SOHCAHTOA: Missing Angles HW **Geometry**

Directions: Find the missing angle to the nearest degree.

1) $\sin P = \frac{6}{10}$

$P = \sin^{-1}\frac{6}{10}$

$\boxed{\approx 37^\circ}$

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

$M = \cos^{-1}\left(\frac{12}{13}\right)$

$\boxed{\approx 23^\circ}$

3) $\tan P = \frac{3}{4}$

$P = \tan^{-1}\frac{3}{4}$

$\boxed{\approx 37}$

4) $\cos O = \frac{15}{16}$

$O = \cos^{-1}\left(\frac{15}{16}\right)$

$\boxed{\approx 20^\circ}$

5) $\sin O = \frac{1}{2}$

$O = \sin^{-1}\left(\frac{1}{2}\right)$

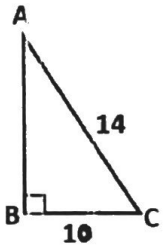
$\boxed{= 30^\circ}$

$\tan\theta = \frac{5}{6}$

$\theta = \tan^{-1}\left(\frac{5}{6}\right)$

Directions: Find each angle. Round to the nearest degree.

6)

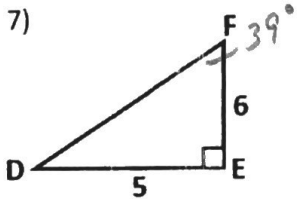


$\cos\theta = \frac{10}{14}$

$\theta = \cos^{-1}\left(\frac{10}{14}\right)$

$\boxed{\angle C \approx 44^\circ \quad \angle A \approx 46^\circ}$

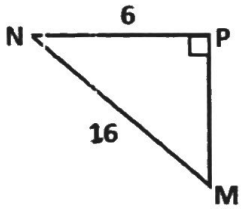
7)



$\theta = \tan^{-1}\left(\frac{5}{6}\right)$

$\boxed{\angle F = 40^\circ \quad \angle D \approx 50^\circ}$

8)

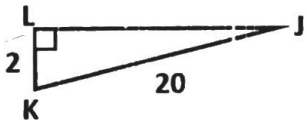


$\sin\theta = \frac{6}{16}$

$\theta = \sin^{-1}\left(\frac{6}{16}\right)$

$\boxed{\angle M \approx 22^\circ \quad \angle N = 68^\circ}$

9)



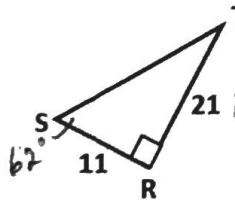
$\sin\theta = \frac{2}{20}$

$\theta = \sin^{-1}\left(\frac{2}{20}\right)$

$\boxed{\angle J \approx 6^\circ \quad \angle K \approx 84^\circ}$

Directions: Find all the missing sides and angles on the triangle.

10)



$x \cdot \sin 62^\circ = \frac{21}{x} \cdot x$

$x\sin 62^\circ = 21$

$x = \frac{21}{\sin 62}$

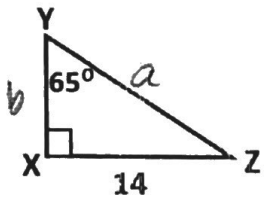
$\boxed{x \approx 24 = ST}$

$\tan\theta = \frac{21}{11}$

$\theta = \tan^{-1}\left(\frac{21}{11}\right)$

$\boxed{\angle S \approx 62^\circ}$ $\boxed{\angle T \approx 28}$

11)



$a \cdot \sin 65^\circ = \frac{14}{a} \cdot a$

$a\sin 65^\circ = 14$

$a = \frac{14}{\sin 65}$

$YZ = a = 15.4$

$\angle Z = 25$

$b \cdot \cos 65 = \frac{14}{b} \cdot b$

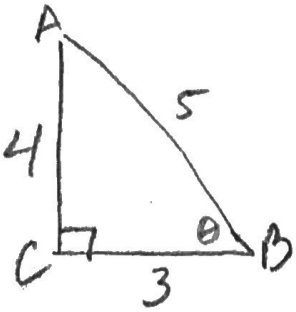
$b\cos 65 = 14$

$b = \frac{14}{\cos 65} = \boxed{33 \approx b}$

6.4

Directions: Draw a right triangle with points A, B, & C to represent each set of given information. Then find all missing sides and angles. Assume C is the right angle.

