

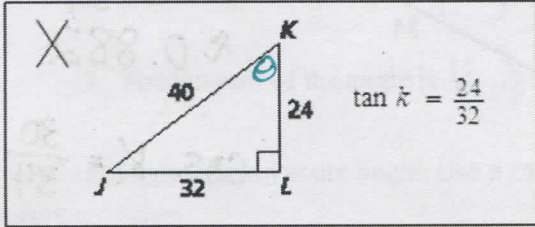
Name Key

date _____ Pd _____

9.4 – 9.6 Practice Worksheet

9.4 Tangent

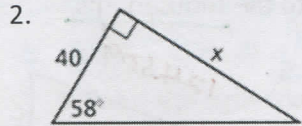
1. Describe and correct the error in writing the statement of the tangent ratio for the given figure.



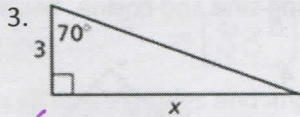
TOA = $\frac{\text{opp}}{\text{adj}}$; they flipped the ratio.

$$\tan K = \frac{32}{24}$$

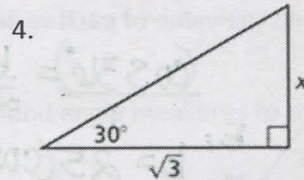
2 – 4: Find the value of x. Round your answer to the nearest thousandth.



$$\begin{aligned} (\tan 58) &= \frac{x}{40} \\ 40(\tan 58) &= x \text{ (exact)} \\ 64.013 &\approx \end{aligned}$$

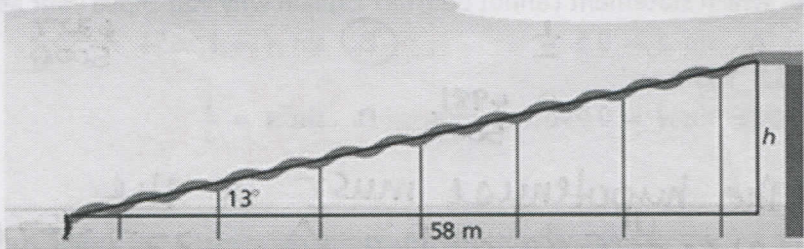


$$\begin{aligned} (\tan 70) &= \frac{x}{3} \\ x &= 3(\tan 70) \text{ (exact)} \\ &\approx 8.242 \end{aligned}$$



$$\begin{aligned} (\tan 30) &= \frac{x}{\sqrt{3}} \\ x &= (\sqrt{3})(\tan 30) \text{ (exact)} \\ &\approx 1 \end{aligned}$$

5: You are measuring the height of a water slide. You stand 58 meters from the base of the slide. You measure the angle of elevation from the ground to the top of the water slide to be 13°. Find the height h of the slide to the nearest meter.



$$(\tan 13^\circ) = \frac{h}{58}$$

$$\begin{aligned} h &= 58(\tan 13) \text{ (exact)} \\ &\approx 13.390 \end{aligned}$$

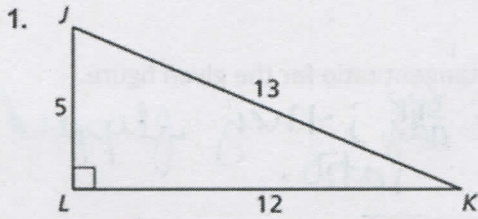
13 m high

$$\text{SOH} = \sin = \frac{\text{opp}}{\text{hyp}}$$

$$\text{CAH} = \cos = \frac{\text{adj}}{\text{hyp}}$$

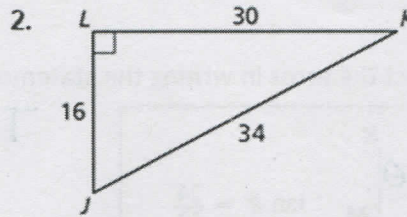
9.5 Sine & Cosine

1 - 2: Find sin J and cos K. Write each answer as a fraction AND as a decimal rounded to the thousandths.



$$\sin J = \frac{12}{13} \approx 0.923$$

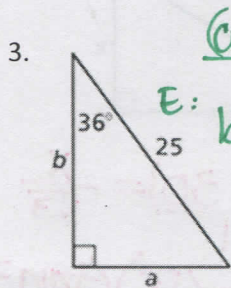
$$\cos K = \frac{12}{13} \approx 0.923$$



$$\sin J = \frac{30}{34} \approx 0.882$$

$$\cos K = \frac{30}{34} \approx 0.882$$

3 - 5: Find the value of each variable using sine and cosine. Round your answer to the thousandths.

