

Extra Practice

REVIEW for TEST

Chapter 8

Lessons 8-1 and 8-2

Find the value of  $x$ . If your answer is not a whole number, leave it in simplest radical form.

1.  $9^2 + 12^2 = x^2$   
 $81 + 144 = x^2$   
 $225 = x^2$   
 $x = 15$

2.  $5^2 + x^2 = 10^2$   
 $25 + x^2 = 100$   
 $x^2 = 75$   
 $x = 5\sqrt{3}$   
 $8.66$

3.  $6^2 + x^2 = 9^2$   
 $36 + x^2 = 81$   
 $x^2 = 45$   
 $x = \sqrt{45} = 3\sqrt{5}$   
 $3\sqrt{5} \approx 6.7$

4.  $6 = s\sqrt{2}$   
 $s = \frac{6\sqrt{2}}{2}$   
 $3\sqrt{2}$

5.  $4^2 + x^2 = 10^2$   
 $16 + x^2 = 100$   
 $x^2 = 84$   
 $x = \sqrt{84} = 2\sqrt{21}$

6.  $8 = 2s$   
 $s = 4$   
 $x = 4\sqrt{3}$

7. A rectangular lot is 165 feet long and 90 feet wide. How many feet of fencing are needed to make a diagonal fence for the lot? Round to the nearest foot.

$90^2 + 165^2 = d^2$   
 $8100 + 27225 = d^2$   
 $d = \sqrt{35325}$   
 $\approx 188$

The lengths of the sides of a triangle are given. Classify each triangle as acute, right, or obtuse.

8. 3, 5, 7  $7^2 > 3^2 + 5^2$  obtuse  
 9. 8, 9, 11  $11^2 > 8^2 + 9^2$  obtuse  
 10. 0.5, 1.2, 1.3  $1.3^2 < 0.5^2 + 1.2^2$  acute  
 11.  $\sqrt{5}, 4, 5$   $5^2 < 4^2 + 5^2$  acute  
 12.  $\sqrt{3}, 3, \sqrt{3}$   $(\sqrt{3})^2 + (\sqrt{3})^2 < 3^2$  obtuse  
 13. 24, 32, 38  $38^2 < 24^2 + 32^2$  acute

Find the missing side lengths. Give answers in simplest radical form if necessary.

14.  $x = 4$

15.  $x = 6\sqrt{2}$

16.  $x = 13\sqrt{3}$

17.  $x = 8\sqrt{3}$

18.  $x = 1$

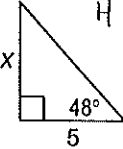
19.  $x = 4\sqrt{3}$   
 $s = \frac{12}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$

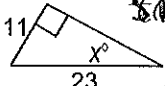
# Extra Practice (continued)

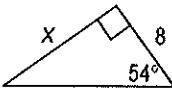
## Chapter 8

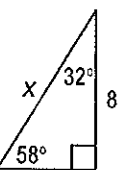
### Lessons 8-3

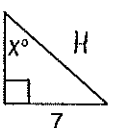
Find the value of  $x$ . Round lengths of segments to the nearest tenth and angle measures to the nearest degree.

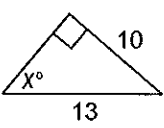
20.   $\tan 48 = \frac{x}{5}$   $x = 5.55$

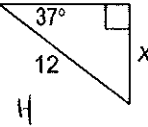
21.   $\sin x = \frac{11}{23}$   $x = 28.57$

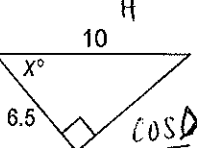
22.   $\tan 54 = \frac{x}{8}$   $x = 11.01$

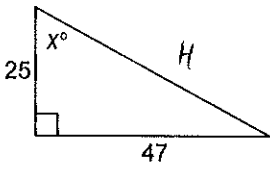
23.   $\sin 32 = \frac{8}{x}$   $x = 9.43$

24.   $\tan x = \frac{6}{7}$   $x = 49.4$

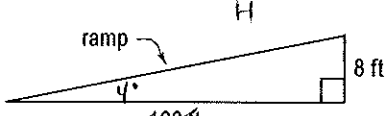
25.   $\sin x = \frac{10}{13}$

26.   $\sin 37 = \frac{x}{12}$

27.   $\cos x = \frac{6.5}{10}$

28.   $\tan x = \frac{25}{47}$


29. An architect includes wheelchair ramps in her plans for the entrance to a new museum. She wants the angle that the ramp makes with level ground to measure  $4^\circ$ . Will the dimensions shown in the figure work? If not, what change should she make?



$\tan 4 = \frac{8}{100}$   $x = 114.4$

NO change dist. to 114.4 ft

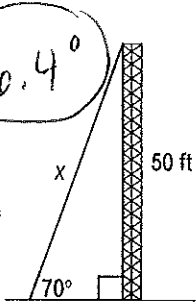
30. A 12-ft ladder is propped against a vertical wall. The top end is 11 ft above the ground. What is the measure of the angle formed by the ladder with the ground?



