

Answer Key

1. $\frac{19}{2}$
 $9 \times 2 + 1 = 19$
2. $\frac{23}{10}$
 $2 \times 10 + 3 = 23$
3. $\frac{26}{3}$
 $8 \times 3 + 2 = 26$
4. $\frac{37}{4}$
 $9 \times 4 + 1 = 37$
5. $\frac{40}{3}$
 $13 \times 3 + 1 = 40$
6. $\frac{33}{4}$
 $8 \times 4 + 1 = 33$
7. $\frac{21}{5}$
 $4 \times 5 + 1 = 21$
8. $\frac{19}{6}$
 $3 \times 6 + 1 = 19$
9. $\frac{41}{6}$
 $6 \times 6 + 5 = 41$
10. $\frac{57}{8}$
 $7 \times 8 + 1 = 57$
11. 32
12. 10
13. 18
14. 54
15. 21
16. 12
17. 30
18. 36
19. 48
20. 2
21. 8
22. 6
23. 5
24. 8
25. 2
26. 8
27. 7
28. 2
29. 2
30. 9
31. $\frac{1}{3}$
32. $\frac{1}{9}$
33. $\frac{2}{7}$
34. $\frac{3}{6}$
35. $\frac{4}{6}$
36. $\frac{2}{6}$
37. $\frac{1}{6}$
38. $1\frac{4}{10}$
39. $1\frac{4}{5}$
40. $1\frac{4}{5}$
41. $\frac{7}{10}$
42. $\frac{4}{6} = \frac{2}{3}$
43. $\frac{16}{12} = \frac{4}{3}$
44. $\frac{6}{5}$
45. $\frac{7}{8}$
46. $60 \div 3 = 20$ (smaller)
 $20 \times 2 = 40$ (larger)
47. A
48. $15 \div 3 = 5$
 $15 - 5 = 10$
49. $240 \div 30 = 8$ wks
50. 6 faces
51. $650 \div 10 = 65$ boxes
52. $363 - 299 = 64$ mi
53. $2.5 \times 8 = 20$ pounds
54. $75 - 19 = 56$
55. $75 \div 3 = 25$
56. $42 - 3 - 17 = 42 - 20 = 22$
57. 12.3
58. $8.15 - 7.75 = \$0.40$
59. $37 - 20 = 17$ inches below
60. $16 \div 2 = 8$
 $8 - 1 = 7$ candy bars

MAP 230 (T2) Issue 1

61. A
22 $\div$ 20
19 $\div$ 20
20 + 20 = 40
62. B
63. C
64. C
65. C
66. A
67. B
68. B
69. D
70. B
71. C
72. C
314 - 168 = 146
73. B
74. C
75. B
76. $\frac{1}{2} \times 60 = 30$ min
77. 3 + 4 + 5 = 12
78. 13 + 14 + 15 = 42
79. 23 + 24 + 25 = 72
80. 29 - 22 + 1 = 8
8 $\times$ 10 = 80
81. 18 $\div$ 6 = 3 cupcakes
82. 40123
83. 39 $\div$ 3 = 13
39 - 13 = 26
84. 18 $\times$ $\frac{1}{4}$ = \$4.50
85. 20 + 7 = 27
27 $\div$ 3 = 9
2 $\times$ 9 = 18
20 - 18 = \$2 (left)
86. 25 $\times$ $\frac{1}{5}$ = 5
87. 3 $\times$ 12 = 36
36 $\times$ 2 = 72 (still enough)
36 $\times$ 3 = 108 (over)
Ans = 2 dozen
88. 24 - 6 = 18
18 $\div$ 2 = 9 dogs
89. 51 $\times$.5 = \$25.50
90. 50 $\times$ 5 = 250 miles

