Trigonometry Review

____ 2. The hypotenuse of a 30°-60°-90° triangle measures $10\sqrt{3}$ inches. What is the measure of the longer leg?

a. 5 in.
b. $5\sqrt{3}$ in.
c. 10 in.
d. 15 in.

____ 3. One leg of a 45°-45°-90° triangle measures 12 centimeters. What is the length of the hypotenuse?

a. $4\sqrt{3}$ cm
b. $6\sqrt{2}$ cm
c. $12\sqrt{2}$ cm
d. $12\sqrt{3}$ cm

____ 4. What is cos 30°?

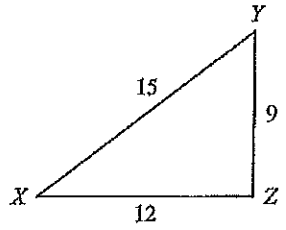
a. $\frac{1}{\sqrt{3}}$
b. $\frac{\sqrt{3}}{2}$
c. $\frac{2}{\sqrt{3}}$
d. $\sqrt{3}$

____ 5. A camera is mounted at a point 4,400 ft from the base of a rocket launching pad. Assuming the rocket rises vertically, what is the height of the rocket from its base when the camera angle is 30°? Round your answer to the nearest foot.

a. 3,811 ft
b. 2,540 ft
c. 7,621 ft
d. 2,200 ft

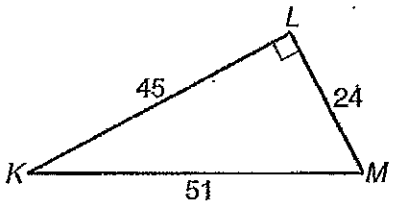
____ 7. Write the trigonometric ratio for cos X as a fraction and as a decimal rounded to the nearest hundredth.

a. $\cos X = \frac{12}{9} \approx 1.33$
b. $\cos X = \frac{9}{15} = 0.60$
c. $\cos X = \frac{12}{15} = 0.80$
d. $\cos X = \frac{9}{12} = 0.75$



____ 8. What is tan K?

a. $\frac{8}{17}$
b. $\frac{8}{15}$
c. $\frac{15}{17}$
d. $\frac{15}{8}$

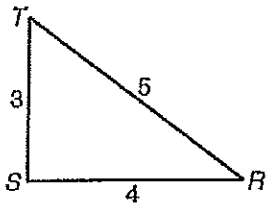


____ 9. Use a special right triangle to write tan 60° as a fraction.

a. $\frac{\sqrt{3}}{1}$
c. $\frac{\sqrt{2}}{1}$
b. $\frac{1}{\sqrt{3}}$
d. $\frac{\sqrt{3}}{2}$

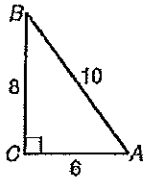
____ 10. Which is equal to the cosine of $\angle R$?

a. 0.6
c. 0.8
b. 0.75
d. 1.25



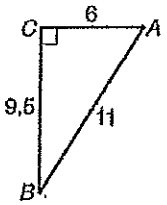
____ 11. Which angle has a cosine of $\frac{3}{5}$?

a. $\angle A$
b. $\angle B$



____ 12. Which is approximately equal to sin A?

a. 0.55
c. 0.86
b. 0.63
d. 1.58

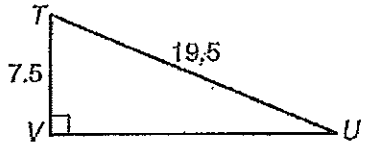


____ 13. A skateboard ramp has a slope of $\frac{2}{5}$. Which is the angle the ramp makes with the ground?

a. 22°
c. 66°
b. 24°
d. Not here

____ 14. Which expression can be used to find $m\angle U$?

a. $\sin^{-1}(0.38)$
c. $\tan^{-1}(0.38)$
b. $\cos^{-1}(0.38)$
d. $\sin^{-1}(0.92)$



