

CHAPTER 2 § 3 REVIEW ANSWER KEY

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2. $(-2.5) + (-6.1) = -8.6$

3. $\frac{14 \times 2}{7 \times 2} + \left(-\frac{15}{14}\right) = \frac{28}{14} + \left(-\frac{15}{14}\right) = \frac{13}{14}$

4. $(-40.25) + (-15.75) + 20.75 = \35.25 is still owed to his father.

5. $\frac{18}{7} - \left(-\frac{5}{7}\right) = \frac{18}{7} + \frac{5}{7} = \frac{23}{7} = 3\frac{2}{7}$

6. $-4\frac{2}{3} - 2\frac{1}{2} = -\frac{14 \times 2}{3 \times 2} - \frac{5 \times 3}{2 \times 3} = -\frac{28}{6} - \frac{15}{6} = -\frac{43}{6} = -7\frac{1}{6}$

7. $\left(-\frac{3}{2}\right)\left(-\frac{5}{4}\right) = \frac{15}{8} = 1\frac{7}{8}$

8. $\left(-4\frac{1}{3}\right)\left(1\frac{4}{5}\right) = \left(-\frac{13}{3}\right)\left(\frac{9}{5}\right) = -\frac{39}{5} = -7\frac{4}{5}$

9. $\frac{11}{12} \div \left(-\frac{5}{6}\right) = \frac{11}{12} \times -\frac{6}{5} = -\frac{11}{10} = -1\frac{1}{10}$

10. $\frac{1}{2} \div \left(-2\frac{3}{5}\right) = \frac{3}{2} \div -\frac{13}{5} = \frac{3}{2} \times -\frac{5}{13} = -\frac{15}{26}$

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11. $\frac{5}{6} \div \left(\frac{4}{3} + \frac{1}{6}\right) = \frac{5}{6} \div \left(\frac{8}{6} + \frac{1}{6}\right) = \frac{5}{6} \times \frac{6}{9} = \frac{30}{54} = \frac{5}{9}$

12. $\frac{5}{6} - \frac{2}{3} \times \frac{3}{4} + \frac{5}{6} = \frac{5}{6} - \frac{6}{12} + \frac{5}{6} = \frac{5}{6} - \frac{3}{6} + \frac{5}{6} = \frac{7}{6} = 1\frac{1}{6}$

$$13. 7^2 = 7 \times 7 = 49 \text{ Squares}$$

$$14. (-5) \text{ is the base of } -(-5)^3$$

$$15. 7^5 = 7 \times 7 \times 7 \times 7 \times 7$$

$$16. (-4)^6$$

$$17. 6^5 = 7776$$

$$18. -4^4 = -256$$

$$19. (-5)^7 = -78125$$

$$20. 10 \text{ } \cancel{000} \text{ } 000 = 10^7$$

$$21. 1 \text{ } 000 \text{ } \cancel{000} = 10^6$$

$$22. -8^0 = -1$$

$$23. (-13)^0 = 1$$

$$24. (-10^3)^0 = 1$$

$$25. (5 \times 10^4) + (8 \times 10^1) + (9 \times 10^2) + (6 \times 10^0)$$

50000 + 80 + 900 + 6

$$= 50986$$

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26. i) 5647

ii) 5645

iii) 5208

iv) 5780 ←

27. $4 - 6^2 = 4 - 36 = -32$

28. $(-3 \times 6)^2 = (-18)^2 = 324$

29. $6^5 - 3^3 = 7776 - 27 = 7749$

30. $2^3 - (-3)^3 = 8 - (-27) = 8 + 27 = 35$

31. $(5^3 - 4^2)^0 - (6^2 - 8^0) = 1 - (36 - 1) = 1 - 35 = -34$

32. $(3+4)^2 - (2-4)^3 = 7^2 - (-2)^3 = 49 - (-8) = 49 + 8 = 57$

33. $5^3 \times 5^4 = 5^7$

34. $(-7)^7 \times (-7)^3 = (-7)^{10}$

35. $\frac{6^{10}}{6^5} = 6^5$

36. $7^9 \times 7^3 \div 7^6 = 7^{12} \div 7^6 = 7^6$

37. $\frac{(-5)^9 \times (-5)^6}{(-5)^3} = \frac{(-5)^{15}}{(-5)^3} = (-5)^{12}$

38. $\frac{(5)^8 \times (5)^6}{(5)^{12}} = \frac{(5)^{14}}{(5)^{12}} = (5)^2 = 25$