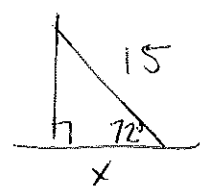
$\sin x = \frac{11}{12}$   $x = 66.4$

31. How long is the guy wire shown in the figure if it is attached to the top of a 50-ft antenna and makes a  $70^\circ$  angle with the ground? Round to the nearest tenth.

$\sin 70 = \frac{50}{x}$   $x = 53.21$  ft



32. A 15-ft ladder is propped against a vertical wall and makes a  $72^\circ$  angle with the ground. How far is the foot of the ladder from the base of the wall? Round to the nearest tenth.



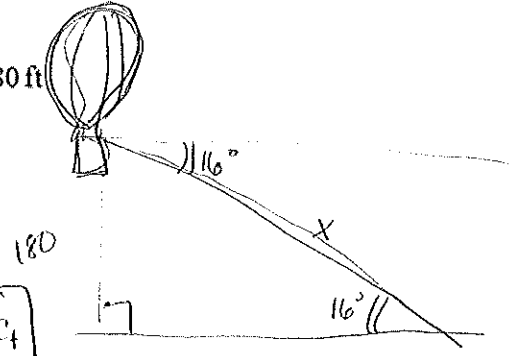
Lessons 8-4

Solve each problem. Round your answers to the nearest foot.

33. A couple is taking a balloon ride. After 25 minutes aloft, they measure the angle of depression from the balloon to its launch place as  $16^\circ$ . They are 180 ft above ground. Find the distance from the balloon to its launch place.

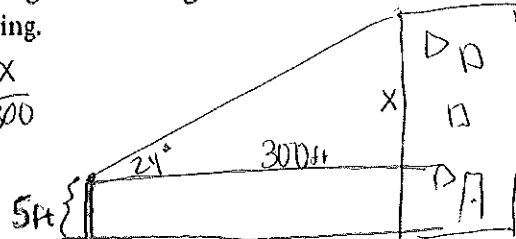
$$\frac{\sin 16}{1} = \frac{180}{x}$$

$$653.03 \approx \boxed{653 \text{ ft}}$$



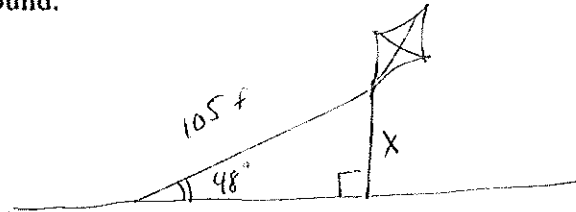
34. A surveyor is 300 ft from the base of an apartment building. The angle of elevation to the top of the building is  $24^\circ$ , and her angle-measuring device is 5 ft above the ground. Find the height of the building.

~~tan 24~~  
 $\frac{\tan 24}{1} = \frac{x}{300}$   
 $133.57$   
 $+ \frac{5}{1}$   
 $138.57 \approx \boxed{139 \text{ ft}}$



35. Your friend is flying a kite. She lets out 105 ft of string and anchors it to the ground. She determines that the angle of elevation of the kite is  $48^\circ$ . Find the height the kite is from the ground.

$$78.03 \approx \boxed{78 \text{ ft}}$$

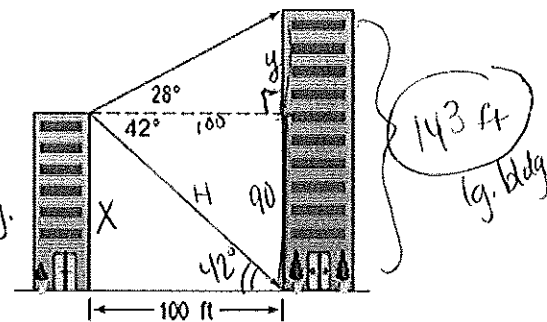


$$\frac{\sin 48}{1} = \frac{x}{105}$$

36. Two office buildings are 100 ft apart. From the edge of the shorter building, the angle of elevation to the top of the taller building is  $28^\circ$ , and the angle of depression to the bottom is  $42^\circ$ . How tall is each building? Round to the nearest foot.

$$\frac{\tan 42}{1} = \frac{x}{100} \quad 100 \tan 42 = \boxed{90 \text{ ft}} \text{ sm. bldg.}$$

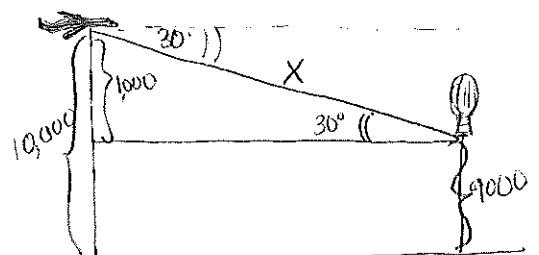
$$\frac{\tan 28}{1} = \frac{y}{100} = 53.17$$



