

Section 2.3 Calculator Exercises

1. 2

3. 84

5. 49

7. 4

9. 0.5

Section 2.3 Practice Exercises

1. (a) quotient; product; sum; difference

(b) base; exponent; power

(c) 8^2 (d) p^4

(e) radical; square

(f) order of operations

3. 56

5. -19

7. $\frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} \cdot \frac{1}{6} = \left(\frac{1}{6}\right)^4$

9. $a \cdot a \cdot a \cdot b \cdot b = a^3 b^2$

11. $(5c)^5$ 13. (a) x

(b) Yes, 1

15. $x^3 = x \cdot x \cdot x$

17. $(2b)^3 = 2b \cdot 2b \cdot 2b$

19. $10y^5 = 10 \cdot y \cdot y \cdot y \cdot y \cdot y$

21. $2wz^2 = 2 \cdot w \cdot z \cdot z$

23. $6^2 = 6 \cdot 6 = 36$

25. $\left(\frac{1}{7}\right)^2 = \frac{1}{7} \cdot \frac{1}{7} = \frac{1}{49}$

27. $(0.2)^3 = 0.2 \cdot 0.2 \cdot 0.2 = 0.008$

29. $2^6 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 64$

31. $\sqrt{81} = 9$

33. $\sqrt{4} = 2$

35. $\sqrt{144} = 12$

37. $\sqrt{16} = 4$

39. $\sqrt{\frac{1}{9}} = \sqrt{\left(\frac{1}{3}\right)^2} = \frac{1}{3}$

41. $\sqrt{\frac{25}{81}} = \sqrt{\left(\frac{5}{9}\right)^2} = \frac{5}{9}$

43. $8 + 2 \cdot 6 = 8 + 12 = 20$

45. $(8 + 2)6 = 10 \cdot 6 = 60$

47. $4 + 2 \div 2 \cdot 3 + 1 = 4 + 3 + 1 = 8$

49. $81 - 4 \cdot 3 + 3^2 = 81 - 12 + 9 = 78$

51. $\frac{1}{4} \cdot \frac{2}{3} - \frac{1}{6} = \frac{1}{2} \cdot \frac{2^1}{3} - \frac{1}{6}$
 $= \frac{1}{6} - \frac{1}{6} = 0$

53. $\left(\frac{11}{6} - \frac{3}{8}\right) \cdot \frac{4}{5} = \left(\frac{44}{24} - \frac{9}{24}\right) \cdot \frac{4}{5}$
 $= \frac{\cancel{35}^7}{24_6} \cdot \frac{\cancel{4}}{\cancel{5}} = \frac{7}{6}$

55. $3[5 + 2(8 - 3)] = 3[5 + 2(5)] = 45$

57. $10 + |-6| = 10 + 6 = 16$

59. $21 - |8 - 2| = 21 - 6 = 15$

61. $2^2 + \sqrt{9} \cdot 5 = 4 + 15 = 19$

63. $3 \cdot 5^2 = 3 \cdot 25 = 75$

65. $\sqrt{9+16} - 2 = \sqrt{25} - 2 = 5 - 2 = 3$

67. $[4^2 \cdot (6-4) \div 8] + [7 \cdot (8-3)]$
 $= [16 \cdot 2 \div 8] + [7 \cdot 5]$
 $= 4 + 35$
 $= 39$

$$\begin{aligned}
 69. \quad & 48 - 13 \times 3 + [(50 - 7 \times 5) + 2] \\
 & = 48 - 39 + [15 + 2] \\
 & = 26
 \end{aligned}$$

$$\begin{aligned}
 71. \quad & \frac{7 + 3(8 - 2)}{(7 + 3)(8 - 2)} \\
 & = \frac{7 + 18}{(10)(6)} \\
 & = \frac{25}{60} \\
 & = \frac{5}{12}
 \end{aligned}$$

$$\begin{aligned}
 73. \quad & \frac{15 - 5(3 \cdot 2 - 4)}{10 - 2(4 \cdot 5 - 16)} \\
 & = \frac{15 - 5(2)}{10 - 2(4)} \\
 & = \frac{15 - 10}{10 - 8} \\
 & = \frac{5}{2}
 \end{aligned}$$

75. (a) debt-to-income ratio

$$\begin{aligned}
 & = \frac{\text{payments}}{\text{take-home pay}} \\
 & = \frac{52 + 20 + 65 + 43}{1500} \\
 & = \frac{180}{1500} \\
 & = 0.12
 \end{aligned}$$

(b) yes; $0.12 < 0.20$

$$\begin{aligned}
 77. \quad & A = lw = 360 \cdot 160 \\
 & = 57,600 \text{ ft}^2
 \end{aligned}$$

$$\begin{aligned}
 79. \quad & A = \frac{1}{2}(b_1 + b_2)h \\
 & = \frac{1}{2}(6 + 8)3 \\
 & = 21 \text{ ft}^2
 \end{aligned}$$

81. $3x$

83. $\frac{x}{7}$ or $x \div 7$

85. $2 - a$

87. $2y + x$

89. $4(x + 12)$

91. $3 - Q$

$$\begin{aligned}
 93. \quad & 2y^3 = 2(\quad)^3 \\
 & = 2(2)^3 \\
 & = 2(8) = 16
 \end{aligned}$$

95. $|z - 8| = |(\quad) - 8| = |(10) - 8| = |2| = 2$

$$\begin{aligned}
 97. \quad & 5\sqrt{x} = 5\sqrt{(\quad)} \\
 & = 5\sqrt{(4)} = 5(2) = 10
 \end{aligned}$$

$$\begin{aligned}
 99. \quad & yz - x = (\quad)(\quad) - (\quad) \\
 & = (2)(10) - (4) \\
 & = 20 - 4 \\
 & = 16
 \end{aligned}$$

$$\begin{aligned}
 101. \quad & \frac{\sqrt{\frac{1}{9} + \frac{2}{3}}}{\sqrt{\frac{4}{25} + \frac{3}{5}}} = \frac{\frac{1}{3} + \frac{2}{3}}{\frac{2}{5} + \frac{3}{5}} = \frac{\frac{3}{3}}{\frac{5}{5}} \\
 & = \frac{1}{1} = 1
 \end{aligned}$$

$$\begin{aligned}
 103. \quad & \frac{|-2|}{|-10| - |2|} = \frac{2}{10 - 2} \\
 & = \frac{2}{8} \\
 & = \frac{1}{4}
 \end{aligned}$$

105. (a) $36 \div 4 \cdot 3 = 9 \cdot 3 = 27$

Division must be performed before multiplication.

(b) $36 - 4 + 3 = 32 + 3 = 35$

Subtraction must be performed before addition.

107. This is acceptable, provided division and multiplication are performed in order from left to right, and subtraction and addition are performed in order from left to right.