SOHCAHTOA Missing Sides **Geometry**

Directions: Write the trigonometric ratio as a fraction and as a decimal rounded to the nearest hundredth.

1) sin P = $\frac{12}{13}$ .92

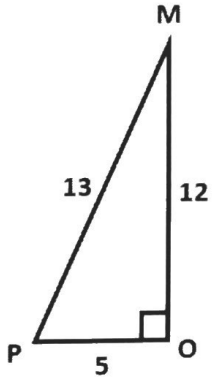
2) cos M = $\frac{12}{13}$ .92

3) tan P = $\frac{12}{5}$ 2.4

4) cos P = $\frac{5}{13}$ .38

5) sin M = $\frac{5}{13}$ .38

6) tan M = $\frac{5}{12}$ .42



Directions: Use your calculator to find each trigonometric ratio to the nearest tenth.

7) cos 25° .9

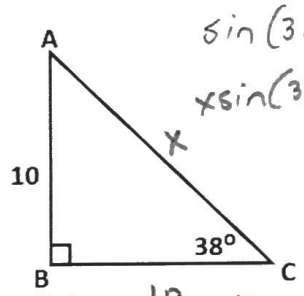
8) tan 30° .6

9) sin 30° .5

10) cos 45° .7

Directions: Find each length. Round to the nearest hundredth.

11) AC & BC



$\sin(38) = \frac{10}{x}$

$x\sin(38°) = 10$

$x = \frac{10}{\sin(38)}$

$\boxed{x \approx 16.24 = AC}$

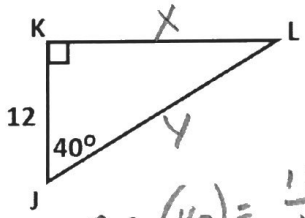
$x \cdot \tan(38) = \frac{10}{x} \cdot x$

$x\tan(38) = 10$

$x = \frac{10}{\tan(38)}$

$\boxed{x \approx 12.8 = BC}$

12) KL & JL



$12 \cdot \tan(40) = \frac{x}{12} \cdot 12$

$12 \cdot (\tan 40) = x$

$\boxed{10.07 = x = KL}$

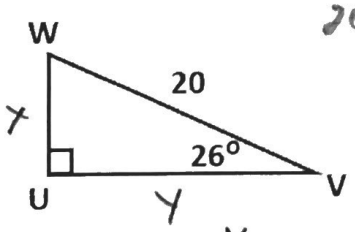
$y \cdot \cos(40) = \frac{12}{y} \cdot y$

$y \cdot \cos(40) = 12$

$y = \frac{12}{\cos 40}$

$y = \boxed{15.66 = JL}$

13) WU & UV



$\sin(26) = \frac{x}{20} \cdot 20$

$20(\sin 26) = x$

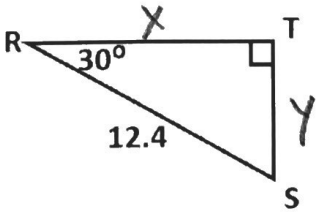
$\boxed{8.77 = x = WU}$

$20 \cdot \cos 26 = \frac{y}{\cancel{20}} \cdot \cancel{20}$

$17.98 = y$

$\boxed{17.98 = UV}$

14) RT & TS



$\cos 30° = \frac{x}{12.4}$

$12.4 \cdot \cos 30 = x$

$= x$

$\boxed{10.74 = RT}$

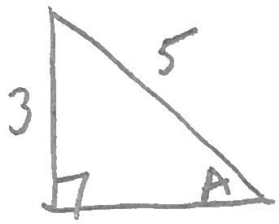
$12.4 \cdot \sin 30 = \frac{y}{12.4} \cdot 12.4$

$6.2 = y$

$\boxed{6.2 = TS}$

Directions: Draw a right triangle to represent each trigonometric ratio. Then, find the missing side.

15) $\sin A = \frac{3}{5}$



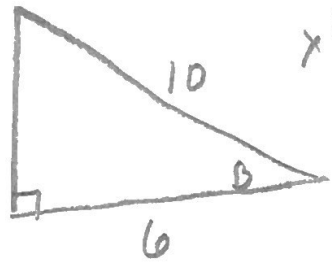
$3^2 + x^2 = 5^2$

$9 + x^2 = 25$

$x^2 = 16$

$\boxed{x = 4}$

16) $\cos B = \frac{6}{10}$



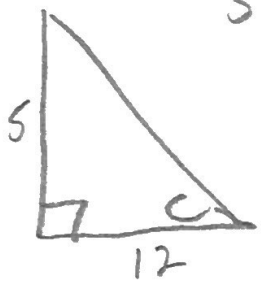
$x^2 + 6^2 = 10^2$

$x^2 + 36 = 100$

$x^2 = 64$

$\boxed{x = 8}$

17) $\tan C = \frac{5}{12}$



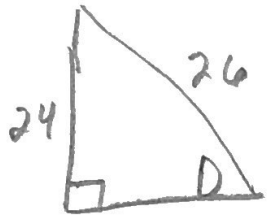
$5^2 + 12^2 = c^2$

$25 + 144 = c^2$

$169 = c^2$

$\boxed{c = 13}$

18) $\sin D = \frac{24}{26}$



$24^2 + b^2 = 26^2$

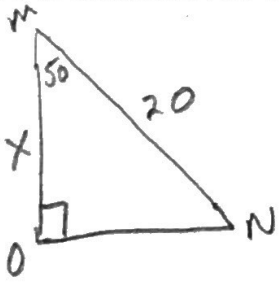
$576 + b^2 = 676$

$b^2 = 100$

$\boxed{b = 10}$

Directions: Draw a triangle to represent the given situation. Then, find each missing side.

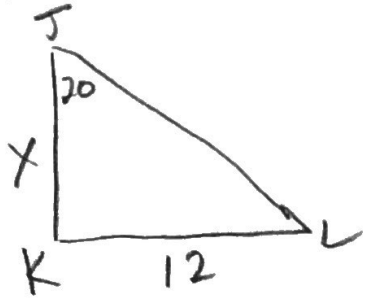
19) M, O, and N are the vertices of a right triangle. Angle M is 50° & MN = 20. MN is the hypotenuse. What is MO to the nearest tenth?



$20 \cdot \cos 50 = \frac{x}{20} \cdot 20$

$\boxed{12.9 = x}$

20) J, K, and L are the vertices of a right triangle. Angle J is 20°. KL = 12. If JK is a leg, what is JK to the nearest hundredth?



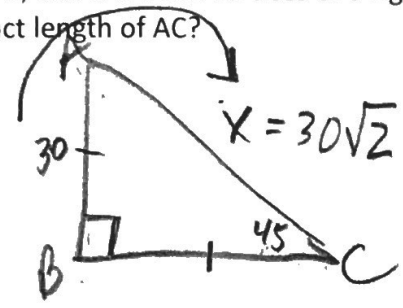
$x \cdot \tan 20 = \frac{12}{x} \cdot x$

$x \tan 20 = 12$

$x = \frac{12}{\tan 20}$

$\boxed{x = 32.97}$

21) A, B, and C are the vertices of a right triangle. Angle C is 45° and AB = 30. If CB is a leg, what is the exact length of AC?



$x = 30\sqrt{2}$

$x \cdot \sin 45 = \frac{30}{x} \cdot x$

$x \cdot \sin 45 = 30$

$x = \frac{30}{\sin 45} = 30\sqrt{2}$