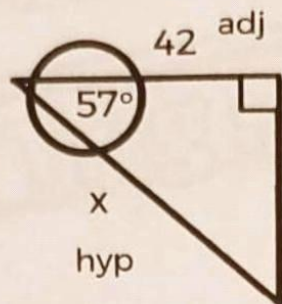
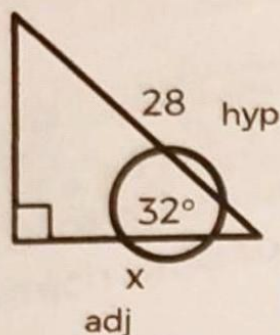
$$\sin x = \frac{7}{25}$$

$$\sin^{-1}\left(\frac{7}{25}\right)$$

$$x = 16.3^\circ$$

Using Cos:

C-A-H



$$\cos 32 = \frac{x}{28}$$

$$x = 28(\cos 32)$$

$$x = 23.7$$

$$\cos 57 = \frac{42}{x}$$

$$x = \frac{42}{\cos 57}$$

$$x = 77.1$$

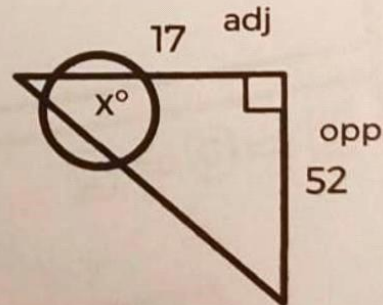
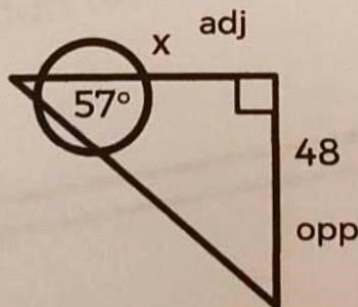
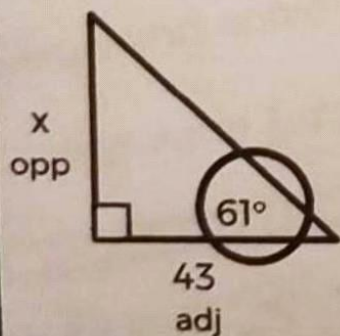
$$\cos x = \frac{8}{12}$$

$$\cos^{-1}\left(\frac{8}{12}\right)$$

$$x = 48.2^\circ$$

Using Tan:

T-O-A



$$\tan 61 = \frac{x}{43}$$

$$x = 43(\tan 61)$$

$$x = 77.6$$

$$\tan 57 = \frac{48}{x}$$

$$x = \frac{48}{\tan 57}$$

$$x = 31.2$$

$$\tan x = \frac{52}{17}$$

$$\tan^{-1}\left(\frac{52}{17}\right)$$

$$x = 71.9^\circ$$