Answer Key

1. $\frac{19}{2}$
 $9 \times 2 + 1 = 19$
2. $\frac{23}{10}$
 $2 \times 10 + 3 = 23$
3. $\frac{26}{3}$
 $8 \times 3 + 2 = 26$
4. $\frac{37}{4}$
 $9 \times 4 + 1 = 37$
5. $\frac{40}{3}$
 $13 \times 3 + 1 = 40$
6. $\frac{33}{4}$
 $8 \times 4 + 1 = 33$
7. $\frac{21}{5}$
 $4 \times 5 + 1 = 21$
8. $\frac{19}{6}$
 $3 \times 6 + 1 = 19$
9. $\frac{41}{6}$
 $6 \times 6 + 5 = 41$
10. $\frac{57}{8}$
 $7 \times 8 + 1 = 57$
11. $6\frac{1}{3}$
 $19 \div 3 = 6 \text{ r } 1$
12. $9\frac{2}{3}$
 $29 \div 3 = 9 \text{ r } 2$
13. $9\frac{1}{3}$
 $28 \div 3 = 9 \text{ r } 1$
14. $9\frac{2}{3}$
 $29 \div 3 = 9 \text{ r } 2$
15. $6\frac{1}{4}$
 $25 \div 4 = 6 \text{ r } 1$
16. $8\frac{3}{4}$
 $35 \div 4 = 8 \text{ r } 3$
17. $5\frac{1}{5}$
 $26 \div 5 = 5 \text{ r } 1$
18. $5\frac{3}{5}$
 $28 \div 5 = 5 \text{ r } 3$
19. $6\frac{1}{6}$
 $37 \div 6 = 6 \text{ r } 1$
20. $7\frac{1}{10}$
 $71 \div 10 = 7 \text{ r } 1$
21. $\frac{3}{8}$ cup
22. 2.5 miles
23. $\frac{4}{10} = \frac{2}{5}$
24. $\frac{2}{7}$
25. $3\frac{1}{6}$
26. 8
27. 2
28. 6
29. 90
30. $2\frac{1}{4}$
31. 2400
32. 24000
33. 160000
34. 28000
35. 2100
36. 350000
37. 56000
38. 4200
39. 63000
40. 14000
41. 0.56
42. 0.016
43. 0.0028
44. 0.024
45. 0.63
46. 0.0035
47. 0.021
48. 0.49
49. 0.042
50. 0.014
51. 560
52. 360
53. 300
54. 280
55. 270
56. 240
57. 240
58. 210

MAP 240 (T2) Issue 1

59. 200
60. 150
61. C
62. B
63. B
64. C
65. C
66. D
67. D
68. B
69. D
70. C
71. D
72. C
73. A
74. B
 $60 = 2^2 \times 3 \times 5$
 $\{2, 3, 5\}$ are the different prime factors.
75. A
 $7\frac{1}{2} - 6\frac{3}{4} = \frac{3}{4} \text{ hr} = 45 \text{ min}$
76. C
77. D
78. C
79. C
80. D
 $30 - 12\frac{3}{4} - 7\frac{1}{2} = 9\frac{3}{4}$
81. 0.008
82. $27.50 \times 2 - 2.00 + 2.50 + 17.25$
 $= 55 - 2 + 2.5 + 17.25$
 $= 55.5 + 17.25$
 $= \$72.75$
83. $6 \div 0.75 = 6 \div \frac{3}{4} = 8 \text{ cans}$
84. $1 + 50\% = 1.5$
 $5 \times 1.5 = \$7.50$
85. $2500 \div 10 \times 3$
 $= 750 \text{ min}$
 $= 12\frac{1}{2} = 12 \frac{1}{2} \text{ hr}$
86. $\frac{3}{4} \times 120 = 90$
 $\frac{2}{3} \times 120 = 80$
 $90 - 80 = 10$
87. $175 \div 25 = 7$
 $7 \times 120 = 840$
or
 $\frac{175}{25} \times 120 = 840$
88. $\frac{1}{4} = 0.25 = 25\%$
89. $120 : \underline{\hspace{1cm}} = 4 : 1$
 $\underline{\hspace{1cm}} = 30$
90. $3 \times 5 = 15$
 $15 \times 6 = 90$
91. D
92. D
93. $(120 \div 8) \times 15 = 225$
94. Method I)
 $45 \times \frac{5}{3} = 75 \text{ books}$
Method II)
 $1 - \frac{5}{8} = \frac{3}{8} \text{ (unsold)}$
 $45 \div \frac{3}{8} = 120 \text{ (total)}$
 $120 - 45 = 75 \text{ (sold)}$
95. $7.5 \times 36 = 15 \times 18 = 30 \times 9 = \270
96. $40 \times 8 + 5 \times 12 = 320 + 60 = \380
97. $\frac{580 - 40 \times 10}{15} + 40 = 52 \text{ hr}$
98. $8 - 12 - 6 = 2$