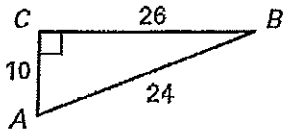
____ 15. What is tan 34° to the nearest hundredth?

a. 0.34
c. 0.67
b. 0.56
d. 0.83

____ 16. What is sin 49° to the nearest tenth?

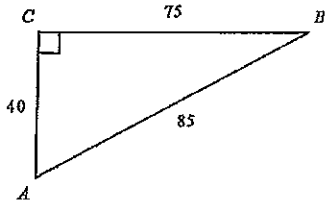
a. 0.7
c. 1.2
b. 0.8
d. 1.3

____ 17. Find $\tan A$ and $\tan B$.



a. $\tan A \approx 0.38, \tan B = 2.6$
b. $\tan A = 2.6, \tan B \approx 0.38$
c. $\tan A \approx 1.08, \tan B \approx 0.42$
d. $\tan A \approx 0.92, \tan B = 2.4$

____ 19. $\angle A$ and $\angle B$ are complementary angles as shown in right triangle ABC. Find the sine of $\angle A$ and the cosine of $\angle B$. Then describe how they are related.



a. $\sin A = \cos B = \frac{8}{17}$; they are the same ratio
b. $\sin A = \cos B = \frac{17}{15}$; they are the same ratio
c. $\sin A = \cos B = \frac{15}{8}$; they are the same ratio
d. $\sin A = \cos B = \frac{15}{17}$; they are the same ratio

____ 21. In right triangle ABC, $\angle A$ and $\angle B$ are acute angles. If $\sin A = \frac{12}{37}$, which of the following statements is true?

a. $\cos B = \frac{12}{37}$
b. $\cos B = \frac{12}{35}$
c. $\cos B = \frac{37}{12}$
d. $\cos B = \frac{37}{35}$

____ 22. A slide 4.1 m long makes an angle of 27° with the ground. How high is the top of the slide above the ground?

a. 1.86 m b. 3.65 m c. 1.93 m d. 2.09 m

____ 23. A 12-foot ladder is leaning up against the side of a house. The ladder makes an angle of 62° with the ground. How far up the side of the house does the ladder reach?

a. 0.1 foot
b. 5.6 feet
c. 10.6 feet
d. 13.6 feet
e. 25.6 feet

____ 24. A helicopter pilot sights a landmark at an angle of depression of 22°. The altitude of the helicopter is 1450 feet. To the nearest foot, what is the horizontal distance from the helicopter to the landmark.

a. 543 ft
b. 586 ft
c. 3589 ft
d. 3871 ft

____ 25. A motorboat heads N 15° W to cross a river flowing 7.25 miles per hour due east. The boat travels at the speed necessary to head due north. To the nearest mile per hour, how fast is the motorboat traveling?

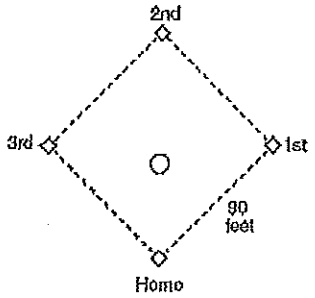
a. 2 mi/h
b. 8 mi/h
c. 27 mi/h
d. 28 mi/h

____ 26. An eagle 300 feet in the air spots its prey on the ground. The angle of depression to its prey is 15°. What is the horizontal distance between the eagle and its prey? Round to the nearest foot.

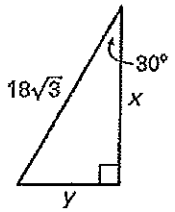
a. 1,120 ft
b. 1,159 ft
c. 310 ft
d. 723 ft

Short Answer

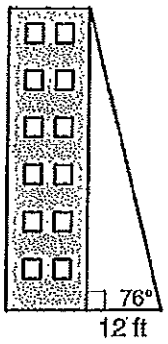
2. A baseball "diamond" is a square of side length 90 feet. How far is the throw, to one decimal place, from home plate to second base?