39. $[(-4) \times (-5)]^3 = (-4)^3 \times (-5)^3$

40. $\left(\frac{11}{9}\right)^5 = \frac{11^5}{9^5}$ or $11^5 \div 9^5$

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41. $-(7^2)^3 = -7^6$ $(-4)^3 \times 5^3 = -64 \times 125 = -8000$

42. $[(-4) \times (5)]^3 = [-20]^3 = -8000$

43. $[(-5)^0]^3 = (-5)^0 = 1$

44. (i) $[(-5)^2]^7 = (-5)^{14} = +ve \text{ value}$

ii) $[-(-5)^2]^7 = -(-5)^{14} = -ve \text{ value}$

iii) $-(5^2)^7 = -5^{14} = -ve \text{ value}$

(iv) $-[-(-5)^2]^7 = -[-(-5)^{14}] = +ve \text{ value}$

45. $(8)^7$ 8 = base 7 = exponent

46. $(-5)^6$ -5 = base 6 = exponent

47. (i) $(5)^3 \rightarrow +ve$

ii) $(-7)^6 \rightarrow +ve$

iii) $(-3)^7 \rightarrow -ve$

iv) $-(6)^3 \rightarrow -ve$

48. 6^7 or 7^6 , $(6^7) = 279,936 > 7^6 = 117,649$

POWER	BASE	EXPONENT	REPEATED MULTIPLICATION
5^3	5	3	$5 \times 5 \times 5$
3^4	3	4	$3 \times 3 \times 3 \times 3$
7^3	7	3	$7 \times 7 \times 7$
6^5	6	5	$6 \times 6 \times 6 \times 6 \times 6$

50. $4865 = (4 \times 10^3) + (8 \times 10^2) + (6 \times 10^1) + (5 \times 10^0)$

51. $805076 = (8 \times 10^5) + (5 \times 10^3) + (7 \times 10^1) + (6 \times 10^0)$

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$$52. (2 \times 10^4) + (5 \times 10^2) = 2050$$

$$53. 6^2 - [12 \div (-2)]^3 = 6^2 - [-6]^3 = 36 - (-216) = 252$$

$$54. \frac{5^3 \times (2+4)^2 \times 6(-9)^0}{-(4)^0 \times 6^3 \times (7-2)^2} = \frac{125 \times 36 \times 6}{-1 \times 216 \times 25} = \frac{27000}{-5400} = -5$$

$$55. 3^3 \times 3^4 - 3^5 \times 3 = 3^7 - 3^6 = 2187 - 729 = 1458$$

$$56. (-2)^6 \div (-2)^5 - (-3)^5 \div (-3)^0 = (-2) - (-3)^5 = (-2) + 243 = 241$$

$$57. (-2)^4 \times (-2)^6 \div (-2)^6 = (-2)^{10} \div (-2)^6 = (-2)^4 = 16$$

$$58. \frac{(-2)^6 \times (-2)^2}{(-2)^3 \times (-2)^0} = \frac{(-2)^8}{(-2)^3} = (-2)^5$$

$$59. \frac{(2^4)^3 \times (2^2)^4}{(2^4 \times 2^4)^2} = \frac{2^{12} \times 2^8}{2^{16}} = \frac{2^{20}}{2^{16}} = 2^4 = 16$$

$$60. [(-2)^4 \times (-2)^3] - [(-3)^4 \div (-3)^3] = [(-2)^7] - [(-3)] \\ = -128 + 3 = -125$$

$$61. 3.\bar{3} < 3.\bar{3}$$

$$62. -\frac{3}{4}, -\frac{7}{9}, -\frac{5}{6}, -\frac{2}{3} \quad -0.83, -0.7\bar{7}, 0.75, -0.\bar{66} \\ -0.75 \quad -0.7\bar{7} \quad -0.83 \quad -0.\bar{66}$$

$$63. \frac{5}{3} + \left(-\frac{7}{6}\right) = \frac{10}{6} - \frac{7}{6} = \frac{3}{6} = \frac{1}{2}$$

$$64. -\frac{3}{2} + \frac{2}{5} = -\frac{15}{10} + \frac{4}{10} = -\frac{11}{10} = -1\frac{1}{10}$$

$$65. -4\frac{3}{4} + \left(-1\frac{3}{5}\right) = -\frac{19}{4} - \frac{8}{5} = -\frac{95}{20} - \frac{32}{20} = -\frac{127}{20} = -6\frac{7}{20}$$

$$66. 6\frac{1}{2} - \left(-5\frac{1}{3}\right) = \frac{13}{2} + \frac{16}{3} = \frac{39}{6} + \frac{32}{6} = \frac{71}{6} = 11\frac{5}{6}$$