Answer Key

1. 550%
 2. 35%
 3. 125%
 4. 236%
 5. 320%
 6. 1.5
 7. 0.45
 8. 1.65
 9. 12.34
 10. 8
 11. 150%
 12. 260%
 13. 175%
 14. 380%
 15. 305%
 16. $1\frac{4}{1000}$
 17. $3\frac{5}{13}$
 18. $2\frac{13}{20}$
 19. $1\frac{11}{20}$
 20. $2\frac{9}{25}$
 21. 20%
 22. 20%
 23. 30%
 24. 50%
 25. 60%
 26. 75%
 27. 80%
 28. 32
 29. 144
 30. 25
 31. 84
 32. 30
 33. 10%
 34. 20%
 35. 30%
 36. 50%
 37. 60%
 38. 75%
 39. 80%
 40. 24
 41. .008
 42. .03
 43. .018
 44. $\frac{2}{3} = 2/3$
 45. 3
 46. 32
 47. 200
 48. 8,000
 49. .09
 50. 350000
 51. .008
 52. 6,000
 53. 24.3
 54. 400
 55. 98
 56. 537
 57. $\Delta = 18$
 58. $\frac{17}{30}$
 59. 0.4
 60. $375 = 3 \times 5 \times 5 \times 5 = 3 \times 5^3$
 61. B
 62. C
 63. C
 64. C
 65. B
 66. B
 67. B
 68. D
 69. D
 70. B
 71. D
 72. A
 73. C
- There are four choices of dinner and 3 choices of activity. He has $4 \times 3 = 12$ choices of combination.

MAP 250 (T2) Issue 1

# hours	Cost
0	\$2.00
1	\$3.50
2	\$5.00
3	\$6.50
4	\$8.00

74.

75. $1.50n + 2.00$

76. 8 (hr)

$$14.00 - 2.00 = 12.00$$

$$12.00 \div 1.5 = 8 \text{ (hr)}$$

77. 5

78. $2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5$

$$= 2^3 \times 3^2 \times 5^2$$

79. 48

80. $\frac{13}{48}$

81. 6.25 (%)

82. $\square = 9$

83. $A = 16$

84. 60

85. 12

86. $\frac{26}{91} = \frac{2 \times 13}{7 \times 13} = \frac{2}{7} = 2/7$

87. $\frac{2}{3}$

88. $\frac{3}{8}$

89. $20 \div 2 = 10$

$$10^2 \times 3.14 = 314$$

$$400 - 314 = 86 \text{ in}^2$$

90. $8 + 2 = 10$ (length)

$$5 + 2 = 7$$
 (width)

$$10 \times 7 = 70 \text{ ft}^2 \text{ (area)}$$

91. $12 \times 12 = \frac{1}{2}(x)(18)$

$$x = 16 \text{ (height)}$$

92. $120 \div 3 = 40$

$$40 \times 1.1 = \$44$$

93. $144 = 2^4 \times 3^2$

$$4 + 2 = 6$$

94. $1 \text{ kg} = 1000 \text{ g}$

$$1000 \div 20 = 50 \text{ g}$$

95. $3\frac{3}{4} \times 48 = \180

96. $38\frac{1}{9} - 31\frac{1}{3} = 7\frac{1}{9} - \frac{1}{3} = 6\frac{2}{9} = 6\frac{7}{9} \text{ pounds}$

