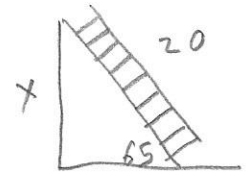
1. If a 20-foot ladder makes a 65° angle with the ground, how high up a wall will it reach?



$\sin 65 = \frac{x}{20}$

$20 \sin 65 = x$

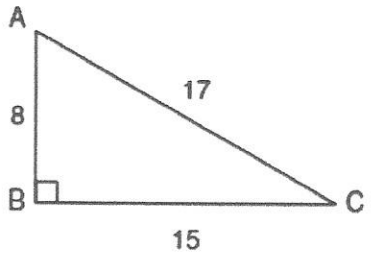
$x = 18.1$

2. Find the following. (Leave as a fraction)

Sin A = $\frac{15}{17}$

Tan A = $\frac{15}{8}$

Cos A = $\frac{8}{17}$

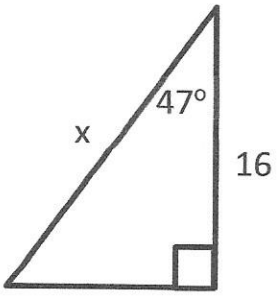


3. Solve for x.

$\cos 47 = \frac{16}{x}$

$x \cos 47 = 16$

$x = \frac{16}{\cos 47} = 23.5$

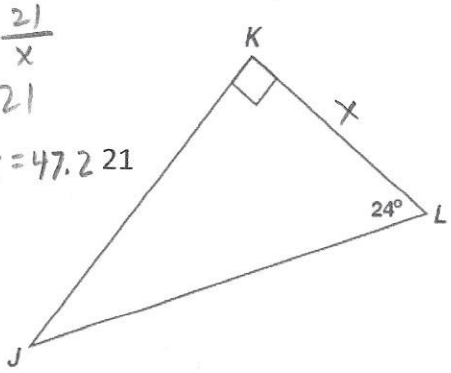


4. What is the measure of KL?

$\tan 24 = \frac{21}{x}$

$x \tan 24 = 21$

$x = \frac{21}{\tan 24} = 47.221$

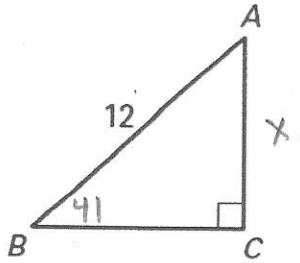


5. If $m\angle B = 41$, solve for AC.

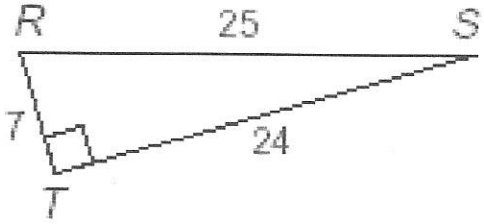
$\sin 41 = \frac{x}{12}$

$12 \sin 41 = x$

$x = 7.9$



6.

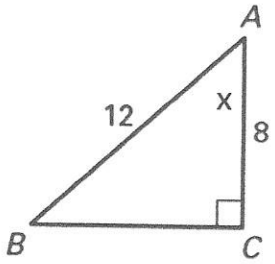


In the diagram above, find cos R. $= \frac{7}{25}$

7. Solve for x.

$\cos x = \frac{8}{12}$

$x = 48.2$

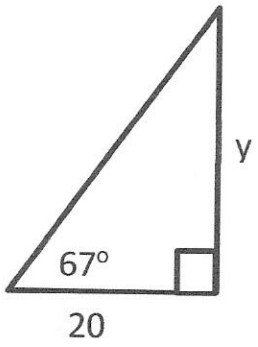


8. What is the value of y?

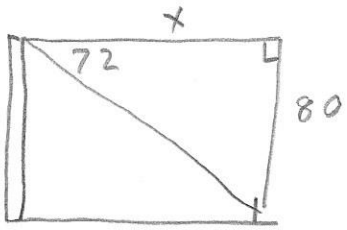
$\tan 67 = \frac{y}{20}$

$20 \tan 67 = y$

$y = 47.1$



9. From the top of a tower, the angle of depression to a stake on the ground is 72°. The top of the tower is 80 feet above ground. How far is the stake from the foot of the tower?

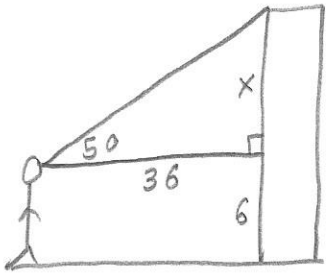


$\tan 72 = \frac{80}{x}$

$x \tan 72 = 80$

$x = \frac{80}{\tan 72} = 26.0$

10. A 6 ft tall man looks to the top of a building and creates an angle of elevation of 50°. If he is standing 36 feet from the building, how tall is the building?



