Name Key _____ Date _____

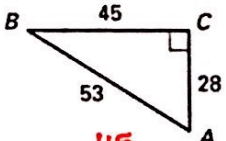
LESSON 7.5

Practice

For use with the lesson "Apply the Tangent Ratio"

Find tan *A* and tan *B*. Write each answer as a decimal rounded to four decimal places.

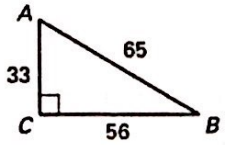
1.



$\tan A = \frac{45}{28} = 1.6071$

$\tan B = \frac{28}{45} = 0.6222$

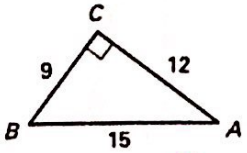
2.



$\tan A = \frac{56}{33} = 1.6970$

$\tan B = \frac{33}{56} = 0.5893$

3.

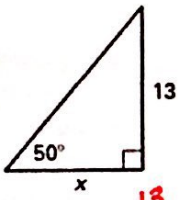


$\tan A = \frac{9}{12} = 0.75$

$\tan B = \frac{12}{9} = 1.3333$

Find the value of *x* to the nearest tenth.

4.



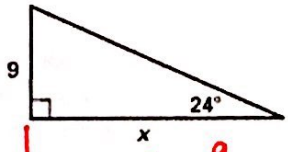
$\tan 50° = \frac{13}{x}$

$x \cdot \tan 50° = \frac{13}{x} \cdot x$

$x = \frac{13}{\tan 50°}$

$x = 10.9$

5.

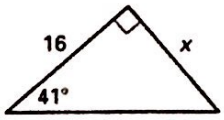


$\tan 24° = \frac{9}{x}$

$x = \frac{9}{\tan 24°}$

$x = 20.2$

6.



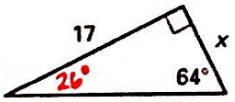
$\tan 41° = \frac{x}{16}$

$x = 16 \cdot \tan 41°$

$x = 13.9$

Use a tangent ratio to find the value of *x*. Round to the nearest tenth.

7.



$\tan 64° = \frac{17}{x}$

$x = \frac{17}{\tan 64°}$

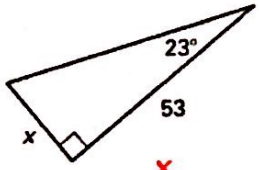
$x = 8.3$

$\tan 26° = \frac{x}{17}$

$x = 17 \cdot \tan 26°$

$x = 8.3$

8.



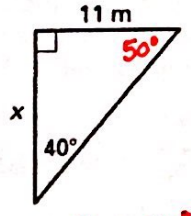
$\tan 23° = \frac{x}{53}$

$x = 53 \cdot \tan 23°$

$x = 22.5$

Find the area of the triangle.

9.



$\tan 50° = \frac{x}{11}$

$x = 11 \cdot \tan 50°$

$x = 13.1$ m

$\tan 40° = \frac{11}{x}$

$x = \frac{11}{\tan 40°}$

$x = 13.1$ m

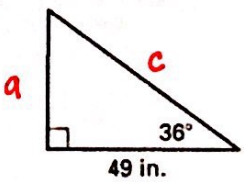
$A = \frac{1}{2} b \cdot h$

$A = \frac{1}{2}(11\text{ m})(13.1\text{ m})$

$A = 72.1\text{ m}^2$

Find the perimeter of the triangle.

10.



① $\tan 36° = \frac{a}{49}$

$a = 49 \cdot \tan 36°$

$a = 35.6$ in

② $a^2 + b^2 = c^2$

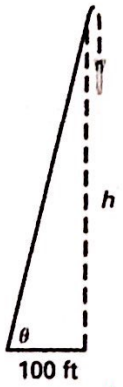
$35.6^2 + 49^2 = c^2$

$c = 60.6$ in

③ $P = 49 + 35.6 + 60.6$

$P = 145.2$ in

11. Model Rockets To calculate the height h reached by a model rocket, you move 100 feet from the launch point and record the angle of elevation θ to the rocket at its highest point. The values of θ for three flights are given below. Find the rocket's height to the nearest foot for the given θ in each flight.



a. $\theta = 77°$ $\tan 77° = \frac{h}{100}$

$h = 100 \cdot \tan 77°$

$h = 433$ ft

b. $\theta = 81°$ $\tan 81° = \frac{h}{100}$

$h = 100 \cdot \tan 81°$

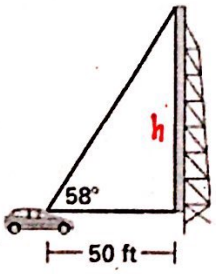
$h = 631$ ft

c. $\theta = 83°$ $\tan 83° = \frac{h}{100}$

$h = 100 \cdot \tan 83°$

$h = 814$ ft

12. Drive-in Movie You are 50 feet from the screen at a drive-in movie. Your eye is on a horizontal line with the bottom of the screen and the angle of elevation to the top of the screen is 58°. How tall is the screen?

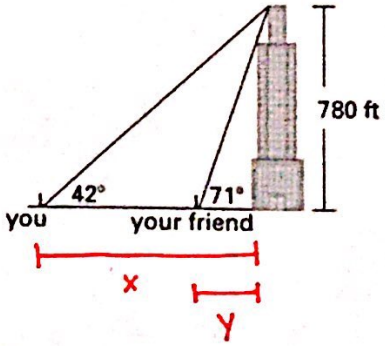


$\tan 58° = \frac{h}{50}$

$h = 50 \cdot \tan 58°$

$h = 80$ ft

13. Skyscraper You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is 42°. The angle of elevation from your friend's position to the top of the skyscraper is 71°. To the nearest foot, how far are you from your friend?



$\tan 42° = \frac{780}{x}$

$x = \frac{780}{\tan 42°} = 866.3$ ft

$\tan 71° = \frac{780}{y}$

$y = \frac{780}{\tan 71°} = 268.6$ ft

you to your friend:

$= 866.3 - 268.6$

$= 598$ ft