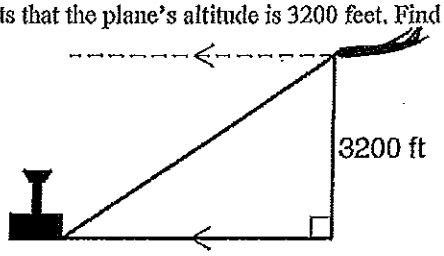
4. Find the value of each variable. Write your answers in simplest radical form.



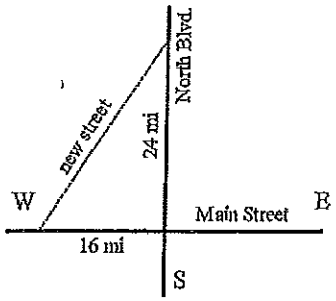
8. From a point on the ground 12 feet in front of the building, the angle of elevation to the top of the building is 76°. How tall is the building? Round the answer to the nearest foot.



9. The angle of depression from a plane to the airport is 34°. The pilot reports that the plane's altitude is 3200 feet. Find the horizontal distance between the plane and the airport to the nearest foot.



1. A new street is going to be constructed to connect Main Street, which runs in the east-west direction, and North Boulevard, which runs in the north-south direction, as shown in the diagram below. The construction cost has been estimated at $600,00 per mile.



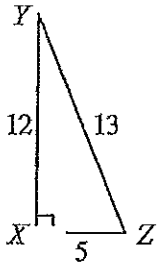
What type of triangle is bounded by the new street, North Boulevard, and Main Street?

Let x represent the length of the new street. What is the name of the formula that can be used to find the value of x? Use that formula to write an equation that can be solved for x.

What is the length of the new street ? Show your work.

Estimate the cost of constructing the new street.

2. Prove that $\angle YXZ$ is a right angle.

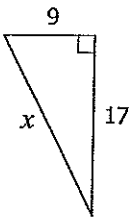


Topic 1: Pythagorean Theorem & Applications

For any right triangle: _____, where a and b are legs and c is the hypotenuse.

Directions: Solve for x. Round your answer to the nearest tenth.

1.



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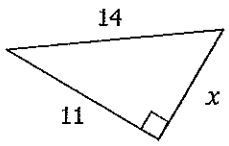

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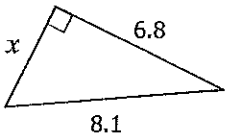

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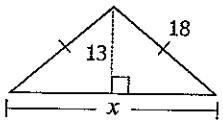
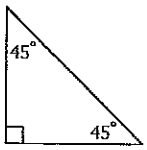


5. An Olympic-size swimming pool is approximately 50 meters long by 25 meters wide. What distance will a swimmer travel if they swim from one corner to the opposite?

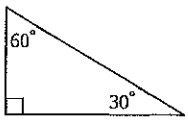
Topic 3: Special Right Triangles

Directions: Label the sides for each special right triangle.

45°-45°-90° Special Right Triangle

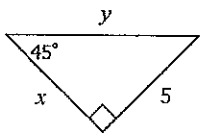


30°-60°-90° Special Right Triangle



Directions: Find the value of each variable.

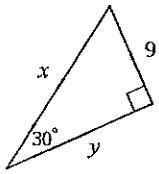
11.



$x =$ _____

$y =$ _____

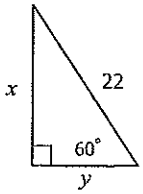
12.



$x =$ _____

$y =$ _____

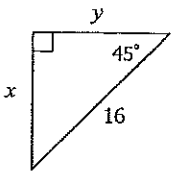
13.



$x =$ _____

$y =$ _____

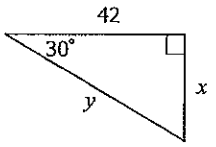
14.



$x =$ _____

$y =$ _____

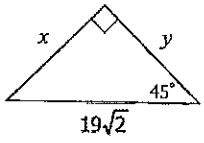
15.



$x =$ _____

$y =$ _____

16.



$x =$ _____

$y =$ _____