$\tan 50 = \frac{x}{36}$

$36 \tan 50 = x$

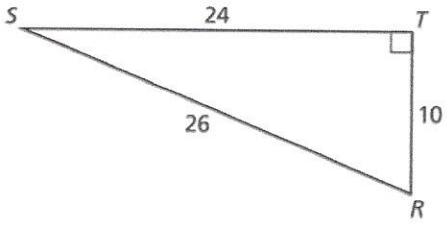
$x = 42.9$

height $= 48.9$

Name:_____

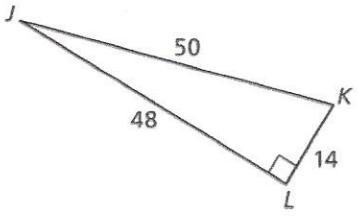
13-2 B Sine and Cosine Ratio

11. Consider this right triangle. Determine whether each equation is correct. Mark YES or No for each equation.



Equation	Yes	No
$Sin(R)=\frac{24}{10}$		X
$Sin(S)=\frac{10}{26}$	X	
$cos(R)=\frac{10}{26}$	X	
$\cos(S)=\frac{10}{26}$		X
$\cos(S)=\frac{24}{26}$	X	

12. Consider this right triangle. Find the value of cos(K).



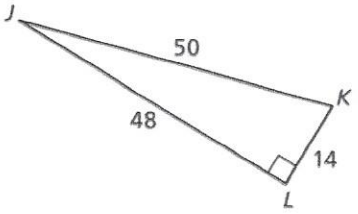
A. $\frac{14}{50}$

B. $\frac{48}{14}$

C. $\frac{50}{48}$

D. $\frac{48}{50}$

13. Consider this right triangle. Find the value of sin(J).



A. $\frac{14}{50}$

B. $\frac{48}{14}$

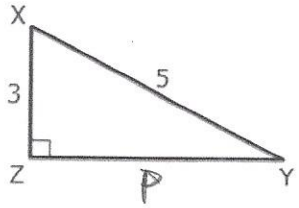
C. $\frac{50}{48}$

D. $\frac{48}{50}$

14. Consider this right triangle

$\cos Y = \frac{p}{5}$

$5\cos Y = p$



Decide whether each expression can be used to find the length of $\overline{ZY}$. Mark Yes or No for each expression.

expression	Yes	No
$5\cos(Y)$	X	
$3\cos(Y)$		X

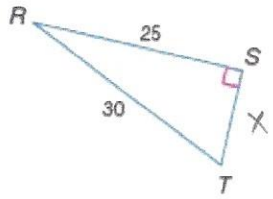
Name:_____

13-2 B Sine and Cosine Ratio

15. Consider this right triangle

$\sin R = \frac{x}{30}$

$x = 30 \sin R$



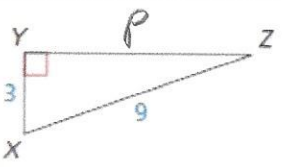
Decide whether each expression can be used to find the length of $\overline{ST}$. Mark Yes or No for each expression.

expression	Yes	No
$25\sin(R)$		X
$30\sin(R)$	X	

16. Consider this right triangle

$\cos Z = \frac{p}{9} \rightarrow p = 9\cos Z$

$\sin X = \frac{p}{9} \rightarrow p = 9\sin X$



Decide whether each expression can be used to find the length of $\overline{YZ}$. Mark Yes or No for each expression.

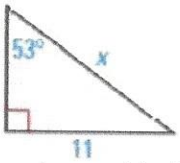
expression	Yes	No
$9\cos(Z)$	X	
$9\sin(X)$		X

12. Consider this right triangle

$\sin 53 = \frac{11}{x}$

$x \sin 53 = 11$

$x = \frac{11}{\sin 53}$



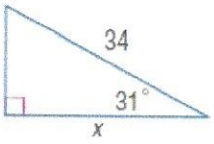
Decide whether each expression can be used to find the length of x. Mark Yes or No for each expression.

expression	Yes	No
$11\sin(53^\circ)$		X
$\frac{11}{\sin 53^\circ}$	X	

13. Consider this right triangle

$\cos 31 = \frac{x}{34}$

$x = 34\cos 31$

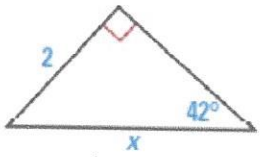


Decide whether each expression can be used to find the length of x. Mark Yes or No for each expression.

expression	Yes	No
$\frac{34}{\cos(31^\circ)}$		X
$34\cos(31^\circ)$	X	

Find x. Round to the nearest tenth.

19.

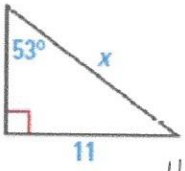


$\sin 42 = \frac{2}{x}$

$x \sin 42 = 2$

$x = \frac{2}{\sin 42} = 3.0$

20.

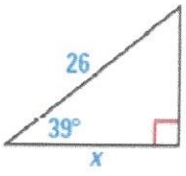


$\sin 53 = \frac{11}{x}$

$x \sin 53 = 11$

$x = \frac{11}{\sin 53} = 13.8$

21.



