

Answers for Lesson 7-4 Exercises

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| 1. 6 | 2. 3 | 3. 7 |
| 4. 10 | 5. -3 | 6. 6 |
| 7. 8 | 8. 3 | 9. 3 |
| 10. $\sqrt[6]{x}$ | 11. $\sqrt[5]{x}$ | 12. $\sqrt[7]{x^2}$ or $(\sqrt[7]{x})^2$ |
| 13. $\sqrt[5]{y^2}$ or $(\sqrt[5]{y})^2$ | 14. $\frac{1}{\sqrt[8]{y^9}}$ or $\frac{1}{(\sqrt[8]{y})^9}$ | 15. $\frac{1}{\sqrt[4]{t^3}}$ or $\frac{1}{(\sqrt[4]{t})^3}$ |
| 16. $\sqrt{x^3}$ or $(\sqrt{x})^3$ | 17. $\sqrt[5]{y^6}$ or $(\sqrt[5]{y})^6$ | 18. $(-10)^{\frac{1}{2}}$ |
| 19. $7^{\frac{1}{2}} x^{\frac{3}{2}}$ | 20. $(7x)^{\frac{3}{2}}$ | 21. $(7x)^{\frac{3}{2}}$ |
| 22. $a^{\frac{2}{3}}$ | 23. $a^{\frac{2}{3}}$ | 24. $c^{\frac{1}{2}}$ |
| 25. $25x^2y^2$ | 26. ≈ 72.8 m | 27. ≈ 15.1 m |
| 28. ≈ 7.9 m | 29. ≈ 1.6 m | 30. 4 |
| 31. 16 | 32. 4 | 33. 64 |
| 34. $\frac{1}{16}$ | 35. 8 | 36. 64 |
| 37. 1000 | 38. $\frac{1}{x^2}$ | 39. $\frac{1}{x^4}$ |
| 40. $\frac{1}{3x^{\frac{2}{3}}}$ | 41. $\frac{5}{x^{\frac{2}{3}}}$ | 42. $-\frac{3}{x^3}$ |
| 43. $-2y^3$ | 44. $\frac{1}{x}$ | 45. $x^{\frac{13}{3}}$ |
| 46. $\frac{y^4}{x^3}$ | 47. $\frac{y^2}{x^8}$ | 48. x^3y^9 |
| 49. $\frac{y^5}{x^{10}}$ | 50. -7 | 51. -3 |
| 52. 64 | 53. 729 | 54. 2,097,152 |
| 55. 1,000,000,000 or 10^9 | | 56. $\frac{1}{4}$ |
| 57. $\frac{1}{8}$ | 58. $\frac{1}{36}$ | 59. 16 |

Answers for Lesson 7-4 Exercises (cont.)

60. $-\frac{1}{81}$

61. 10

62. about 78%, 61%, 37%

63. A

64. 768

65. $x^{\frac{1}{2}}$

66. $y^{\frac{4}{5}}$

67. $x^{\frac{1}{2}}$

68. $y^{\frac{1}{2}}$

69. $x^{\frac{1}{6}}y^{\frac{1}{4}}$

70. $\frac{1}{x^{\frac{1}{4}}y^{\frac{5}{6}}}$

71. $\frac{4x^7}{9y^9}$

72. $\frac{9y^8}{4x^6}$

73. $\frac{1}{x^{\frac{13}{36}}}$

74. $\frac{1}{x^{\frac{7}{24}}}$

75. $\frac{1}{x^{\frac{1}{3}}}$

76. $\frac{1}{(xy)^{\frac{1}{2}}}$

77. The cube root of -64 is -4 , which equals $-(64)^{\frac{1}{3}}$.
The square root of -64 is not a real number, but
 $-(64)^{\frac{1}{2}} = -\sqrt{64} = -8$.

78. The exponent $\frac{1}{2}$ applies only to the 5, not to the 25.

79. Answers may vary. Sample: $4 - 5^{\frac{1}{2}}, 2(4 - 5^{\frac{1}{2}}), \frac{4 - 5^{\frac{1}{2}}}{2}$;
no, if a is rational and the product is rational,
then $4 + 5^{\frac{1}{2}}$, must be rational.

80. a. $\sqrt{x} \cdot \sqrt{x} \cdot \sqrt{x} \cdot \sqrt{x} = x \cdot x = x^2$, so $\sqrt[4]{x^2} = \sqrt{x}$

b. $\sqrt[4]{x^2} = (x^2)^{\frac{1}{4}} = x^{\frac{2}{4}} = x^{\frac{1}{2}} = \sqrt{x}$

81. 49

82. 9

83. $x^{2\pi}$

84. 1

85. $3\sqrt{2}$

86. 9

87. 33.13 mph