

Try these:

Find the value of theta.

a) $\tan \sigma = 2.3559$

$$\theta = \tan^{-1}(2.3559)$$

$$\sigma = 67^\circ$$

b) $\cos \sigma = 0.8746$

$$\theta = \cos^{-1}(0.8746)$$

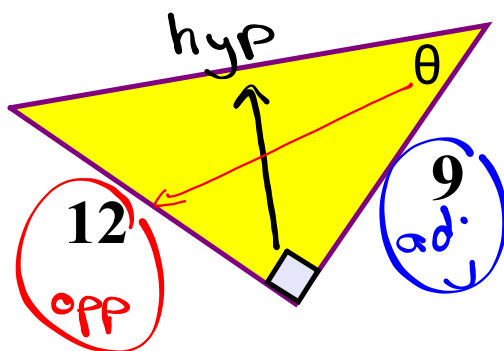
$$\sigma = 29^\circ$$



Finding the Unknown



1. Find the value of theta.



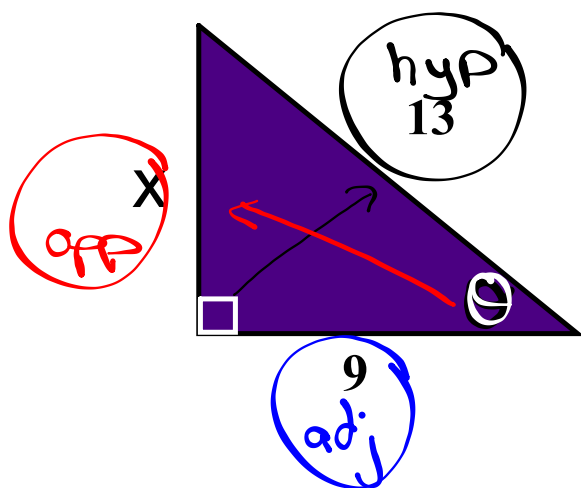
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

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

$$\tan \theta = 1.3333$$

$$\theta = 53^\circ$$

2. a) Using the proper trig ratio, find theta.
b) Find the missing side x.



$$a) \cos \theta = \frac{a}{h}$$

$$\cos \theta = \frac{9}{13}$$

$$\cos \theta = 0.6923$$

$$\theta = 46^\circ$$

b) Find x:

