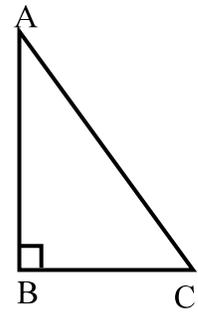


Trigonometry 4

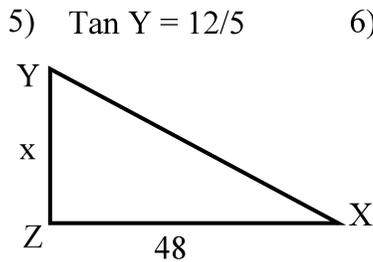
KEY

Find the trigonometric ratios using the information given.

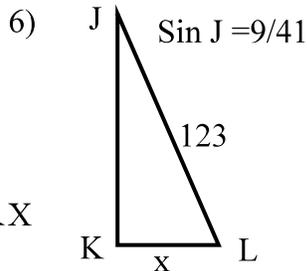
- | | | |
|--|---------------------------------------|--|
| 1) $\cos A = 8/10$
$8^2 + a^2 = 10^2$; so $a = 6$ | $\tan C = 8/6$ or $4/3$
$= 1.3333$ | $\sin C = 8/10$ or $4/5$
$= 0.8000$ |
| 2) $\sin A = 7/25$
$7^2 + a^2 = 25^2$; so $a = 24$ | $\cos A = 24/25$
$= 0.9600$ | $\tan C = 24/7$
$= 3.4286$ |
| 3) $\tan C = 30/16$
$16^2 + 30^2 = c^2$; so $c = 34$ | $\tan A = 16/30 = 8/15$
$= 0.5333$ | $\sin A = 16/34 = 8/17$
$= 0.4706$ |
| 4) $\sin C = 24/26$ | $\cos A = 24/26$
$= 0.9231$ | $\cos C = 10/26$
$= 0.3846$ |



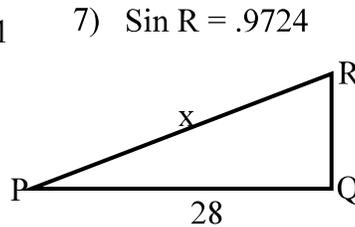
Use a proportion or an equation to find x in each problem below.



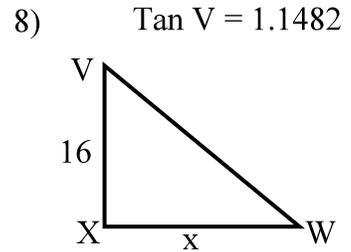
$\tan Y = 48/x$, so
 $12/5 = 48/x$, and $x/5 = 48/12 (=4)$
 (because we can swap a diagonal)
 $x = (4)(5) = 20$



$x = 27$



$\sin R = 28/x$, so
 $.9724 = 28/x$, and
 $x = 28/.9724 = 28.8$

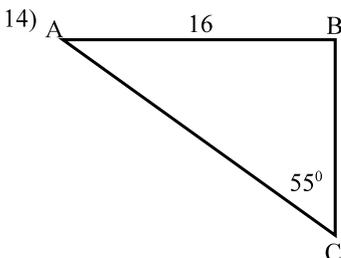


$x = 18.4$

Give each trigonometric ratio to 4 places.

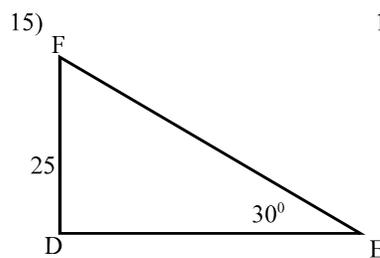
- 9) $\sin 32^\circ = .5299$ 10) $\cos 89^\circ = .0175$ 11) $\tan 18^\circ = .3249$ 12) $\tan 58^\circ = 1.6003$ 13) $\cos 24^\circ = .9135$

Solve each triangle. Give the measure of each side and angle to the nearest tenth.



