

Answer Key

- | | |
|----------|---------------------------------------|
| 1. N/A | 45. 5.7 |
| 2. N/A | 46. 8.2 |
| 3. N/A | 47. 3.7 |
| 4. N/A | 48. 3.4 |
| 5. N/A | 49. 9.8 |
| 6. N/A | 50. + |
| 7. N/A | 51. A=1, B=3, C=6 |
| 8. N/A | Ans=1 (for A) & 3 (for B) & 6 (for C) |
| 9. N/A | 52. A=2, B=5, C=7 |
| 10. N/A | Ans=2 (for A) & 5 (for B) & 7 (for C) |
| 11. 22 | 53. A=7, B=2, C=6 |
| 12. 33 | Ans=7 (for A) & 2 (for B) & 6 (for C) |
| 13. 50 | 54. A=7, B=4, C=0 |
| 14. 33 | Ans=7 (for A) & 4 (for B) & 0 (for C) |
| 15. 300 | 55. A=5, B=1, C=7 |
| 16. 60 | Ans=5 (for A) & 1 (for B) & 7 (for C) |
| 17. 32 | 56. A=4, B=4, C=8 |
| 18. 7 | Ans=4 (for A) & 4 (for B) & 8 (for C) |
| 19. 10 | 57. A=3, B=4, C=7 |
| 20. 100 | Ans=3 (for A) & 4 (for B) & 7 (for C) |
| 21. 7 | 58. A=6, B=4, C=9 |
| 22. 4 | Ans=6 (for A) & 4 (for B) & 9 (for C) |
| 23. 5 | 59. A=9, B=6, C=4 |
| 24. 3 | Ans=9 (for A) & 6 (for B) & 4 (for C) |
| 25. 4 | 60. A=8, B=4, C=8 |
| 26. 2 | Ans=8 (for A) & 4 (for B) & 8 (for C) |
| 27. 9 | 61. A=9, B=5 |
| 28. 8 | 62. A=2, B=4 |
| 29. 2 | 63. A=5, B=1 |
| 30. 8 | 64. 61 |
| 31. 33 | 65. A=5, B=2 |
| 32. 22 | 66. A=5, B=4 |
| 33. 111 | 67. A=2, B=9 |
| 34. 185 | 68. 51 |
| 35. 58 | 69. 83 |
| 36. 71 | 70. A=1, B=3 |
| 37. 150 | 71. $80 \times 3 = 240$ |
| 38. 196 | 72. $80 \times 2 = 160$ |
| 39. 24 | 73. $20 \times 8 = 160$ |
| 40. 40 | 74. $7 - 1.50 + 0.25 = 5.75$ |
| 41. 14.4 | 75. $5 + 3 = 8^{\text{th}}$ |
| 42. + | 76. $40 - 7 = 33$ |
| 43. 3 | 77. $6 + 44 = 50$ (lb) |
| 44. 6.5 | |

MAP 220 (T2) Issue 9

78. $300 - 100 = 260$
 $130 + 100 = 230$ (Adult's ticket)
 $260 \div 2 = \boxed{130}$ (Child's ticket)
79. $4 \times 6 = 24$
80. $28 \div 4 = 7$
81. $24 - 10 = 14$
 $14 \div 2 = 7$
(a) 7
(b) $7 + 10 = 17$
82. 5 hours & 30 minutes
83. $38 + 26 = 64$ in
84. 3°
85. $2 + 3 = 5$
 $5 \times 5 = \$25$
86. $8 \times 20 = \$160$
87. $3 \times 2 = 6$
88. $3 \times 4 = 12$
89. $50 \div 2 = 25$ miles
90. $6 \times 25 = 150$ miles