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

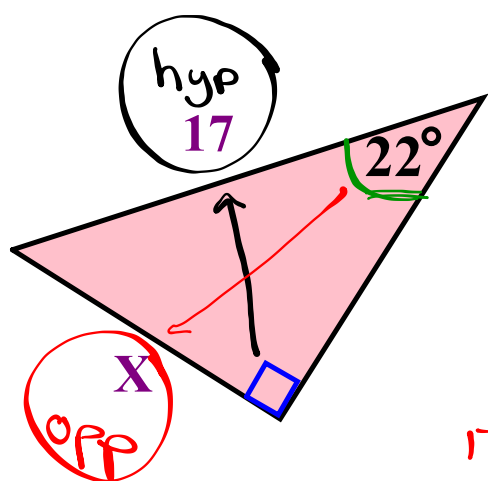
$$(x)^2 + (9)^2 = (13)^2$$

$$x^2 + 81 = 169$$

$$x^2 = 88$$

$$x = 9.3808$$

3. How do we find the missing side? $\theta = 22^\circ$



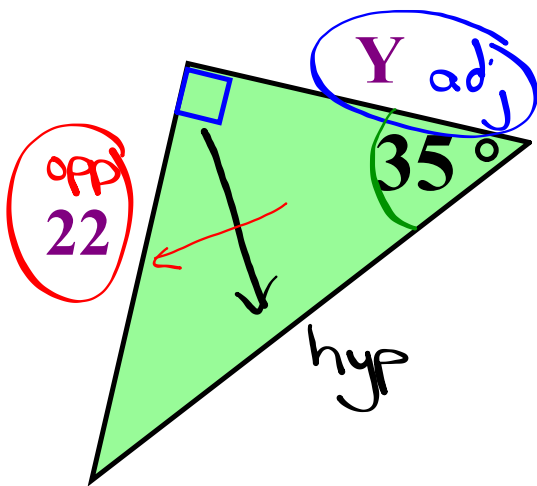
$$\sin \theta = \frac{o}{h}$$

$$\sin 22^\circ = \frac{X}{17}$$

$$17. \quad 0.3746 = \frac{X}{17} \cdot 17$$

$$\boxed{6.4 = X}$$

4. Find the missing side y $\theta = 35^\circ$



$$\tan \theta = \frac{o}{a}$$

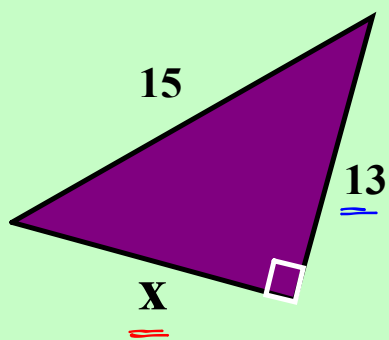
$$\tan 35^\circ = \frac{22}{y}$$

$$y \cdot 0.7002 = \frac{22}{y} \cdot y$$

$$\frac{0.7002y}{0.7002} = \frac{22}{0.7002}$$

$$y = 31.4$$

5. Find the missing side x



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

$$\underline{x^2} + \underline{(13)^2} = \underline{(15)^2}$$

$$x^2 + 169 = 225$$

$$x^2 = 225 - 169$$

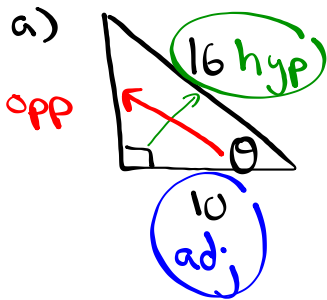
$$x^2 = 64$$

$$\sqrt{x^2} = \sqrt{64}$$

$$\boxed{x = 8}$$

Homework

$$\sin \theta = \frac{o}{h} \quad \cos \theta = \frac{a}{h} \quad \tan \theta = \frac{o}{a}$$

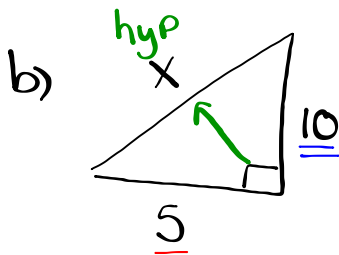


$$\cos \theta = \frac{a}{h}$$

$$\cos \theta = \frac{10}{16}$$

$$\cos \theta = 0.625$$

$$\theta = 51^\circ$$



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

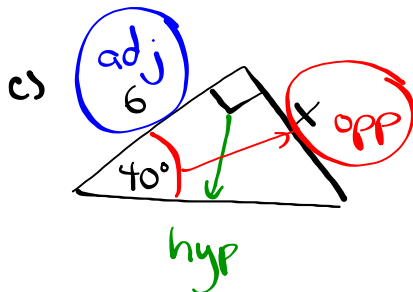
$$(5)^2 + (10)^2 = (x)^2$$

$$25 + 100 = x^2$$

$$125 = x^2$$

$$\sqrt{125} = \sqrt{x^2}$$

$$11.2 = x$$



$$\tan \theta = \frac{o}{a}$$

$$\tan 40^\circ = \frac{x}{6}$$

$$6 \cdot 0.8391 = \frac{x}{6} \cdot 6$$

$$5.0346 = x$$

Find x or theta for each of the following:

a)

$\cos \theta = \frac{a}{h}$
 $\cos \theta = \frac{10}{16}$ opp
 $\cos \theta = 0.625$
 $\theta = 51^\circ$

b)

