

Answers for Lesson 2-1, pp. 54–56 Exercises

1. GCF
2. 1, 2, 3, 6, 9, 18, 27, 54
3. No; the ones digit is not 0, 2, 4, 6, or 8.
4. No; the ones digit is not 0 or 5.
5. Yes; the sum of the digits is 6, which is divisible by 3.
6. Elliot's, all factors are prime.
7. composite; $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$
8. composite; $5 \cdot 5$
9. prime
10. prime
11. composite; $3 \cdot 3 \cdot 11$
12. composite; $2 \cdot 5 \cdot 5 \cdot 5$
13. prime
14. composite; $3 \cdot 3 \cdot 37$
15. $2 \cdot 2 \cdot 5$
16. $2 \cdot 2 \cdot 3$
17. $2 \cdot 2 \cdot 2 \cdot 2$
18. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 5 \cdot 5$
19. $3 \cdot 3 \cdot 3$
20. $2 \cdot 13$
21. $2 \cdot 2 \cdot 2 \cdot 7$
22. $3 \cdot 13$
23. 6
24. 3
25. 6
26. 21
27. 26
28. 2
29. 4
30. 10
31. 7
32. 9
33. 15
34. 16
35. 22
36. 31
37. 2
38. 19
39. 25
40. 5 m by 5 m
41. 36
42. Regardless of the method used, the prime factorization of a number consists of only prime numbers.
43. 12
44. 11
45. 9
46. 12
47. Answers may vary. Samples are given. $7 + 53$; $13 + 47$;
 $17 + 43$; $19 + 41$;
 $23 + 37$; $29 + 31$

Answers for Lesson 2-1, pp. 54–56 Exercises (cont.)

48. a. 6 classes

**b. 20 paintbrushes, 13 boxes of markers, 4 packs of paper,
9 watercolors**

49. It is also divisible by 2.

50. 1; the factors of any prime number are 1 and the number.

51. 7, 17, and 19 are prime. 52. 16; 1, 2, 4, 8, 16

53. 1 ft 54. \$10.60 55. 74

56. 17.3 57. -210 58. 97.2

Answers for Lesson 2-2, pp. 59–60 Exercises

1. $\frac{123}{1}$
2. Yes; it increased from .441 to .457.
3. D
4. C
5. A
6. B
7. $\frac{3}{4}$
8. $\frac{3}{4}$
9. $-\frac{2}{3}$
10. $-\frac{2}{9}$
11. $\frac{1}{5}$
12. $\frac{2}{9}$
13. $-\frac{2}{7}$
14. $\frac{1}{5}$
15. 0.667
16. 0.320
17. 1.063
18. 0.941
19. -1.857
20. 0.200
21. 0.385
22. -0.800
23. .333; .250
24. $1\frac{2}{5}$
25. $\frac{33}{100}$
26. $\frac{6}{25}$
27. $4\frac{11}{25}$
28. $2\frac{4}{5}$
29. $\frac{1}{20}$
30. $\frac{1}{200}$
31. $7\frac{8}{25}$
32. They have the same record.
33. $\frac{219}{1,000}$
34. 0.25; $0.\overline{3}$; $0.1\overline{6}$; 0.25
35. $-\frac{2}{5}$
36. .960
37. Answers may vary. Sample: He cannot forget just $\frac{1}{2}$ of a birthday.
38. $\frac{1}{101}$
39. A
40. J
41. A
42. -25
43. 9
44. -50
45. 34

