

Answer Key

1. $\frac{2}{7}$
2. $\frac{3}{8}$
3. $\frac{3}{8}$
4. $\frac{3}{8}$
5. $\frac{3}{8}$
6. $\frac{4}{8}$
7. $\frac{4}{8}$
8. $\frac{4}{8}$
9. $\frac{4}{8}$
10. $\frac{3}{7}$
11. 3
12. 3
13. 10
14. 5
15. 2
16. 7
17. 12
18. 2
19. 3
20. 20
21. 5.855
22. 52.16
23. 9.07
24. 5.898
25. 82.67
26. 2.387
27. 107.33
28. 112.7
29. 3.96
30. 114.3
31. 12
32. 22
33. 6
34. 7
35. 21
36. 8
37. 9
38. 13
39. 14
40. 10
41. $12 + 5 = 17$
 $17 + 7 = 24$
42. $30 \div 3 = 10$
 $10 \times 2 = 20$
 $10 + 3 = 13$ yrs old (Juan)
 $20 + 3 = 23$ yrs old (Bill)
43. 100
44. B
45. $10:10 - 8:40 = 1:30 = 1$ hr & 30 min
46. 998
47. 101
48. $1000 \div 10 = 100$ (pennies) = 1 dollar = \$1.00
49. $16 \div 2 = 8$
 $8 \times 3 = 24$ ft
50. $14 \div 2 = 7$
 $7 - 5 = 2$ inches
51. $2(5 + 10) = 30$ cm
52. $63 \times 7 = 441$
53. $12 \times 7 = 84$
54. $12.50 \times 2 = \$25.00$
55. $62 - 39 = 23$
56. $15 \div 3 = 5$ (Mary)
 $5 \times 2 = 10$ (Susan)
57. $6 - \frac{1}{2} \times 6 = 3$ (Amy's)
 $6 - \frac{1}{3} \times 6 = 4$ (Paul's)
 $3 + 4 = 7$ cans
58. $\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$
 $1 - \frac{3}{4} = 1/4$ (leftover)
59. 8 & 9
60. $82 + 78 + 83 = 243$
 $243 \div 3 = 81$
61. $3 \times 60 = \underline{180 \text{ min}}$
62. $3.5 \times 12 = 42$
 $42 \times (1 - \frac{1}{3}) = 28$
 $\frac{1}{4} \times 28 = 7$ roses
63. $40 - 21 = 19$
 $2040 + 19 = \underline{2059}$
64. $3 \times 12 = 36$
 $36 \div 2 = 18$
 $36 + 18 = \underline{54}$
65. $3 \times 80 = 240$ elves

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66. $25 \div 10 = 2.5$
 $2.5 \times 8 = \underline{20 \text{ pounds}}$
67. $20 \times 2 = 40$
 $40 \times 4 = \$160$
68. $40 \div 5 = 8$ (bags)
 $8 \times 2 = 16$ cookies
69. $30 \div 2 = 15$ (bags)
 $15 \times 5 = 75$ candies
70. C
71. $17 - 5 = 12$
 $\frac{1}{2}(12) = 6$
72. $25 - 10 = 15$
 $2 \times 15 = \$30$
73. $3 \times 12 = 36$
 $2 + 1 = 3$ couples = 6 people
 $36 \div 6 = 6$ cookies
74. $2.9 + .5 + .6 + 1.25 = 5.25$
 $6 - 5.25 = \underline{\$0.75}$
75. $5 \times 12 \times 12 = \underline{720}$
76. $24 \div 4 = 6$
 $24 - 6 = \underline{18 \text{ hours}}$
77. $2 \times 12 = 24$
 $\frac{1}{6} \times 24 = 4$
 $24 - 4 = 20$
 $\frac{1}{4}(20) = 5$ cookies
78. The average of 30, 40, 50, 60, and 70 = 50
79. $15 + 20 = 35$
 $1 - \frac{1}{5} = \frac{4}{5}$
 $35 \times \frac{4}{5} = \underline{\$28}$
80. 12:30 P.M.