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$$67. \frac{11}{2} - \left(-\frac{7}{5}\right) + \left(-\frac{13}{4}\right) = \frac{110}{20} + \frac{28}{20} - \frac{65}{20} = \frac{73}{20} = 3\frac{13}{20}$$

$$68. 4 \times \left(-\frac{7}{3}\right) = \frac{4}{1} \times -\frac{7}{3} = -\frac{28}{3} = -9\frac{1}{3}$$

$$69. \left(\frac{10}{7}\right)\left(-\frac{4}{3}\right) = -\frac{40}{21} = -1\frac{19}{21}$$

$$70. \left(3\frac{1}{2}\right)\left(-3\frac{2}{3}\right) = \left(\frac{7}{2}\right)\left(-\frac{11}{3}\right) = -\frac{77}{6} = -12\frac{5}{6}$$

$$71. \left(-8\frac{2}{5}\right) \div \left(-1\frac{4}{5}\right) = \left(-\frac{42}{5}\right) \div \left(-\frac{9}{5}\right) = \left(-\frac{42}{5}\right) \times \left(-\frac{5}{9}\right) = \frac{210}{45} = 4\frac{30}{45}$$

$$72. \frac{2}{3} - \left(-\frac{7}{12}\right)\left(-\frac{4}{21}\right) = \frac{2}{3} - \left(+\frac{28}{252}\right) = \frac{168}{252} - \frac{28}{252} = \frac{140}{252} = \frac{5}{9} = 4\frac{2}{3}$$

$$73. 1\frac{7}{8} \times 2\frac{2}{5} - 1\frac{3}{4} = \frac{15}{8} \times \frac{12}{5} - \frac{7}{4} = \frac{180}{40} - \frac{7}{4} = \frac{180}{40} - \frac{70}{40} = \frac{110}{40} = 2\frac{3}{4}$$

$$74. \left[\frac{1}{3} + \frac{3}{5}\right] \div \left[\left(-\frac{5}{9}\right) \times \frac{12}{25}\right] = \left[\frac{5}{15} + \frac{9}{15}\right] \div \left[\frac{-60}{225}\right]$$

$$= \left[\frac{14}{15}\right] \div \left[\frac{-60}{225}\right] = \frac{14}{15} \times -\frac{225}{60} = -\frac{3150}{900} = -3\frac{1}{2}$$

$$75. \left[\frac{8}{9} \times \left(-\frac{5}{12}\right)\right] \div \left(-\frac{4}{9}\right) = \left[\frac{-40}{108}\right] \div \left(-\frac{4}{9}\right) = -\frac{40}{108} \times -\frac{9}{4} = \frac{360}{432} = \frac{5}{6}$$

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$$76. 2^4 \times 3^3 \times 5^2 = 16 \times 27 \times 25 = 10800$$

$$77. (7)^5 + (-5)^4 - (6)^2 = 16807 + 625 - 36 = 17396$$

$$78. 5(5)^4 - 3(-3)^3 = 5 \times 625 - 3 \times (-27) = 3125 + 81 = 3206$$

$$79. -2\frac{3}{4} - \left(-4\frac{1}{3}\right) - 2\frac{5}{6} = -\frac{11}{4} + \frac{13}{3} - \frac{17}{6} = -\frac{33}{12} + \frac{52}{12} - \frac{34}{12} = \frac{-15}{12} = -1\frac{1}{4}$$

$$80. \left[\frac{5}{7} \times \left(-3\frac{5}{6}\right)\right] \div \left[\left(-2\frac{1}{10}\right) \div \frac{7}{8}\right] = \left[\frac{12}{7} \times -\frac{23}{6}\right] \div \left[\frac{-21}{10} \div \frac{7}{8}\right]$$

$$= \left[\frac{-46}{7}\right] \div \left[\frac{-21}{10} \times \frac{8}{7}\right] = \frac{-46}{7} \div \frac{-12}{5} = \frac{-46}{7} \times \frac{5}{12} = \frac{115}{42}$$