Answers for Lesson 2-3, pp. 64–65 Exercises

1. The LCM is the smallest number that is a multiple of both numbers.
2. greater; $\frac{15}{28} > \frac{14}{28}$
3. $\frac{2}{9}$
4. $\frac{5}{7}$
5. $\frac{4}{5}$
6. -0.4
7. $\frac{4}{25}$
8. $\frac{2}{5}$
9. $-\frac{5}{14}$
10. $\frac{7}{8}$
11. $\frac{5}{12}$
12. equal
13. $-\frac{14}{33}$
14. $-\frac{9}{20}$
15. men; $\frac{13}{108} > \frac{23}{233}$
16. $\frac{9}{13}$
17. $\frac{19}{11}$
18. $-\frac{41}{30}$
19. $-\frac{17}{27}$
20. $-3.13, \frac{10}{13}, \frac{15}{19}, 0.8$
21. $0.03, \frac{3}{10}, 0.33, \frac{1}{3}$
22. $-4, -3.9, -\frac{2}{9}, \frac{2}{11}$
23. $\frac{5}{7}, \frac{5}{6}, \frac{5}{3}, \frac{5}{2}$
24. A
25. Greater; check student's explanation.
26. $<$
27. $=$
28. $>$
29. $<$
30. Answers may vary. Sample: Change the fraction to a decimal and compare it to 0.5.
31. your friend
32. $\frac{5}{8}, \frac{5}{7}, \frac{5}{4}, \frac{5}{3}$; when the numerators are the same, the larger the denominator is, the smaller the value.
33. Maria
34. 3
35. D
36. J
37. C
38. $9r - 63$
39. $48 - 8b$
40. $10t - 40$

Answers for Lesson 2-4, pp. 68–69 Exercises

1. 10 2. 15 3. 28
4. $-\frac{1}{4}$ 5. $\frac{1}{2}$ 6. $6\frac{2}{15}$
7. Positive; $51 > 50$, so $\frac{1}{51} < \frac{1}{50}$, and $\frac{1}{50} - \frac{1}{51}$ is positive.
8. $\frac{17}{21}$ 9. $1\frac{3}{40}$ 10. $-\frac{24}{35}$ 11. $1\frac{1}{15}$
12. $\frac{19}{90}$ 13. $-\frac{17}{18}$ 14. $\frac{19}{36}$ 15. $\frac{4}{9}$
16. $\frac{4}{21}$ 17. $\frac{1}{10}$ 18. $\frac{1}{30}$ 19. $-\frac{13}{30}$
20. $4\frac{1}{2}$ 21. $3\frac{1}{6}$ 22. $1\frac{3}{20}$ 23. $-6\frac{3}{8}$
24. $-10\frac{11}{12}$ 25. $3\frac{1}{6}$ 26. $-8\frac{3}{20}$
27. $19\frac{2}{15}$ 28. $\frac{9}{10}$ in. 29. $\frac{2}{5}$
30. 3 in. 31. $2\frac{1}{2}$ 32. $-2\frac{1}{2}$
33. $-\frac{1}{8}$ 34. $\frac{3}{4}$ 35. 8
36. $1\frac{5}{6}$ 37. $\frac{8}{21}$ 38. $2\frac{7}{12}$ in.
39. Answers may vary. Sample: $\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$; $\frac{1}{2+3} = \frac{1}{5}$
40. You can rewrite all of the fractions using the LCD. Then add the integers together and add the fractions together. Simplify.
41. $a - \frac{2}{3}$ 42. C 43. H 44. B
45. $\frac{1}{125}$, 0.8, 0.808, $\frac{22}{25}$ 46. $-2\frac{33}{50}$, -2.6, $-2\frac{3}{50}$, -2.006

Answers for Lesson 2-5, pp. 74–76 Exercises

1. multiplicative inverse

- | | | | |
|--|---------------------|------------------------|-----------------------|
| 2. $x \approx 3$ | 3. 1 | 4. $-\frac{2}{7}$ | 5. -5 |
| 6. $\frac{2}{5}$ | 7. $-\frac{3}{5}$ | 8. $3\frac{2}{5}$ | 9. $-\frac{5}{24}$ |
| 10. $-\frac{1}{3}$ | 11. $-\frac{2}{3}$ | 12. $6\frac{3}{4}$ | 13. $8\frac{3}{4}$ |
| 14. -11 | 15. $-\frac{2}{3}$ | 16. $-5\frac{1}{3}$ | 17. 17 |
| 18. $\frac{49}{81}$ | 19. $\frac{1}{101}$ | 20. -33 | 21. $-\frac{3}{4}$ |
| 22. $-\frac{2}{5}$ | 23. $\frac{2}{9}$ | 24. 22 laps | 25. $1\frac{1}{3}$ lb |
| 26. 25 | 27. $\frac{3}{5}$ | 28. $2\frac{2}{3}$ | 29. $-3\frac{3}{4}$ |
| 30. $-3\frac{1}{4}$ | | 31. -19 | |
| 32. $50\frac{4}{5} \div 3\frac{1}{10}$; 16 | | 33. $10\frac{7}{8}$ lb | |
| 34. 9; check students' work. | | 35. 6 | |
| 36. $-\frac{1}{6}$ | | 37. 6 | |
| 38. a. 22 cups
b. 6 pies | | | |
| 39. Dividing by a fraction is the same as multiplying by its reciprocal. The reciprocal of a number less than 1 is a number greater than 1, so the answer will be greater. | | | |
| 40. Answers may vary. Sample: Dividing by 4 will give an answer that is smaller than 10. Dividing by $\frac{1}{4}$ will give an answer greater than 10 because it is the same as multiplying by 4. | | | |
| 41. $10\frac{5}{8}$ yd | 42. 9 nickels | 43. C | 44. J |
| 45. D | 46. -43 | 47. 7 | 48. 0 |