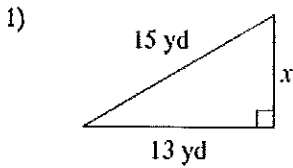
37. A plane flying at 10,000 ft spots a hot air balloon in the distance. The balloon is 9000 ft above ground. The angle of depression from the plane to the balloon is  $30^\circ$ . Find the distance from the plane to the balloon.

$$\frac{\sin 30}{1} = \frac{1000}{x}$$

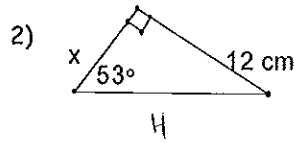
$$\boxed{2000 \text{ ft}}$$



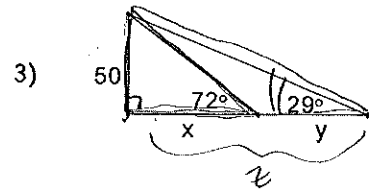
Mixed Practice: Find the missing side lengths:



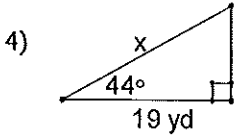
equation  $13^2 + x^2 = 15^2$   
 $x^2 = 56$   
 $x = \sqrt{56} = 7.48$



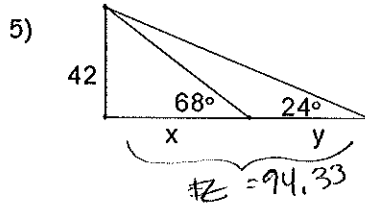
equation  $\frac{\tan 53 = 12}{1} = \frac{x}{X}$   
 $x = 9.04$   
 $12 = \tan 53$



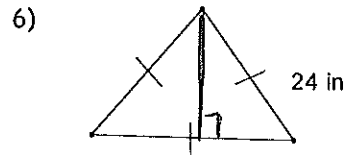
(x) equation  $\frac{\tan 72 = 50}{1} = \frac{x}{X}$   
 $x = 16.25$   
 (y) equation  $\frac{\tan 29 = 50}{1} = \frac{y}{90.2}$   
 $y = 73.95$



equation  $\frac{\cos 44 = 19}{1} = \frac{x}{X}$   
 $x = 26.41$



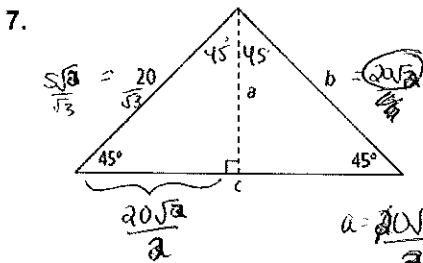
(x) equation  $\frac{\tan 68 = 42}{1} = \frac{x}{X}$   
 $x = 16.97$   
 (y) equation  $\frac{\tan 24 = 42}{1} = \frac{y}{X}$   
 $y = 77.36$



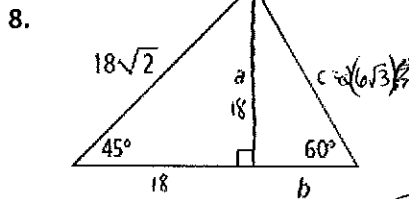
find the height of this triangle  
 (to the nearest tenth)

$12\sqrt{3}$   
 $20.78$

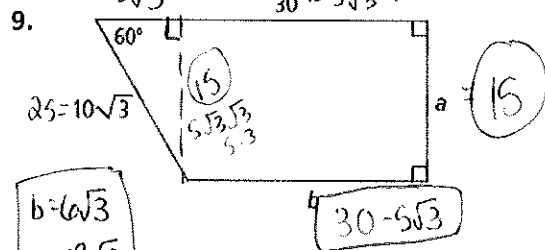
Find the value of each variable. If your answer is not an integer, express it in simplest radical form.



$a = \frac{20\sqrt{2}}{2} = 10\sqrt{2}$



$18 = 5\sqrt{3}$   
 $s = \frac{18\sqrt{3}}{3}$   
 $s = 6\sqrt{3}$   
 $b = 6\sqrt{3}$   
 $c = 12\sqrt{3}$



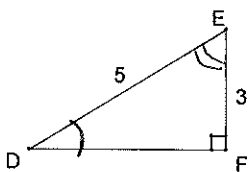
Solve.

10. If the diagonal of a square is 9 units long, how long is each side?  $\frac{9\sqrt{2}}{2}$

11. If the side of a square is 7 units long, how long is the diagonal?  $7\sqrt{2}$

12. A rectangular suitcase measures 2 feet by 3 feet. Can an umbrella that is 42 inches long be packed lying flat in the suitcase? yes

Find each angle measure:



$\sin \angle D = \frac{3}{5}$

$\sin^{-1}(\frac{3}{5})$   
 $38.87^\circ$

$\cos \angle E = \frac{3}{5}$

$\cos^{-1}(\frac{3}{5})$   
 $53.13^\circ$

13)  $m \angle D = 38.87^\circ$       14)  $m \angle E = 53.13^\circ$

\*inverse button!