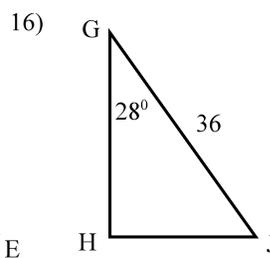
$A = 90^\circ - 55^\circ = 35^\circ$

$\sin 55^\circ = 16/AC$, so
 $.8192 = 16/AC$, and



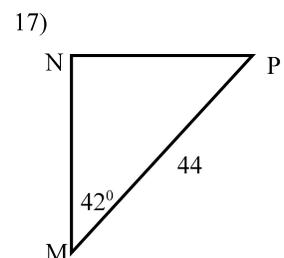
$F = 90^\circ - 30^\circ = 60^\circ$

This is a special triangle
 $FE = 2(25) = 50$



$J = 90^\circ - 28^\circ = 62^\circ$

$\sin 28^\circ = HJ/36$
 $.4258 = HJ/36$



$P = 48^\circ$

$NP = 29.4$

$$AC = 16/.8192 = 19.5$$

$$DE = (25)\sqrt{3} = 43.3$$

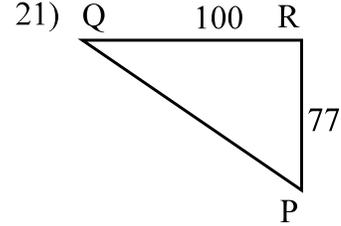
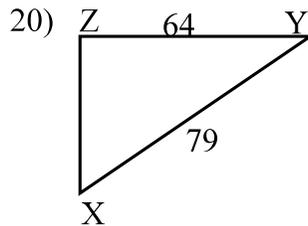
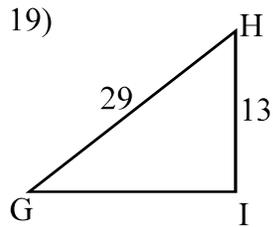
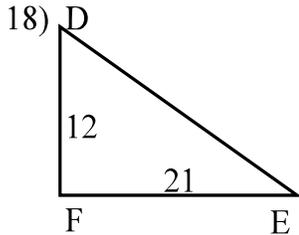
$$HJ = (36)(.4258) = 15.3$$

$$NM = 32.7$$

$$\begin{aligned} \tan 55^\circ &= 16/BC, \text{ so} \\ 1.4281 &= 16/BC, \text{ and} \\ BC &= 16/1.4281 = 13.7 \end{aligned}$$

$$\begin{aligned} \cos 28^\circ &= GH/36 \\ .9048 &= GH/36 \\ GH &= (36)(.9048) = 32.6 \end{aligned}$$

Find the measure of each acute angle to the nearest tenth of a degree.



$$\begin{aligned} \tan D &= 21/12, \text{ so} \\ \tan^{-1}(\tan D) &= \tan^{-1}(21/12) \\ D &= \tan^{-1}(21/12) = 60.3^\circ \end{aligned}$$

$$\begin{aligned} \cos H &= 13/29 \\ H &= \cos^{-1}(13/29) = 63.4^\circ \end{aligned}$$

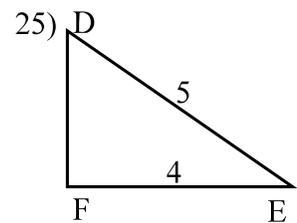
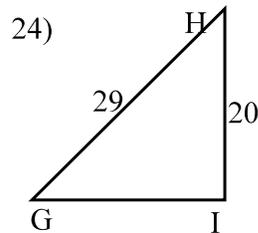
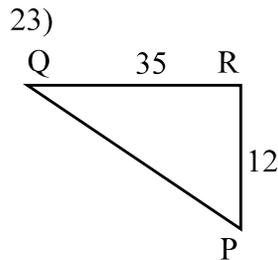
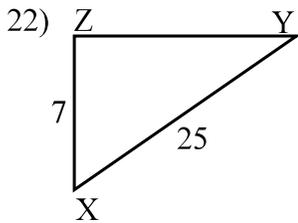
$$\begin{aligned} \cos Y &= 64/79 \\ Y &= \cos^{-1}(64/79) = 35.9^\circ \end{aligned}$$

$$\begin{aligned} P &= 52.4^\circ \\ Q &= 37.6^\circ \end{aligned}$$

$$E = 90^\circ - 67.0^\circ = 29.7^\circ$$

$$G = 90^\circ - 70.4^\circ = 26.6^\circ$$

$$X = 90^\circ - 39.9^\circ = 54.1^\circ$$



$$\begin{aligned} \cos X &= 7/25 \\ \cos^{-1}(\cos X) &= \cos^{-1}(7/25) \\ X &= \cos^{-1}(7/25) = 73.7^\circ \end{aligned}$$

$$\begin{aligned} \tan P &= 35/12 \\ P &= \tan^{-1}(35/12) \\ P &= 71.1^\circ \end{aligned}$$

$$\begin{aligned} \cos H &= 20/29 \\ H &= \cos^{-1}(20/29) \\ H &= 46.4^\circ \end{aligned}$$

$$\begin{aligned} D &= 53.1^\circ \\ E &= 36.9^\circ \end{aligned}$$

$$Y = 90^\circ - 81.9^\circ = 16.3$$

$$Q = 18.9^\circ$$

$$G = 43.6^\circ$$