Answers for Lesson 2-6, pp. 83–84 Exercises

- ℓ is the length; w is the width.
- Solve the formula $d = rt$ for r by dividing both sides of the equation by t .
- $\frac{7}{8} \text{ cm}^2$
- 35 in.^2
- Area of a trapezoid; h is the height; b_1 and b_2 are the bases.
- Distance formula; d is the distance, r is the rate, and t is the time.
- Perimeter of a square; s is the side length.
- 29.93 m^2
- 24 m^2
- 81 cm^2
- $12\frac{1}{2} \text{ in.}^2$
- 0.25 cm^2
- about 108 mi/h
- $h = \frac{v}{\ell w}$
- $t = \frac{d}{r}$
- $r = \frac{C}{2\pi}$
- $C = K - 273$
- $h = \frac{3v}{B}$
- $g = W + 25$
- 45 seconds
- 24 mi/h
- $2\frac{2}{3} \text{ h}$
- $\frac{9}{\pi} \text{ ft}$
- You use properties of equality; instead of getting a number for an answer, you get an equation.
- 2,220 ft
 - The difference between the dew point and air temperature will grow larger, and the height of the base of the cloud will increase. Examples:
 $H = 222(80 - 70) = 2,220 \text{ ft}$
 $H = 222(80 - 60) = 4,440 \text{ ft}$
- 3.2 cm
- C
- G
- B
- 16
- 17
- 6

Answers for Lesson 2-7, pp. 88–89 Exercises

1. C 2. A 3. B
4. Yes; $x^2 \cdot x^3 = x \cdot x \cdot x \cdot x \cdot x$, which is x^5 .
5. $9^3 \cdot x$ 6. 4^5 7. z^6 8. -64
9. 64 10. -7 11. $4^2 \cdot 8^4$ 12. $6^3 \cdot 11$
13. $5^2 \cdot x^3 \cdot y$ 14. $9 \cdot a^2 \cdot b \cdot c^3$ 15. $m^2 \cdot p^3$
16. $7^2 \cdot t^2 \cdot w$ 17. -32 18. -32
19. -216 20. -216 21. -225 22. 225
23. 81 24. 81 25. 57 26. 51
27. 41 28. 23 29. 8 30. -24
31. $3,391.2 \text{ cm}^3$ 32. 214 square units 33. -360
34. 148 35. 2 36. 405
37. 112 ft 38. 256 ft
39. No; the product of any number and itself is always positive.
For example, $3^2 = 3 \cdot 3 = 9$, and $(-3)^2 = -3 \cdot -3 = 9$.
40. 226.08 cubic units
41. yes; when $a = 0$ or $b = 0$, and when $a = 1$
42. Sample answer: $5 \cdot 5 \cdot 5 - 5 \cdot 5$
43. D
44. F 45. C 46. $\frac{3}{10}$
47. $6\frac{9}{25}$ 48. $\frac{3}{1000}$ 49. $\frac{9}{20}$