Answer Key

1. $4/100 = 1/25$
2. $8/100 = 2/25$
3. $12/100 = 3/25$
4. $16/100 = 4/25$
5. $20/100 = 1/5$
6. $105/100 = 105\%$
7. $110/100 = 110\%$
8. $115/100 = 115\%$
9. $120/100 = 120\%$
10. $125/100 = 125\%$
11. 15
12. 30
13. 18
14. 8
15. 40
16. A) $\frac{3}{4} \times \frac{5}{5} = \frac{15}{20}$
 B) $\frac{7}{10} \times \frac{2}{2} = \frac{14}{20}$, so A is greater.
17. B
 $\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$
 $\frac{2}{6} \times \frac{2}{2} = \frac{4}{12}$
18. A
 $\frac{5}{12} \times \frac{2}{2} = \frac{10}{24}$
 $\frac{7}{24} \times 1 = \frac{7}{24}$
19. A
 $\frac{13}{24} \times 1 = \frac{13}{24}$
 $\frac{5}{12} \times \frac{2}{2} = \frac{10}{24}$
20. B
 $\frac{11}{40} \times \frac{3}{3} = \frac{33}{120}$
 $\frac{23}{60} \times \frac{2}{2} = \frac{46}{120}$
21. $\frac{14}{35} \xrightarrow{\div 7} \frac{2}{5}$
22. $\frac{12}{18} \xrightarrow{\div 2} \frac{6}{9} \xrightarrow{\div 3} \frac{2}{3}$
23. $\frac{90}{150} \xrightarrow{\div 10} \frac{9}{15} \xrightarrow{\div 3} \frac{3}{5} = 3/5$
24. $\frac{6}{8} = \frac{3}{4} = 3/4$
25. $\frac{12}{30} = \frac{2}{5} = 2/5$
26. 96
27. 6
28. 396
29. 3996
30. 39996
31. 8
32. 2
33. 4
34. 5
35. 5
36. 35
37. 28
38. 20
39. 47
40. 71
41. 408
42. 560
43. 713
44. 768
45. 3404
46. 3
47. 6
48. 9
49. 35
50. 6
51. $24 + 16 = 40$
52. 4 and 6
younger = 4
53. $23 - 15 = 8$
54. $32 - 15 = 17$
55. $293 - 128 = 165$ (from Greece)
 $165 - 128 = 37$
56. $700 + 250 = 950$
 $950 - 70 = 880$
57. $2 \times 500,000 = 1,000,000$
58. $40 \times 3 = 120$
59. $12 \times 8 = 96$

MAP 230 (T2) Issue 9

60. $5 + 4 \times 3 = \underline{\$17}$

61. $18 \div 3 = 6$

J = 6

T = 12

62. $408 \div 4 = 102$ boxes

63. $28 \div 4 = 7$

64. B

65. $3 \times 2 = 6$ hr

66. ABCDDCBA

CCDDDDCC ①

CDDDDDDD ②

DDDDDDDD ③

Ans = 3

67. DABC

BADC

CDAB

CBAD

Ans = 4 different outcomes

68. Here is the list of possible outcomes for Lions scoring 80 points in 38 games:

Win 3 pts	Draw 1 pt	Lose 0 pt
26	2	10
25	5	8
24	8	6
23	11	4
22	14	2
21	17	0

Ans = 10

69. 21

70. $36 \div 9 = 4$

$60 \div 4 = 15$ columns

9 moons and 9 suns in every 2 full columns.

$15 \div 2 = 7$ R1

(a) $7 \times 9 + 5 = \boxed{68}$ (suns) (b) $7 \times 9 + 4 = \boxed{67}$ (moons)

71. LCM(4, 3) = 12

72. 6

73. Roy = 2 Rob

$2 \times 30 - 40 = 20$ (distance measured in Rob's jumps per min)

$3 \times 20 = 60$ (distance measured in Rob's jumps after 3 min)

74. 12

75. To be multiple of 4, the last two digits must be a multiple of 4. For instance, **112** is a multiple of 4 since 12 is divisible by 4. By following this rule, these are the only 4-multiples:

6812, 8612

8216, 2816

1628, 6128

1268, 2168

Ans = 8 numbers

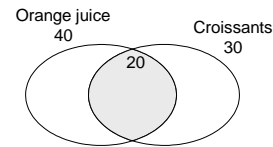
Answer Key

- | | |
|---------------------|--------------------|
| 1. 0.44 | 31. 15 |
| 2. 0.48 | 32. 0 |
| 3. 0.52 | 33. 14 |
| 4. 0.56 | 34. 1 |
| 5. 0.6 | 35. 14 |
| 6. $55/100 = 11/20$ | 36. 12 |
| 7. $60/100 = 3/5$ | 37. 61 |
| 8. $65/100 = 13/20$ | 38. 15 |
| 9. $70/100 = 7/10$ | 39. 14 |
| 10. $75/100 = 3/4$ | 40. 9 |
| 11. $55/100 = 55\%$ | 41. $2\frac{3}{7}$ |
| 12. $60/100 = 60\%$ | 42. $2\frac{1}{3}$ |
| 13. $65/100 = 65\%$ | 43. $3/11$ |
| 14. $70/100 = 70\%$ | 44. $1\frac{1}{4}$ |
| 15. $75/100 = 75\%$ | 45. $5/7$ |
| 16. 3 | 46. $4/5$ |
| 30 | 47. $1/4$ |
| 3 | 48. $1/3$ |
| 300 | 49. $5/7$ |
| 17. 5 | 50. $6/7$ |
| 50 | 51. $1/256$ |
| 5 | 52. .64 |
| 500 | 53. .512 |
| 18. 7 | 54. $256/625$ |
| 70 | 55. $1024/3125$ |
| 7 | 56. $1/4096$ |
| 700 | 57. $1/125$ |
| 19. 9 | 58. $1/625$ |
| 90 | 59. $1/3125$ |
| 9 | 60. $1/15625$ |
| 90 | 61. $17/70$ |
| 20. 3 | LCD = 70 |
| 30 | 62. $19/96$ |
| 3 | LCD = 96 |
| 30 | 63. $8/15$ |
| 21. 0.048 | LCD = 15 |
| 22. 0.024 | 64. $11/56$ |
| 23. 0.032 | LCD = 56 |
| 24. 0.032 | 65. $7/60$ |
| 25. 0.2 | LCD = 60 |
| 26. 0.02 | 66. $1/36$ |
| 27. 0.003 | LCD = 36 |
| 28. 0.0063 | |
| 29. 0.016 | |
| 30. 0.045 | |

MAP 250 (T2) Issue 9

67. $1/36$
LCD = 36
68. $5/9 (=10/18)$
LCD = 18
69. $1/8 (=5/40)$
LCD = 40
70. $1/6 (=3/18)$
LCD = 18
71. $8:35 - 0:50 = 7:45$ am
72. $\frac{39}{3} \times 0.5 = 13 \times 0.5 = \6.50
73. 3:45 pm
74. 42 min & 16 sec
75. 18×20 min = 6 hr
76. 15 min + 55 min + 6 hr = 7 hr 10 min
77. $5:30$ pm - $7:10$ = 10:20 am
78. 54 min
79. 106 hours
80. 30 min = $\frac{1}{2}$ hr
 $\frac{1}{2} \times 30 = 15$ hr
81. 1 hour 59 min
82. $12 - 3 \times 2 = 6$ am
83. $0:30 + 0:45 + 1:00 = 2:15$
2 hours 15 minutes = $2\frac{1}{4} = 2$ 1/4 hours
84. 11:35 pm
85. 4 hrs & 50 min
86. 1.44
87. (a) $75\% = \frac{3}{4}$ (b) $58\frac{1}{3}\% = \frac{7}{12} = 7/12$
88. 10 ft = 120 in
 $120 \div 3 = 40$ (tiles each side)
 $40 \times 4 - 4 = 156$ tiles (around)
Note: We need to deduct 4 tiles from corners.
89. $1\frac{1}{3} \times 6 \times 3\frac{1}{4} = \frac{4}{3} \times 6 \times 3\frac{1}{4} = 26$ trees

90. $\frac{1}{3} \times 30 = 10$ (girls)
 $30 - 10 = 20$ (boys)
 $10 + 2 = 12$
 $20 - 2 = 18$ (boys)
 $\frac{18}{30} = \frac{3}{5} = 3/5$
91. D
In the first 6 numbers, only two will stay: 1 and 5.
 $20 \div 6 = 3$ (rem 2)
 $3 \times 2 = 6$
(1, 5) (7, 11) (13, 17) (19)
(Don't forget 19)
 $6 + 1 = 7$
92. $30 + 40 = 70$
 $70 - 50 = 20$



93. D
94. 1 gallon = 16 cups
 $16 \div \frac{4}{3} = 16 \times \frac{3}{4} = 12$ pies
95. $120 \div 5 = 24$ mi/gal
96. $12 \div 3 = 4$
 $4 \times 4 = \$16.00$
97. Let the middle length be x cm, so the longest one be $3x$.
The shortest one then is $3x - 23$ (cm).
The total length = $x + 3x + 3x - 23 = 40$
 $7x = 63$
 $x = 9$
 $3x - 23 = 4$ cm
98. $\frac{2}{3} = 66\frac{2}{3}\% = 66$ 2/3% (precise percent)
99. $2 \times 10,000 = 20,000$