Answer Key

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|--------------------------------------|--|--------------------------|---------------------|
| 1. $10 \frac{1}{2}$ | 6. $4 \frac{3}{4}$ | 11. $1 \frac{2}{9}$ | 16. 2 |
| 2. $10 \frac{2}{3}$ | 7. $1 \frac{2}{3}$ | 12. $2 \frac{7}{9}$ | 17. $2 \frac{7}{8}$ |
| 3. $10 \frac{3}{4}$ | 8. $2 \frac{5}{8}$ | 13. 2 | 18. $\frac{2}{3}$ |
| 4. $1 \frac{8}{9}$ | 9. $2 \frac{2}{3}$ | 14. $2 \frac{2}{7}$ | 19. $2 \frac{2}{3}$ |
| 5. $3 \frac{1}{3}$ | 10. $6 \frac{5}{6}$ | 15. $1 \frac{5}{7}$ | 20. $\frac{3}{8}$ |
| 21. $\frac{5}{8}$ | 26. $\frac{6}{7}$ | 31. $\frac{1}{2}$ | 36. $\frac{4}{7}$ |
| 22. $\frac{3}{5}$ | 27. $\frac{7}{8}$ | 32. $\frac{1}{3}$ | 37. $\frac{1}{5}$ |
| 23. $\frac{2}{7}$ | 28. $\frac{5}{4}$ | 33. $\frac{1}{8}$ | 38. $\frac{1}{6}$ |
| 24. $\frac{3}{8}$ | 29. $\frac{4}{7}$ | 34. $\frac{1}{4}$ | 39. $\frac{5}{6}$ |
| 25. $\frac{8}{9}$ | 30. $\frac{10}{9}$ | 35. $\frac{2}{7}$ | 40. $\frac{3}{7}$ |
| 41. $\frac{2}{9}$ | 46. $\frac{2}{3}$ | 51. $\frac{3}{4}$ | 56. $\frac{9}{14}$ |
| 42. $\frac{2}{5}$ | 47. $\frac{3}{4}$ | 52. $\frac{4}{5}$ | 57. $\frac{5}{6}$ |
| 43. $\frac{1}{9}$ | 48. $\frac{4}{5}$ | 53. $\frac{6}{7}$ | 58. $\frac{7}{16}$ |
| 44. $\frac{1}{7}$ | 49. $\frac{4}{9}$ | 54. $\frac{7}{10}$ | 59. $\frac{3}{5}$ |
| 45. $\frac{3}{5}$ | 50. $\frac{3}{10}$ | 55. $\frac{3}{10}$ | 60. $\frac{9}{10}$ |
| 61. $11 \frac{1}{2} = 5 \frac{1}{2}$ | 66. $11 \frac{1}{6} = 1 \frac{5}{6}$ | 71. $\frac{2}{3}$ | 76. $\frac{7}{32}$ |
| 62. $28 \frac{2}{3} = 9 \frac{1}{3}$ | 67. $26 \frac{2}{7} = 3 \frac{5}{7}$ | 72. $\frac{2}{5}$ | 77. $\frac{16}{45}$ |
| 63. $17 \frac{1}{4} = 4 \frac{1}{4}$ | 68. $39 \frac{3}{8} = 4 \frac{7}{8}$ | 73. $\frac{8}{9}$ | 78. $\frac{10}{63}$ |
| 64. $23 \frac{3}{4} = 5 \frac{3}{4}$ | 69. $26 \frac{2}{9} = 2 \frac{8}{9}$ | 74. $\frac{15}{16}$ | 79. $\frac{35}{96}$ |
| 65. $18 \frac{3}{5} = 3 \frac{3}{5}$ | 70. $59 \frac{9}{10} = 5 \frac{9}{10}$ | 75. $\frac{18}{25}$ | 80. $\frac{3}{4}$ |
| 81. 12 | 86. 26 | 91. 5 (greens) | 96. 14 |
| 82. 20 | 87. 32 | 92. $39 \div 3 = \$13$ | 97. 21 (quarters) |
| 83. 28 | 88. 34 | 93. $3.5 \div 7 = \$.50$ | 98. \$10 |
| 84. 36 | 89. 12 | 94. 18 | 99. \$12 |
| 85. 7 | 90. 7 | 95. 8.4 miles | 100. \$41.45 |
| 101. <u>5</u> | 105. $91 \div 7$ | 108. $36 \div 4$ | |
| 102. \$57 | = 13 | = 9 in | |
| 103. <u>\$42</u> | 106. $90 \div 6 \times$ | 109. 125 | |
| 104. $132 \div$ | 7 = 105 | 110. 6 | |
| 6 = 22 | 107. $128 \div$ | (yellow) | |
| | 4 = 32 | | |