97. $400 \times 0.2 = \$80.00$

98. $\frac{\text{discount}}{\text{original price}} = \frac{20}{50} = 40\%$

99. $48 \div 3 = 16$

$$16 \times 2 = 32$$

100. 1:1

Answer Key

1. slope(AF) = $1/4$
2. slope(BG) = $2/3$
3. slope(CH) = $3/2$
4. slope(DI) = 4
5. slope(EJ) = -4
6. slope(FK) = $-3/2$
7. slope(GL) = $-2/3$
8. slope(HM) = $-1/4$
9. slope(L₁) = $1/3$
10. slope(L₂) = $1/2$
11. slope(L₃) = $3/2$
12. slope(L₄) = 3
13. 1
14. 2
15. $-\frac{2}{3}$
16. -2
17. -2
18. $-\frac{1}{2}$
19. 0
20. $-\frac{1}{2}$
21. slope = 1
22. slope = -1
23. slope = 2
24. slope = -1
25. slope = -10
26. slope = 2
27. slope = $1/2$
28. $3/2$
29. $-2/3$
30. $1/4$
31. $\frac{6}{4} = \frac{3}{2}$
32. $\frac{-5}{8}$
33. 7
34. $\frac{8}{3}$
35. C
36. A
37. B
38. A
39. B
40. D
41. 1) 3
2) $y = 3x + b$
3) 3
4) $y = 3x - 7$
5) $5 = 3(4) - 7$ ✓
42. $b = 0$
43. $b = 7$
44. $b = -31$
45. $3(5) = 4(k) - 5$
 $k = 5$
46. 2
47. $y = 2x + b$
48. $b = 7$ (Use point A)
49. $y = 2x + 7$
50. $2(2) + 7 = 11$ (Check for point B)
51. $y = -7x + 25$
52. $y = \frac{1}{3}x - 3$
53. We have $y = -2x + b$ at beginning. Since it passes through G(-4, -1), we can solve for b .
 $-1 = -2(-4) + b$
 $b = -9$
Thus, the equation is $y = -2x - 9$
54. They are the same line.
55. $y = 3x - \frac{3}{2}$
56. $y = -1.5x + 3$
57. $y = 3.6x + 4$
58. $y = 3x + 10$
59. $y = \frac{1}{5}x + 0.3$
60. $y = -2x - \frac{3}{2}$
61. D
62. B
63. A
64. C
65. $y = \frac{1}{3}x + 3$
66. $y = \frac{1}{2}x + 3$
67. $y = \frac{3}{2}x + 3$
68. $y = 3x + 3$
69. $y = \frac{-1}{3}x - 2$
70. $y = \frac{-1}{2}x - 2$
71. $x = 3$
72. $x = 11$
73. $x = -2$
74. $x = 1$
75. $x = 1$
76. $x = -2$
77. $x = 4$
78. $x = -2$
79. $7 - 2(2.5 - 3x) = 1 - 4x$
 $7 - 5 + 6x = 1 - 4x$
 $2 + 6x = 1 - 4x$

MAP 260 (T2) Issue 1

- $2 + 10x = 1$
 $10x = -1$
 $x = -0.1$
80. Multiply both sides by 12,
 $3x + 4x = 12$
 $7x = 12$
 $x = \frac{12}{7}$
81. 150
82. 110
83. 960
84. 90
85. 30
86. 4.5
87. 4.5
88. 40
89. $\frac{375}{3000} = 0.125 = 12.5\%$
90. 37.5
91. 1
92. $\frac{4}{5} = 4/5$
93. $\frac{2}{5} = 2/5$
94. 120%
95. 80%