$a^2 + b^2 = c^2$
 $5^2 + 10^2 = x^2$
 $25 + 100 = x^2$
 $125 = x^2$
 $x = 11.2$

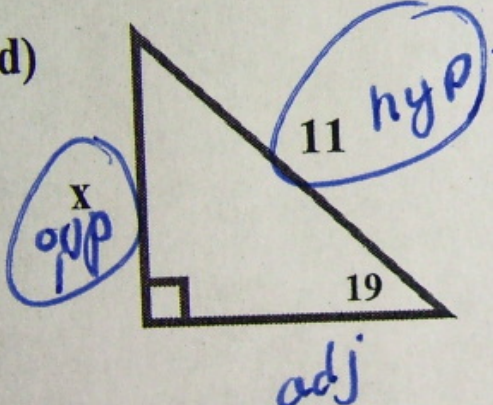
c)

$\tan \theta = \frac{o}{a}$
 $\tan \theta = \frac{x}{6}$
 $0.8391 = \frac{x}{6}$
 $x = 5.0$

e)

$\cos 25 = \frac{10}{x}$

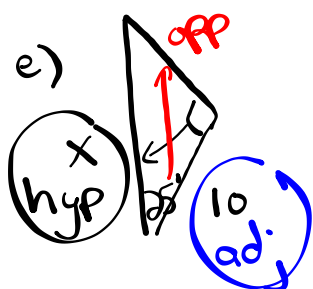
d)



$\frac{\sin 19^\circ}{1} = \frac{x}{11}$

$\frac{0.3256}{1} = \frac{x}{11}$

$x = 3.6$



$$\theta = 25^\circ$$

$$\cos 25^\circ = \frac{10}{x}$$

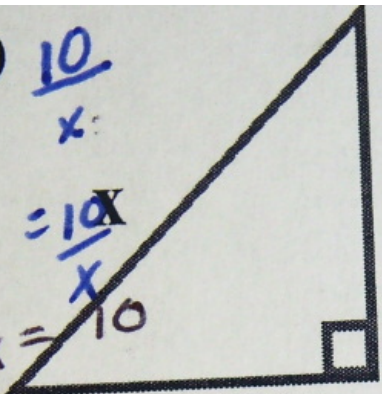
$$0.9063 = \frac{10}{x}$$

$$\frac{0.9063x}{0.9063} = \frac{10}{0.9063}$$

$$x = 11.0339$$

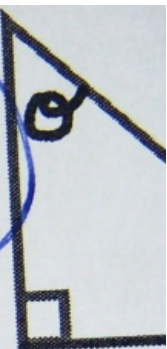
$$x = 11$$

f) $\frac{10}{x}$
 $3x = \frac{10}{x}$



17
11

g) adj
15

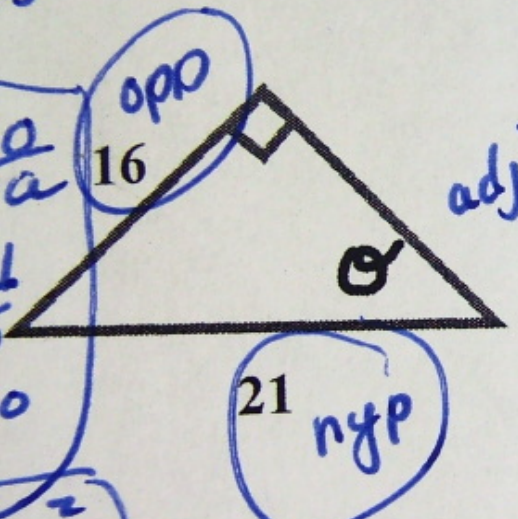


$a^2 + b^2 = c^2$
 $17^2 + 11^2 = c^2$
 $289 + 121 = c^2$
 $c^2 = 410$
 $c = 20.2$

hyp

90°

m)



$\sin \theta = \frac{16}{21}$

$\sin \theta = 0.7619$

$\theta = 50^\circ$