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



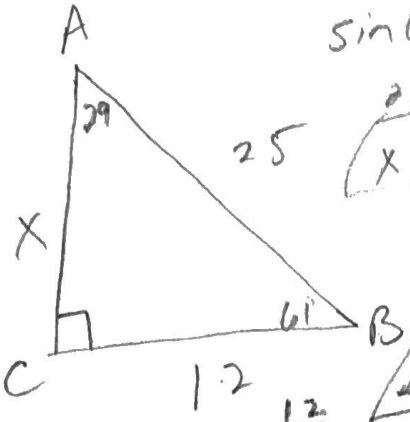
$\sin\theta = \frac{4}{5}$

$\theta = \sin^{-1}\left(\frac{4}{5}\right)$

$\angle B \approx 53.1$

$\angle A \approx 37.9$

13) $\cos B = \frac{12}{25}$



$\sin 61 = \frac{x}{25}$

$25 \cdot \sin 61 = x$

$x \approx 21.9$

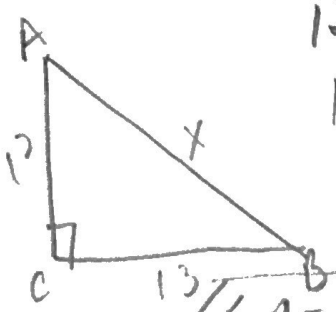
$\angle A \approx 29$

$\cos\theta = \frac{12}{25}$

$\theta \approx \cos^{-1}\left(\frac{12}{25}\right)$

$\angle B \approx 61^\circ$

14) $\tan A = \frac{13}{12}$



$\tan\theta = \frac{12}{13} =$

$\theta = \tan^{-1}\left(\frac{12}{13}\right) =$ $43^\circ = \angle B$

$12^2 + 13^2 = x^2$

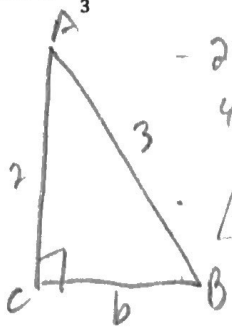
$144 + 169 = x^2$

$313 = x^2$

$AB = 17.69$

$\angle A = 47$

15) $\sin B = \frac{2}{3}$



$a^2 + b^2 = 3^2$

$4 + b^2 = 9$

$b^2 = 5$

$CB = 2.24$

$\sin\theta = \frac{2}{3}$

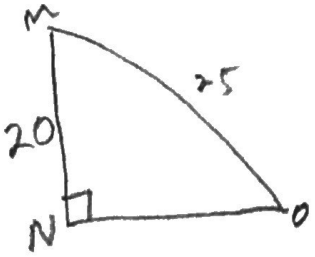
$\theta = \sin^{-1}\left(\frac{2}{3}\right)$

$\angle B = 42^\circ$

$\angle A = 48^\circ$

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

16) M, O, and N are the vertices of a right triangle. MO = 25 & MN = 20. MO is the hypotenuse. What is m∠M?

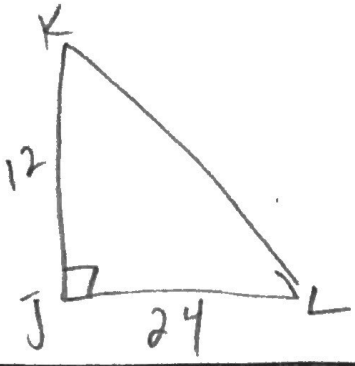


$\cos M = \frac{20}{25}$

$M = \cos^{-1}\left(\frac{20}{25}\right)$

$\approx 37^\circ$

17) J, K, and L are the vertices of a right triangle. Angle J is the right angle. JK = 12 and JL is 2 times the size of JK. What is m∠K?



$\tan\theta = \frac{24}{12}$

$\theta = \tan^{-1}\frac{24}{12}$

$m\angle K \approx 63^\circ$

6.4