Answer Key

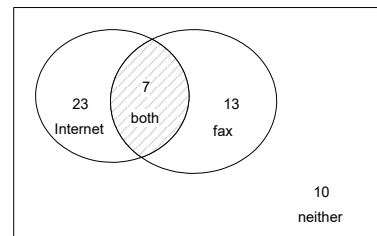
1. -1
2. -3
3. 2.5
4. $\frac{-3}{4}$
5. 6
6. -0.04
7. -1.2
8. $\frac{4}{3}$
9. 0.4
10. 2
11. 0
12. 3
13. -4
14. $\frac{1}{2}$
15. $-\frac{1}{2}$
16. $-\frac{7}{5}$
17. -9
18. 1
19. $\frac{5}{6}$
20. undefined
21. $7x - 7$
22. $-10x - 8$
23. $-18x - 9$
24. $4x - 1$
25. $8x + 7$
26. $6x + 5$
27. $4x + 2$
28. $-18x + 9$
29. -12
30. $-4x - 4$
31. $0.5/0.75 = \frac{2}{3}$, and indeed $\frac{2}{3} \times 0.75 = 0.5$
32. 20
33. $\frac{3}{15} = \frac{1}{5} = 20\%$
34. 35
35. 5
36. 300
37. $43\% \times 60 = 25.8$
38. $\frac{4}{5} \times 75 = 60$
39. $46 \div 40 = 1.15 = 115\%$.
40. 205%
41. 32%
42. 62500
43. 0.0324
44. 0.37
45. 569
46. 801
47. $50^2 = 2500$
48. 40000
49. 4000000
50. $\frac{7}{90} = 7/90$
51. $(\frac{3}{2})^2 = \frac{9}{4} = 2.25$
52. 2
53. $\frac{1}{10} = 1/10$
54. 0.007
55. $\frac{60}{16} = \frac{15}{4} = 3\frac{3}{4} = 3 \frac{3}{4} \text{ (lb)}$
56. 24
57. 4
58. 2.25
59. $x = 4$
60. $2\frac{1}{2} - 1\frac{2}{3} = 2\frac{3}{6} - 1\frac{4}{6} = \frac{5}{6} = 5/6$
61. 24
62. 203%
63. 5
64. 6
65. $\frac{1}{2}(25)(10) = 125 \text{ in}^2$
66. $20 \times 14 - 16 \times 10 = 280 - 160 = 120$
67. $\frac{1}{2} \times (20 \times 10) = 100$
68. $20 \times \frac{1}{4} = 5$
 $20 + 5 = 25$
69. (a) $32 \times \frac{3}{4} = 24 \text{ (D)}$
b) $5 \times 24 = 120 \text{ (J)}$
70. $65 \times 3 - 55 = 140$
 $140 \div 2 = 70 \text{ lb}$
71. $\frac{1}{8}$
72. 4
73. 0.09
74. $2^{12} = 4^6$
 $8^2 = 4^3$
 $6 - 3 = 3$
75. $4^2 \times 2^3 = 2^4 \times 2^3 = 2^7$
Ans = 7

MAP 270 (T2) Issue 1

76. -49
77. $100 - 4(2.5)^2\pi = 100 - 25\pi$
78. $\frac{1}{2}(3 \times 4) = 6$
79. $49 - 4 \times 6 = 25$
80. The unit price is $\frac{19}{3}$ per apple. Thus, the number of apples you can purchase with $\$1.52=152\text{¢}$ is $\frac{152}{\frac{19}{3}} = \frac{152 \times 3}{19} = 24$ apples.
81. $6 \div 0.03 = 200$
82. $100 - 3(x - y) = 100 - 3 \times 7 = 100 - 21 = 79$
83. $20\%:80\% = 1:4$
 $100 \times \frac{1}{4} = \25
84. $390 \div 6.5 = 60$ mph
85. $390 \div 65 = 6$ (hours)
86. $3:4$
87. $3,800 \div 20 = 190$ sec
88. $12 \times 3 = 36$
 $10 \times 2 = 20$
 $36 - 20 = 16$
89. $80 \div 2 = 40$
 $40 \div 4 = 10$ (width)
 $40 - 10 = 30$ (length)
 $10 \times 30 = 300$ cm²
90. Let x = the number students enrolled last year. So, we have
 $1.2x = 660$
 $x = 550$

Answer Key

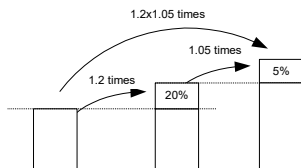
1. -1
2. -3
3. 2.5
4. $\frac{-3}{4}$
5. 6
6. -0.04
7. -1.2
8. $\frac{4}{3}$
9. 0.4
10. 2
11. 3
12. -4
13. $\frac{1}{2}$
14. $-\frac{1}{2}$
15. -9
16. 1
17. $\frac{5}{6}$
18. $-\frac{7}{5}$
19. 0
20. undefined
21. $-\frac{1}{2}$
22. $\frac{1}{3}$
23. $\frac{3}{2}$
24. $-\frac{1}{2}$
25. $\frac{1}{3}$
26. $-\frac{3}{4}$
27. $-\frac{3}{4}$
28. $-\frac{1}{2}$
29. $\frac{1}{2}$
30. $-\frac{3}{2}$
31. $7x - 7$
32. $-10x - 8$
33. $-18x - 9$
34. $4x - 1$
35. $8x + 7$
36. $6x + 5$
37. $4x + 2$
38. $-18x + 9$
39. -12
40. $-4x - 4$
41. $(2\frac{1}{2})^{-1} = 0.4$
 $0.4^2 = 0.16$
42. 4
43. $(1 - 2) + (3 - 4) + (5 - 6) + \dots + (99 - 100) = -50$
44. $25^2 \times 5^4 = 5^4 \times 5^4 = 5^8$
45. $36 \div 60 = 0.6 = 60\%$
46. $\frac{4}{3x^2}$
47. $\frac{5}{9}$
48. $x = -1$
49. Flip the upper shaded semicircle to fill up the empty lower semicircle, making the square complete.
 $20 \times 20 = 400 \text{ in}^2$
50. $\frac{1800}{8} = \frac{900}{4} = \frac{8100}{x} \text{ b}$
 $x = 36 \text{ wks}$
51. B
52. $20:25 = 4:5$
3 is missing from $3:4:5$ (Pythagorean triple)
 $5 \times 5 = 25$
 $5 \times 4 = 20$
 $5 \times 3 = 15$
 $\frac{1}{2} \times 15 \times 20 = 150$
53. The number of students with Internet access only is 23, fax only, 13. Thus, there are $30 + 20 - 7 = 43$ students with either Internet access or fax. Since there are 10 students have neither Internet access or fax, the total number of students is $43 + 10 = 53$.