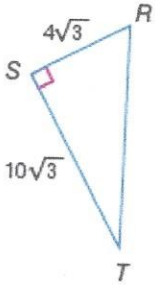
$\cos 39 = \frac{x}{26}$

$26 \cos 39 = x$

$x = 20.2$

Find the measure of angle T. Round to the nearest tenth.

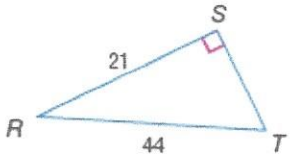
31.



$\tan T = \frac{4\sqrt{3}}{10\sqrt{3}}$

$T = 21.8$

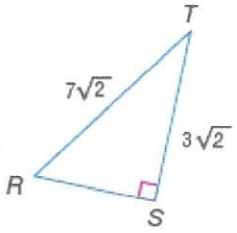
32.



$\sin T = \frac{21}{44}$

$T = 28.5$

33.

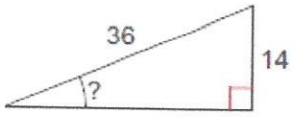


$\cos T = \frac{3\sqrt{2}}{7\sqrt{2}}$

$T = 64.6$

Find the measure of the missing angle. Round to the nearest degree.

37.



$\sin X = \frac{14}{36}$

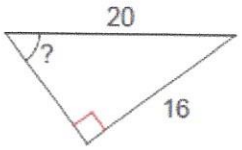
$x = 22.9$

38.

$\sin x = \frac{15}{27}$

$x = 33.7$

39.



$\sin x = \frac{16}{20}$

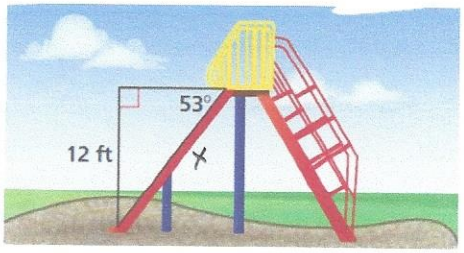
$x = 53.1$

40. The top of the slide is 12 feet from the ground and has an angle of depression of 53° . What is the length of the slide to nearest foot?

$\sin 53 = \frac{12}{x}$

$x \sin 53 = 12$

$x = \frac{12}{\sin 53} = 15$

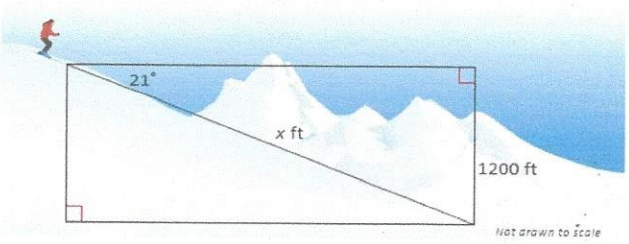


41. You are skiing on a mountain with an altitude of 1200 feet. The angle of depression is 21°. Find the distance x you ski down the mountain to the nearest foot.

$\sin 21 = \frac{1200}{x}$

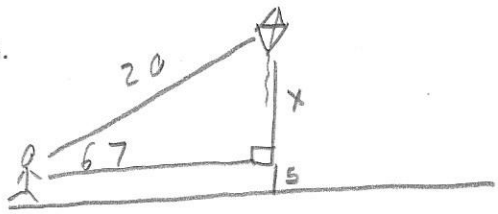
$x \sin 21 = 1200$

$x = \frac{1200}{\sin 21} = 3349$



42. You are flying a kite with 20 feet of string extended. The angle between the string and the ground is 67°. The spool is being held 5 feet above the ground.

a. Draw and label a diagram that represents the situation.



b. How far off the ground is the kite

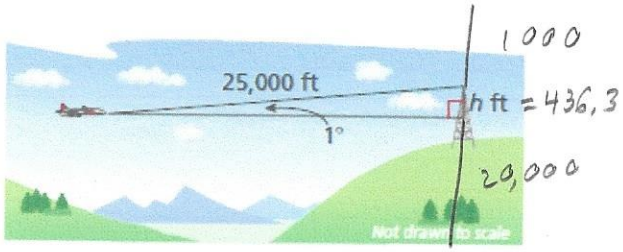
$\sin 67 = \frac{x}{20}$

$20 \sin 67 = x$

$x = 18.4$

height = 23.4

43. Planes that fly at high speeds and low elevations have radar systems that can determine the range of an obstacle and the angle of elevation to the top of the obstacle. The radar of a plane flying at an altitude of 20,000 feet detects a tower that is 25,000 feet away, with an angle of elevation of 1.



a. How many feet must the plane rise to pass over the tower?

$\sin 1 = \frac{h}{25000}$

$25000 \sin 1 = h$

$h = 436.3$

b. Planes cannot come closer than 1000 feet vertically to any object. At what altitude must the plane fly in order to pass over the tower?

$20000 + 436.3 + 1000 = 21436.3$ ft