Extra Practice

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. \[ \frac{12}{9} \]
2. \[ \frac{5}{x} \]
3. \[ \frac{9}{x} \]
4. \[ \frac{x}{6} \]
5. \[ \frac{10}{x} \]
6. \[ \frac{8}{x} \]

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. **188 ft**

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

8. 3, 5, 7 **obtuse**
9. 8, 9, 11 **acute**
10. 0.5, 1.2, 1.3 **right**
11. $\sqrt{5}$, 4, 5 **obtuse**
12. $\sqrt{3}$, 3, $2\sqrt{3}$ **right**
13. 24, 32, 38 **acute**

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

14. 4 in., $4\sqrt{2}$ in.
15. 12 cm, $6\sqrt{2}$ cm
16. 26 cm, 60°, 13 cm, $13\sqrt{3}$ cm
17. $8\sqrt{3}$ in., 16 in.
18. $\sqrt{2}$ units, $\sqrt{2}$ units, 2 units
19. $4\sqrt{3}$ units, 8 $\sqrt{3}$ units
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. 

21. 

22. 

23. 

24. 

25. 

26. 

27. 

28. 

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 $48^\circ$. Will the dimensions shown in the figure work? If not, what change should she make? No; sample: In the plan, change 100 ft to 114.5 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? about $66.4^\circ$

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. 53.2 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. 4.6 ft
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°. They are 180 ft above ground. Find the distance from the balloon to its launch place. 653 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°, and her angle-measuring device is 5 ft above the ground. Find the height of the building. 139 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°. Find the height the kite is from the ground. 78 ft

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°, and the angle of depression to the bottom is 42°. How tall is each building? Round to the nearest foot. 90 ft; 143 ft

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°. Find the distance from the plane to the balloon. 2000 ft

Lessons 8-5

Use the Law of Sines to find the values of x and y. Round to the nearest tenth.

38. \[ x = 7.9; \quad y = 11.5 \]

39. \[ x = 9.4; \quad y = 16.9 \]

40. \[ x = 22.2; \quad y = 18.0 \]

41. \[ x = 8.6; \quad y = 15.2 \]

42. \[ x = 6.9; \quad y = 10.8 \]

43. \[ x = 15.2; \quad y = 12.0 \]

44. \[ x = 8.5; \quad y = 11.4 \]

45. \[ x = 43.9; \quad y = 6.4 \]

46. \[ x = 8.1; \quad y = 24.1 \]
47. A portion of a map is shown in the figure at the right. If you walk along Oak Street between Savannah Lane and Ridgewood Avenue, how far do you walk? Round to the nearest tenth of a yard. \( \text{276.0 yd} \)

48. A portion of a flag is shown with its dimensions in the figure at the right. To the nearest tenth of an inch, what is the height of the flag? \( \text{26.1 in.} \)

Lessons 8-6

Use the Law of Cosines to find the values of \( x \) and \( y \). Round to the nearest tenth.

49. \( x \approx 55.5; \quad y \approx 46.2 \)
50. \( x \approx 88.3; \quad y \approx 40.0 \)
51. \( x \approx 5.6; \quad y \approx 74.5 \)

52. \( x \approx 16.2; \quad y \approx 67.3 \)
53. \( x \approx 48.6; \quad y \approx 42.7 \)
54. \( x \approx 11.6; \quad y \approx 129.8 \)

55. \( x \approx 47.8; \quad y \approx 54.7 \)
56. \( x \approx 112.7; \quad y \approx 26.0 \)
57. \( x \approx 56.4; \quad y \approx 50.5 \)

58. Leonard, Brandon, and Emily are tossing a football. The distances they stand from each other are shown in the diagram at the right. To the nearest tenth, what is the measure of the angle with its vertex at Leonard? \( \text{33.4°} \)

59. Ashley traveled 6 miles from her house to the library, then 9 miles from the library to the dentist office. To the nearest tenth, how far is it from the dentist office to Ashley’s house? \( \text{9.9 miles} \)