Answer Key

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|--|---|--|---|
| 1. $17/2 = 8 \frac{1}{2}$ | 6. $35/6 = 5 \frac{5}{6}$ | 11. $1/24$ | 16. $37/105$ |
| 2. $37/3 = 12 \frac{1}{3}$ | 7. $49/8 = 6 \frac{1}{8}$ | 12. $11/160$ | 17. $43/160$ |
| 3. $29/4 = 7 \frac{1}{4}$ | 8. $38/9 = 4 \frac{2}{9}$ | 13. $149/360$ | 18. $5/18$ |
| 4. $16/5 = 3 \frac{1}{5}$ | 9. $31/10 = 3 \frac{1}{10}$ | 14. $23/140$ | 19. $67/360$ |
| 5. $24/5 = 4 \frac{4}{5}$ | 10. $34/11 = 3 \frac{1}{11}$ | 15. $29/70$ | 20. $83/300$ |
| 21. $21 \frac{11}{16}$ | 26. $23 \frac{1}{12}$ | 31. $1/3$ | 36. $2/3$ |
| 22. $20 \frac{1}{2}$ | 27. $33 \frac{5}{6}$ | 32. $1/2$ | 37. $5/7$ |
| 23. $3 \frac{2}{9}$ | 28. $15 \frac{1}{2}$ | 33. $1/3$ | 38. $7/10$ |
| 24. $6 \frac{1}{2}$ | 29. $16 \frac{1}{2}$ | 34. $1/5$ | 39. $9/20$ |
| 25. $13 \frac{1}{10}$ | 30. $1 \frac{3}{8}$ | 35. $1/3$ | 40. $14/25$ |
| 41. $3/35$ | 46. $1 \frac{5}{6}$ | 51. $8 \frac{1}{6}$ | 56. $64 \frac{1}{5}$ |
| 42. $25/56$ | 47. $2/9$ | 52. $37 \frac{1}{35}$ | 57. $25 \frac{1}{2}$ |
| 43. $16/75$ | 48. 20 | 53. $16 \frac{1}{14}$ | 58. $20 \frac{1}{4}$ |
| 44. $2/3$ | 49. $4/5$ | 54. $33 \frac{1}{15}$ | 59. $67 \frac{1}{5}$ |
| 45. $2/5$ | 50. 10 | 55. $17 \frac{23}{30}$ | 60. $48 \frac{3}{8}$ |
| 61. $48 \frac{8}{9}$ | 66. 8 | 71. 10 | 76. 0.75 |
| 62. $27 \frac{1}{2}$ | 67. 4 | 72. 30 | 77. 5.25 |
| 63. $32 \frac{1}{2}$ | 68. 12 | 73. 24 | 78. 0.04 |
| 64. $40 \frac{4}{9}$ | 69. 2 | 74. 20 | 79. 6.2 |
| 65. $23 \frac{2}{5}$ | 70. 6 | 75. 28 | 80. 3.5 |
| 81. 2.75 | 87. 20 | 93. 0.12 | 99. $2\frac{2}{3}$ |
| 82. 1.325 | 88. 1.25 | 94. 0.8 | 100. $\frac{1}{5}$ |
| 83. 3.75 | 89. 0.75 | 95. 8 | |
| 84. 0.08 | 90. 0.4 | 96. $40 \times 3 = 120$ miles | |
| 85. 0.005 | 91. 15 | 97. $240 \div 40 = 6$ hrs | |
| 86. 1750 | 92. 0.025 | 98. $\frac{1}{2}(80 + 90) = 85$ | |
| 101. (b) Canadians eat less than a pound of apples a week. | 104. The shaded triangle has the same area as the bottom triangle. Why?
$\frac{1}{2}(3 \times 3) = 4.5 \text{ in}^2$ | 108. $2 \times 35 + 4 \times 24 = \$170$ | 113. 54 min |
| 102. Alex: $\frac{3}{4} \times 20 = 15$
Brian: $\frac{5}{6} \times 30 = 25$ | 105. $675 \div 2.5 = 270$ gal | 109. Jake: $9 \times 10 \div 6 = \$15$ each hour | 114. 1 hour = 3×20 min (3 baskets)
$3 \times 2 + 1 = 7$ baskets |
| 103. $15 + 25 = \$40$ | 106. 5 | 110. Kyle: $(8 \times 12 - 20) \div 4 = \$19$ each hour | 115. $90 \div 12 = 7R6$
$7 + 1 = 8$ (days)
Therefore, eight days will do the job, so it should be Saturday. |
| | 107. $10.25 \times 40 = 102.5 \times 4 = \$410.00$ | 111. Kyle | |
| | | 112. $18 - 12 = 6$
$6 \div \frac{1}{4} = 6 \times 4 = 24$ | |

