Name _____ Class _____ Date _____

6-5 Practice

Form G

Solving Square Root and Other Radical Equations

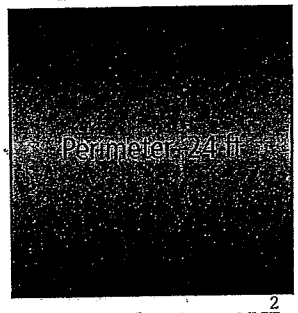
Solve.

1. $5\sqrt{x} + 2 = 12$
2. $3\sqrt{x} - 8 = 7$
3. $\sqrt{4x} + 2 = 8$
4. $\sqrt{2x - 5} = 7$
5. $\sqrt{3x - 3} - 6 = 0$
6. $\sqrt{5 - 2x} + 5 = 12$
7. $\sqrt{3x - 2} - 7 = 0$
8. $\sqrt{4x + 3} + 2 = 5$
9. $\sqrt{33 - 3x} = 3$
10. $\sqrt[3]{2x + 1} = 3$
11. $\sqrt[3]{13x - 1} - 4 = 0$
12. $\sqrt[3]{2x - 4} = -2$

Solve.

13. $(x - 2)^{\frac{1}{3}} = 5$
14. $(2x + 1)^{\frac{1}{3}} = -3$
15. $2x^{\frac{3}{4}} = 16$
16. $2x^{\frac{1}{3}} - 2 = 0$
17. $x^{\frac{1}{2}} - 5 = 0$
18. $4x^{\frac{3}{2}} - 5 = 103$
19. $(7x - 3)^{\frac{1}{2}} = 5$
20. $4x^{\frac{1}{2}} - 5 = 27$
21. $x^{\frac{1}{6}} - 2 = 0$
22. $(2x + 1)^{\frac{1}{3}} = 1$
23. $(x - 2)^{\frac{2}{3}} - 4 = 5$
24. $3x^{\frac{4}{3}} + 5 = 53$

25. The formula $P = 4\sqrt{A}$ relates the perimeter P, in units, of a square to its area A, in square units. What is the area of the square window shown below?



26. The formula $A = 6V^{\frac{2}{3}}$ relates the surface area A, in square units, of a cube to the volume V, in cubic units. What is the volume of a cube with surface area 486 in.^{2}?

27. A mound of sand at a rock-crushing plant is growing over time. The equation $t = \sqrt[3]{5V - 1}$ gives the time t, in hours, at which the mound has volume V, in cubic meters. When is the volume equal to 549 m^3?

6-5 Practice (continued)

Form G

Solving Square Root and Other Radical Equations

28. City officials conclude they should budget s million dollars for a new library building if the population increases by p thousand people in a ten-year census. The formula $s = 2 + \frac{1}{3}(p + 1)^{\frac{2}{5}}$ expresses the relationship between population and library budget for the city. How much can the population increase without the city going over budget if they have \$5 million for a new library building?

Solve. Check for extraneous solutions.

29. $\sqrt{x + 1} = x - 1$

30. $\sqrt{2x + 1} = -3$

31. $(x + 7)^{\frac{1}{2}} = x - 5$

32. $(2x - 4)^{\frac{1}{2}} = x - 2$

33. $\sqrt{x + 2} = x - 18$

34. $\sqrt{x} + 6 = x$

35. $(2x + 1)^{\frac{1}{2}} = -5$

36. $(x + 2)^{\frac{1}{2}} = 10 - x$

37. $\sqrt{x + 1} = x + 1$

38. $\sqrt{9 - 3x} = 3 - x$

39. $\sqrt[3]{2x - 4} = -2$

40. $2\sqrt[5]{5x + 2} - 1 = 3$

41. $\sqrt{4x + 2} = \sqrt{3x + 4}$

42. $\sqrt{7x - 6} - \sqrt{5x + 2} = 0$

43. $2(x - 1)^{\frac{1}{2}} = (26 + x)^{\frac{1}{2}}$

44. $(x - 1)^{\frac{1}{2}} - (2x + 1)^{\frac{1}{4}} = 0$

45. $\sqrt{2x} - \sqrt{x + 1} = 1$

46. $\sqrt{7x - 1} = \sqrt{5x + 5}$

47. $(7 - x)^{\frac{1}{2}} = (2x + 13)^{\frac{1}{2}}$

48. $(x - 7)^{\frac{1}{2}} = (x + 5)^{\frac{1}{4}}$

49. $\sqrt{x + 9} - \sqrt{x} = 1$

50. $\sqrt[3]{8x} - \sqrt[3]{6x - 2} = 0$

51. A clothing manufacturer uses the model $a = \sqrt{f + 4} - \sqrt{36 - f}$ to estimate the amount of fabric to order from a mill. In the formula, a is the number of apparel items (in hundreds) and f is the number of units of fabric needed. If 400 apparel items will be manufactured, how many units of fabric should be ordered?

52. What are the lengths of the sides of the trapezoid shown at the right if the perimeter of the trapezoid is 17 cm?