Answers for Lesson 2-8, pp. 94–95 Exercises

1. 1
2. When you move the decimal point 6 places to the right, it takes 2 moves to get to the right of 0.55.
3. greater than 0, because the number remains positive even though the decimal point moves 5 places to the left
4. Yes; the decimal point in each number needs to move 2 places to the left.
5. 3,200
6. 50,800
7. 410,000,000
8. 7,145,000,000
9. 260,000 lb
10. 4.8×10^3
11. 1.72×10^4
12. 1.8×10^5
13. 3.43502×10^5
14. $\$2.5 \times 10^{10}$
15. 0.0025
16. 0.0000512
17. 0.0105
18. 0.000000314
19. 0.00935 cm
20. 5.81×10^{-3}
21. 1.05×10^{-3}
22. 7.8×10^{-6}
23. 2.7×10^{-5}
24. 1.32×10^{-7}
25. 9×10^{-9}
26. 1.3×10^8
27. 8
28. 5.6194
29. -6
30. 4.802
31. 3.92×10^8
32. because 492 is not between 1 and 10
33. 1.5×10^6 km
34. 3×10^{100}
35. a. 2,750,000 calories
b. 2.75×10^6 calories
36. It increases by two.
37. 9×10^{28}
38. C
39. G
40. D
41. -135
42. 63
43. -18

Chapter 2 Test

Resources

- ExamView Assessment Suite CD-ROM
 - Ch. 2 Ready-Made Test
 - Make your own Ch. 2 test
- MindPoint Quiz Show CD-ROM
 - Chapter 2 Review

Differentiated Instruction

All One Teaching Resources

- Below Level Chapter 2 Test **L2**
- Chapter 2 Test **L3**
- Chapter 2 Alternative Assessment **L4**

Spanish Assessment Resources

- Below Level Chapter 2 Test **L2**
- Chapter 2 Test **L3**
- Chapter 2 Alternative Assessment **L4**

ExamView Assessment Suite CD-ROM

- Special Needs Test **L1**
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Chapter 2 Test

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Find the GCF of each pair of numbers.

1. 12, 16 4 2. 32, 48 16 3. 144, 192 48

Use a factor tree to find the prime factorization of each number.

4. 90 5. 432 6. 47 7. 280
 $2 \cdot 3^2 \cdot 5$ $2^4 \cdot 3^3$ $1 \cdot 47$ $2^3 \cdot 5 \cdot 7$

Compare. Write $<$, $>$, or $=$.

8. $\frac{3}{8} < 0.4$ 9. $-\frac{1}{2} < -\frac{5}{12}$
 10. $-0.89 > -\frac{9}{10}$ 11. $\frac{4}{9} = 0.\overline{4}$

Write each fraction as a decimal. Round to three decimal places.

12. $\frac{2}{5} = 0.400$ 13. $-\frac{27}{8} = -3.375$ 14. $\frac{19}{15} = 1.267$ 15. $\frac{7}{11} = 0.636$

Write each decimal as a fraction or mixed number in simplest form.

16. 0.64 17. $0.\overline{6}$ 18. 0.471 19. $0.\overline{282}$
 $\frac{16}{25}$ $\frac{2}{3}$ $\frac{471}{1,000}$ $\frac{94}{333}$

20. **Sports** Each time a ball hits the ground, it bounces back to $\frac{2}{3}$ of its previous height. On its second bounce, the ball reaches a height of 12 in. What was the ball's original height? ^{27 in.}

21. **Running** A runner jogs on a $\frac{1}{4}$ -mi track. How many miles does the runner jog in 18 laps? $4\frac{1}{2}$ mi

Simplify each expression. Write the answer as a fraction or mixed number in simplest form.

22. $-\frac{3}{5} - \frac{1}{3} = -\frac{14}{15}$ 23. $\frac{1}{12} - \frac{5}{12} = -\frac{1}{3}$
 24. $\frac{5}{12} + \frac{5}{9} = \frac{35}{36}$ 25. $3\frac{1}{4} - 2\frac{2}{3} = \frac{7}{12}$
 26. $\frac{11}{12} - \frac{3}{4} = \frac{1}{6}$ 27. $2\frac{1}{5} - 3\frac{1}{3} = -1\frac{2}{15}$
 28. $-2\frac{3}{4} \cdot \frac{8}{9} = -2\frac{4}{9}$ 29. $\frac{5}{8} \div (-\frac{1}{2}) = -1\frac{1}{4}$
 30. $-\frac{2}{5} \cdot \frac{7}{8} = -\frac{7}{20}$ 31. $-1\frac{1}{2} \div \frac{5}{12} = -3\frac{3}{5}$
 32. $1\frac{1}{4} \cdot -\frac{5}{9} = -\frac{25}{36}$ 33. $\frac{21}{50} \div \frac{21}{50} = 1$

100 Chapter 2 Chapter Test

34. **Answers may vary. Sample:** The exponent 2 only applies to the number 4, not -4.