Answer Key

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|---|--|---|--|
| 1. -26 | 6. 4 | 11. 11.0 | 16. -10.0 |
| 2. 7 | 7. -27 | 12. 0.5 | 17. 3.9 |
| 3. -4 | 8. -1 | 13. 0.4 | 18. 3.3 |
| 4. -6 | 9. -6 | 14. 11.0 | 19. 6.7 |
| 5. -2 | 10. 18 | 15. -0.6 | 20. 7.4 |
| 21. -23 | 26. 11 | 31. 14 | 36. -5 |
| 22. 20 | 27. 12 | 32. -37 | 37. -4 |
| 23. -13 | 28. -10 | 33. 43 | 38. -7 |
| 24. 45 | 29. 33 | 34. 2 | 39. 4 |
| 25. -9 | 30. 17 | 35. 3 | 40. -4 |
| 41. 5% | 46. 35% | 51. 5 | 56. 9 |
| 42. 2.5% | 47. 17.5% | 52. 3 | 57. 7 |
| 43. 1.25% | 48. 27.5% | 53. 6 | 58. 4 |
| 44. 2% | 49. 22% | 54. 10 | 59. 5 |
| 45. 15% | 50. 14% | 55. 4 | 60. -2 |
| 61. $21\frac{11}{16}$ | 66. $23\frac{1}{12}$ | 71. 126 roses | 78. $\frac{5}{8} \times 16 = 10$ gal |
| 62. $20\frac{1}{2}$ | 67. $33\frac{5}{6}$ | 72. \$84 | 79. D |
| 63. $3\frac{2}{9}$ | 68. $15\frac{1}{2}$ | 73. 12 | 80. \$1.50 |
| 64. $6\frac{1}{2}$ | 69. $16\frac{1}{2}$ | 74. C | |
| 65. $13\frac{1}{10}$ | 70. $1\frac{3}{8}$ | 75. 30 mon | |
| | | 76. $10 \div \frac{1}{3} = 30$ | |
| | | 77. $\frac{3}{4} \times (1 - \frac{2}{3}) = \frac{1}{4} = 1/4$ | |
| 81. $16 \times \frac{3}{2} = 24$ | 83. $12 = 1, 22 = 4, \dots, 72$
= 49
Ans = 7 | 86. $15 \div \frac{3}{8} = 40$ mi | 89. 2 (the only prime that is even) |
| 82. $210,000 \times \frac{3}{7} = 90,000$ | 84. $9 \times 8 = 72$ in = 6 ft | 87. D: $36 \div \frac{4}{5} = 36 \times \frac{5}{4} = 45$
G: $45 \div \frac{3}{4} = 45 \times \frac{4}{3} = \span style="border: 1px solid black; padding: 2px;">60$ | 90. $9 \times 10 \times 10 \times 1 = 900$ |
| | 85. $15 \div \frac{5}{8} = 24$ mi | 88. $\frac{2400}{80} - 14 = 16$ | |

Answer Key

1. 10^6
2. $2^2 \times 2^3 = 2^{2+3} = 2^5$
3. $3^4 \times 3^3 = 3^7$
4. $2^1 \times 2^3 \times 3^2 \times 3^4 = 2^4 \times 3^6$
5. $2^5 \times 2^3 = 2^8$
6. $3^5 \times 3^2 = 3^7$
7. 2^2
8. -125
9. -32
10. $-(3)(3)(3)(3) = -81$
11. $(-3)(-3)(-3)(-3) = 81$
12. $(-5)^3 = -125$
13. $-(-5)^3 = 125$
14. $(-y)^4 = y^4$
15. $(-x)^5 = -x^5$
16. $(-y)^3 = -y^3$
17. $x^{2 \times 3} = x^6$
18. x^5
19. x^2
20. x^{15}
21. 4.8×10^{16}
22. 4.5×10^{18}
23. 1.8×10^{10}
24. 1.8×10^{12}
25. 3.2×10^{17}
26. 3.75×10^{12}
27. 8×10^{15}
28. 3×10^{27}
29. 9.8×10^{18}
30. 5×10^{15}
31. 1.4×10^{-1}
32. 4×10^{10}
33. 2.5×10^4
34. 9×10^4
35. 9×10^{-6}
36. 9×10^{-6}
37. 6.4×10^{-3}
38. 4.9×10^7
39. 6.4×10^{10}
40. 2.16×10^5
41. $x^2 - 2x - 15$
42. $x^2 - 5x - 14$
43. $4x^2 - 41x + 45$
44. $4x^2 - 21x + 27$
45. $3x^2 - 15x + 18$
46. $2x^2 - 3x - 27$
47. $3x^2 - 17x + 20$
48. $6x^2 + 17x + 5$
49. $6x^2 - 17x + 12$
50. $6x^2 - 5x - 6$
51. 2, 1
52. -0.4, 0.04
53. $(2x + 5)^2$
54. $(3x + 8)^2$
55. 9, $(5x - 3)^2$
56. -0.6, 0.09
57. 1.2, 0.36
58. $(2x + 7)^2$
59. $(3x - 8)^2$
60. 4, $(5x - 2)^2$
61. 3+1 & 3-1
Roots = 4 & 2
62. -2+1 & -2-1
Roots = -1 & -3
63. -1.5 & 2.5
-1.5+2.5 & -1.5-2.5
Roots = 1 & -4
64. 1 & 2
1+2 & 1-2
Roots = 3 & -1
65. 0.5 & 5
0.5+5 & 0.5-5
Roots = 5.5 & -4.5
66. 25000 - 4000 + 2500
= 23500 ft
67. $D = 32 \times \frac{3}{4} = 24$
 $J = 5 \times 24 = 120$
68. (a) $72 = 24 \times 3$
 $96 = 24 \times 4$
 $\text{GCF}(72, 96) = 24$
 $\text{LCM}(72, 96) = 24 \times 12 = 288$
Ans = 24 (GCF) & 288 (LCM)
(b) $\frac{1}{72} + \frac{1}{96} = \frac{3+4}{288} = \frac{7}{288} = 7/288$
69. B
This is a theorem. For any two nonzero integers A and B, the product of their GCF and LCM always equal the product of A and B, namely, $\text{GCF} \times \text{LCM} = A \times B$.
70. $8 \times 32 + 7 \times 33 = 487$
 $520 - 487 = 33$ pupils
71. $4.25 \times 4 = 17$ (books)
 $17 + 4.25 = 21.25$
 $21.25 + 7.35 = \$28.60$
72. 1 (remainder)