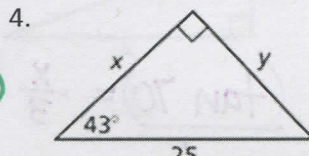


$$\cos 36^\circ = \frac{b}{25}$$

$$b = 25(\cos 36^\circ) \approx 20.225$$

$$\sin 36^\circ = \frac{a}{25}$$

exact: $a = 25(\sin 36^\circ) \approx 14.695$

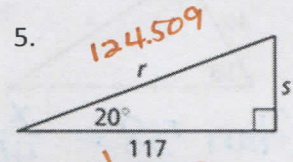


$$\sin 43^\circ = \frac{y}{25}$$

$$y = 25(\sin 43^\circ) \approx 17.050$$

$$\cos 43^\circ = \frac{x}{25}$$

$$x = 25(\cos 43^\circ) \approx 18.284$$



$$\sin 20^\circ = \frac{s}{r}$$

$$s = 124.509(\sin 20^\circ) \approx 42.585$$

$$\cos 20^\circ = \frac{117}{r}$$

$$r(\cos 20^\circ) = 117$$

$$\frac{r(\cos 20^\circ)}{\cos 20^\circ} = \frac{117}{\cos 20^\circ}$$

$$r = \frac{117}{\cos 20^\circ} \approx 124.509 \text{ (exact)}$$

6. Which statement cannot be true? Explain why you chose your answer.

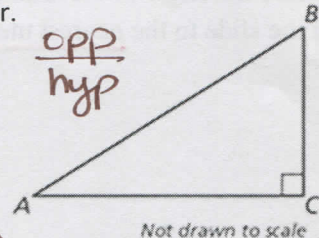
A. $\sin A = 0.5 \frac{1}{2}$

B. $\sin A = 1.2654 \frac{6327}{5000}$

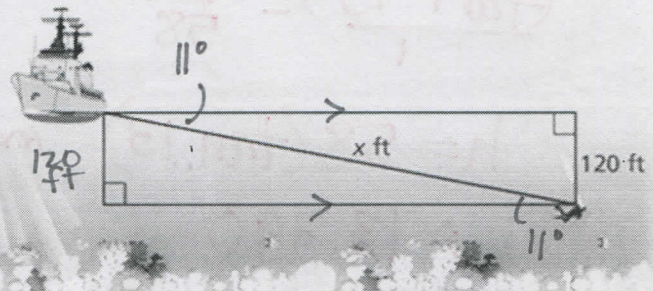
C. $\sin A = 0.9962 \frac{4981}{5000}$

D. $\sin A = \frac{3}{4}$

The hypotenuse must be the largest side of the Δ . $6327 > 5000$ proves this wrong.



7. The angle of depression is 11° from the bottom of a boat to a deep sea diver at a depth of 120 feet. Find the distance x the diver must swim up to the boat to the nearest foot.



$$\sin 11^\circ = \frac{120}{x}$$

$$\frac{x(\sin 11^\circ)}{\sin 11^\circ} = \frac{120}{\sin 11^\circ} \approx 628.901$$

629 ft is the distance.

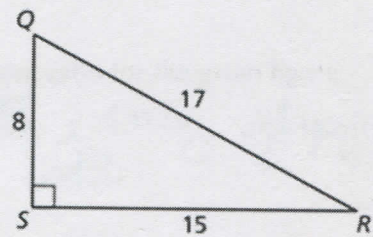
9.6 Sine, Cosine & Tangent Trigonometric Ratios

1-3: Determine which of the two acute angles has the given trigonometric ratio.