54. $3 + 1 = 4$
 $3 \div 4 = 75\%$
55. $\frac{198}{5\frac{1}{2}} = \frac{198}{5.5} = 36 \text{ miles per hour}$
56. $450 \times 1.49 + 350 \times 1.51 = \$1,199$
57. $810/180 = 4\frac{1}{2} = 4 \frac{1}{2} \text{ (ft)}$

MAP 280 (T2) Issue 1

58. Since there is a 20% increase, it becomes 1.2 times of the original price. The new price becomes $\$60 \times 1.2 = \72 . Since there is a additional 5% tax, the total becomes 1.05 of the new price, so $\$72 \times 1.05 = \75.60 (which is equal to $60 \times 1.2 \times 1.05$).



59. $20 \times 3 = 60$
 $68 - 60 = 8$
 Ans = 8 sedans & 12 tricycles.

60. $\overline{PQ}^2 + \overline{QR}^2 = \overline{PR}^2$
 $PQ = 5$
 area = $5 \times 12 = 60$

61. D
 $9 \times 8 = 72$
 $\frac{1}{3} \times 72 = 24$
 $72 - (24 + 8) = 40$

62. C

63. D
 Since the altitude is 4, the base is $\frac{8}{\sqrt{3}}$. The area is $\frac{1}{2}(4)(\frac{8}{\sqrt{3}}) = \frac{16\sqrt{3}}{3}$

64. 6

65. B

66. B
 $25 \times \frac{4}{5} \times 1.08 = 20.16$

67. D
 $1 - \frac{1}{4} = \frac{3}{4}$
 $1 - \frac{1}{3}(\frac{3}{4}) = \frac{1}{2}$

68. A

69. D

70. D

71. C

72. A
 $\frac{11,000 - 9,500}{11,000} = 13.64\%$

73. B

74. D

75. C

76. D

77. 6

78. C

79. B

80. B

81. 4×10^{21}
 Ans = 4 (for a) & 21 (for b)

82. $-8x^6$
 Ans = -8 & 6

83. $\frac{5}{3} = 5/3$

84. 0.3

85. $3 \times (100 \div 40) = \7.50

86. $\frac{1}{2} - \frac{1}{3} = \frac{1}{6}$
 $8 \div \frac{1}{6} = 48$ (the weight of whole wine when full)
 $\frac{1}{2} \times 48 = 24$
 $68 - 24 = 44$ pounds

87. $\frac{5}{50} = \frac{1}{10}$ hour = 6 min
 $5:00 + 0:06 = 5:06$ P.M.

88. C

89. C

90. C
 $-1 = -1$

91. $13 + 11 = 24$ (to cover 100 km round-trip)
 $36 \div 24 = 1.5$
 $1.5 \times 100 = 150$ km (distance)

92. 55

93. Let x be the width.
 $(8 + 2x)(6 + 2x) - 48 = 32$
 Let $y = 2x$
 $(8 + y)(6 + y) = 80$
 $y^2 + 14y + 48 = 80$
 $y^2 + 14y - 32 = 0$
 $(y - 2)(y + 16) = 0$
 $y = 2$
 $x = 1$ yd = 3 ft