	remainder
$8 \div 5$	3
$11 \div 5$	1
$15 \div 5$	0
$29 \div 5$	4
$48 \div 5$	3
sum of rem	$11 \div 5$
rem	1
73. 50
74. 2, 6, 18, 54, and 162
 $2 + 6 + 18 + 54 + 162 = 242$ subscribers.
75. $\text{LCM}(18, 24) = 72$ cm
76. $72 = 4 \times 18$ (Jumpy)
 $72 = 3 \times 24$ (Leapy)
 $4 + 3 = 7$ (leaps)
77. $72 \times 2 = 144$ cm
78. 5 rabbits and 15 chickens
Assume all of them are chickens. Then, there are 20 chickens to begin with. The total number of legs is $20 \times 2 = 40$, 10 less than our current guess. However, each rabbit has two more legs than a chicken. $10 \div 2 = 5$ rabbits
 $20 - 5 = 15$ chickens
Ans = 5 rabbits & 15 chickens
79. 5 cars & 15 bicycles
80. Suppose all the vehicles are tricycles, all 20 of them. The total number of wheels is $20 \times 3 = 60$, a slack of $68 - 60 = 8$ wheels. Note that a car has one more wheel than a tricycle. Therefore, there are 8 sedans and the rest, $20 - 8 = 12$, tricycles. Ans = 12 tricycles & 8 sedans

MAP 270+ (T1) Issue 7

81. Suppose that all (80) tickets are for the video game. Then, a total of $80 \times \$2 = \$160$ should have been raised. However, this amount is $\$250 - \$160 = \$90$, more than we thought. Each ticket for the remote control car costs $\$5 - \$2 = \$3$ more than that of a video game. To make up the difference of $\$90$, there should be $90 \div 3 = 30$ (tickets for remote control car). There are 50 video games.
82. 2 P.M.
Ans = 30 remote control cars
83. $6 \times 60 = 360$ (min)
 $360 \div 40 + 1 = 9 + 1 = 10$ (times)
84. $360 \div 30 + 1 = 12 + 1 = 13$ (times)
85. $10 + 13 - 4 = 19$ (rings)
Note: You will hear one ring at, 12: 00 P.M., 2: 00 P.M., 4: 00 P.M., and 6: 00 P.M. since both bells will ring at the same time. That is why we need to subtract 4.

Answer Key

1. B	6. A	11. D	16. A
2. A	7. B	12. A	17. B
3. D	8. D	13. A	18. A
4. D	9. C	14. B	19. A
5. C	10. A	15. A	20. D
21. B	26. B	31. B	36. A
22. B	27. C	32. A	37. A
23. A	28. A	33. B	38. B
24. B	29. A	34. A	39. D
25. A	30. A	35. A	40. B
41. A	46. A	51. C	56. C
42. B	47. 17	52. A	57. C
43. 8	48. 3	53. D	58. A
44. A	49. -13	54. C	59. B
45. C	50. B	55. B	60. C