55. $6 \times 10^{-5}; \frac{6}{100,000} > \frac{5}{1,000,000}$

34. **Writing in Math** Write what you would say to a classmate who asked you to explain why -4^2 is equal to -16 . See margin.

Simplify each expression.

35. $(-2)^4 = 16$ 36. $-2^4 = -16$ 37. $3^3 + 5^2 = 52$
 38. $4^2 \cdot 2 + 8 = 40$ 39. $(9 - 3)^2 = 36$ 40. $22 - 7^2 = -27$

Evaluate each expression for $m = -4$ and $p = 2$.

41. $m^2 - p + 12 = 26$ 42. $2p^2 - (m - 1)^2 = -17$
 43. $3(5m - 1)^2 = 1,323$ 44. $\frac{m^2 + 16}{m^2} = 2$

Write each number in scientific notation.

45. 23,000,000 46. 1,500,000 1.5×10^6
 2.3×10^7
 47. 450,000,000 48. 0.00007 7.0×10^{-5}
 4.5×10^8
 49. 0.0089 50. 0.0401 4.01×10^{-2}
 8.9×10^{-3}

Write each number in standard form.

51. $4.1 \times 10^5 = 410,000$ 52. $8.02 \times 10^4 = 80,200$
 53. $5 \times 10^{-3} = 0.005$ 54. $8.8 \times 10^{-6} = 0.0000088$
 55. **Number Sense** Which number is greater, 5×10^{-6} or 6×10^{-5} ? Explain. See margin.

56. **Aviation** In 2002, Erik Lindbergh, the grandson of aviator Charles Lindbergh, flew 3,756 miles in 17.7 hours. Find his average speed. Use the formula $d = rt$. about 212 mi/h

57. Find the area of a rectangle with a length of $2\frac{1}{4}$ in. and a width of $\frac{7}{8}$ in. Use the formula $A = \ell w$. $1\frac{31}{32}$ in.²

Solve each formula for the variable shown in red.

58. $L = 2\pi rh$ $r = \frac{L}{2\pi h}$ 59. $V = Bh$ $B = \frac{V}{h}$
 60. $S = a + 2b$ 61. $C = -5d + p$
 $a = S - 2b$ $p = C + 5d$

Below Level Chapter Test

Chapter Test

Chapter Test

Chapter 2

In the first number divisible by the second?

1. 623, 5 2. 360, 5 3. 974, 2
 No Yes Yes

Find the GCF of each pair of numbers.

4. 8, 10 5. 24, 44 6. 144, 144
 2 4 6

Identify each number as prime or composite. If the number is composite, use a factor tree to find its prime factorization.

7. 168 8. 51 9. 127
 composite; $2^3 \cdot 3 \cdot 7$ composite; $3 \cdot 17$ prime
 10. 221 11. 91 12. 161
 composite; $13 \cdot 17$ composite; $7 \cdot 13$ prime

Compare. Use $<$, $>$, or $=$.

13. $\frac{3}{8} < 0.4$ 14. $-\frac{1}{2} < -\frac{5}{12}$ 15. $0.\overline{4} = \frac{4}{9}$

Write each fraction as a decimal. Round your answer to three decimal places.

16. $-\frac{2}{5} = -0.400$ 17. $-\frac{27}{8} = -3.375$ 18. $\frac{19}{15} = 1.267$
 -0.727 0.417 3.2

Write each decimal as a fraction or mixed number in simplest form.

19. $0.\overline{6} = \frac{2}{3}$ 20. $0.\overline{471} = \frac{471}{1,000}$ 21. $0.\overline{282} = \frac{94}{333}$
 $\frac{1}{25}$ $\frac{1}{25}$ $\frac{1}{25}$