1. The sine of the angle is $\frac{8}{17}$. ~~R~~ or r

2. The cosine of the angle is $\frac{15}{17}$. ~~R~~ or r

3. The tangent of the angle is $\frac{15}{8}$. ~~Q~~ or q



4-6: Let angle B be an acute angle. Use a calculator to approximate the measure of angle B to the nearest degree.

4. $\sin B = 0.64$

$m\angle B = \sin^{-1}(0.64)$
 $\approx 39.792 = \boxed{40^\circ}$

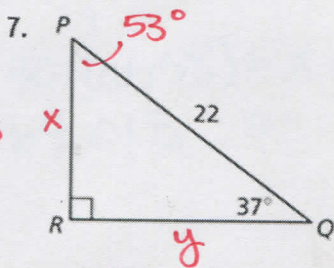
5. $\cos B = 0.12$

$m\angle B = \cos^{-1}(0.12)$
 $\approx 83.108 = \boxed{83^\circ}$

6. $\tan B = 2.18$

$m\angle B = \tan^{-1}(2.18)$
 $\approx 65.358 = \boxed{65^\circ}$

7-9: Solve the right triangle by filling in all missing sides and angles. Round angle measures to the nearest degree and side lengths to the thousandths.



$90 - 37 = 53$

$\sin 37^\circ = \frac{x}{22}$

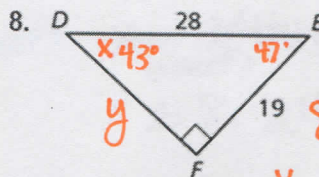
$x = 22(\sin 37)$

$PR \approx \boxed{13.240}$

$\cos 37^\circ = \frac{y}{22}$

$y = 22(\cos 37)$

$RQ \approx \boxed{17.570}$



$\sin x = \frac{19}{28}$

$x = \sin^{-1}(\frac{19}{28})$

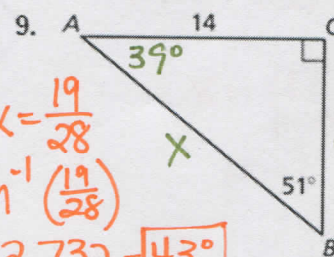
$\approx 42.732 = \boxed{43^\circ}$

$y^2 + 19^2 = 28^2$

$y^2 = 784 - 361$

$y^2 = 423$

$DF \approx \boxed{20.567}$



$90 - 51 = 39$

$\frac{\sin 51}{1} = \frac{14}{x}$

$x(\sin 51) = 14$

$x = \frac{14}{\sin 51} \approx 18.015$

$AB \approx \boxed{18.015}$

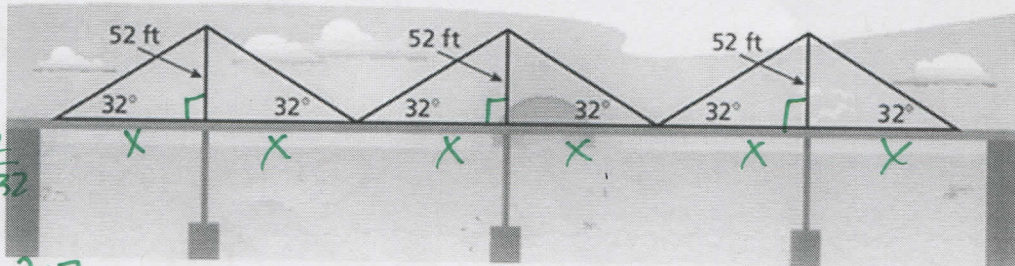
$\frac{\tan 51}{1} = \frac{14}{y}$

$y(\tan 51) = 14$

$y = \frac{14}{\tan 51} \approx 11.337$

$BC = \boxed{11.337}$

10. Use the diagram to find the distance across the suspension bridge. Round your answer to the nearest foot.



$\tan 32 = \frac{52}{x}$

$x(\tan 32) = 52$

$x = \frac{52}{\tan 32} \approx 83.217$

$x \approx 83.217$

$6x = 6(83.217)$
 $= 499.302$

499 ft across the bridge.