Answer Key

1. 21
2. 2
3. 2
4. -8
5. 31
6. -22
7. -27
8. -1
9. 3
10. 3
11. -31
12. 30
13. -2
14. 5
15. 2
16. -8
17. -7
18. 8
19. 6
20. -7
21. $x = -5$
22. $7/3$
23. $x = -7$
24. $x = 4$
25. $x = -2$
26. $x = 2$
27. $x = 1$
28. $x = -3$
29. 3
30. $x = 1$
31. $35 \times 1\frac{1}{5}$ [Split]
 $= 35 \times (1 + \frac{1}{5})$ [Multiply]
 $= 35 + 7$ [Add]
 $= 42$
32. $63 + 7 = 70$
33. $56 + 8 = 64$
34. $78 + 13 = 91$
35. $136 + 17 = 153$
36. $120 + 12 = 132$
37. $112 + 16 = 128$
38. $90 + 54 = 144$
39. $81 + 9 = 90$
40. $102 + 85 = 187$
41. $192 + 36 = 228$
42. $128 + 16 = 144$
43. $54 + 42 = 96$
44. $126 + 35 = 161$
45. $252 + 63 = 315$
46. $45 + 27 = 72$
47. $72 + 6 = 78$
48. $48 + 18 = 64$
49. $70 + 21 = 91$
50. $360 + 32 = 392$
51. $2\sqrt{6}$
52. $4\sqrt{7}$
53. $6\sqrt{6}$
54. $6\sqrt{15}$
55. $20\sqrt{2}$
56. 28
57. 120
58. 224
59. 343
60. 560
61. 4
62. 81
63. 10000
64. 144
65. $(\frac{3}{2})^2 = 2\frac{1}{4} = 2\frac{1}{4}$
66. 1600
67. 19600
68. 441
69. 0.64
70. 1.96
71. 7
72. 8
73. 9
74. 10
75. 11
76. 12
77. 13
78. 15
79. 16
80. 20
81. -9

MAP 260 (T2) Issue 9

82. -12
83. -6
84. -15
85. -18
86. 4
87. -7
88. 4
89. 2
90. -6
91. $\frac{1}{2}(4)(8 + 11) = 2 \times 19 = 38$
92. Square A has a side of 20- $20 \div 4 = 15$
 $20^2 - 15^2 = 400 - 225 = 175 \text{ in}^2$
93. (outer circle area) - (inner circle area)
 $= 12^2\pi - 10^2\pi = 44\pi = 44 \text{ pi}$
94. $36 = 6^2$
 $6 \div 2 = 3$
 $2(3+6) = 18 \text{ in}$
95. $(10 \times 20) - \{(12+20) \times 10 \div 2\} = 200 - 160 = 40$
96. D
97. $\angle AFD = 50^\circ$
 $\angle EFA = 50^\circ$
 $\angle EFC = 180^\circ - 50^\circ - 50^\circ = 80^\circ$
98. $30 \div \frac{3}{5} = 50$
99. $\frac{1}{3} \times 30 = 10$ (girls)
 $\frac{20-2}{30} = \frac{18}{30} = \boxed{60\%}$
100. $\frac{18}{3 \times 12} = \frac{1}{2} = \0.50 per oz
101. $\frac{208}{400} = \frac{52}{100} = \frac{13}{25} = 13/25$
102. $0.52 = 52\%$
103. $\frac{3}{4} \times 120 = 90$
 $\frac{2}{3} \times 120 = 80$
 $90 - 80 = \boxed{10}$
104. $24 \times \frac{7}{8} - 6 = 15$
105. 26 lb & 15 oz
 $63 \text{ lb } 8 \text{ oz} - 36 \text{ lb } 9 \text{ oz} = 26 \text{ lb } \& 15 \text{ oz}$
106. $136 \div 16 = 8.5$ (lb)
107. $32 - 27\frac{3}{4} = 4\frac{1}{4} \text{ lb} = 4 \text{ lb } \& 4 \text{ oz}$
108. $35\frac{1}{9} - 30\frac{1}{7} = 5\frac{1}{9} - \frac{1}{7} = 4\frac{61}{63} = 4 \text{ } 61/63 \text{ pounds}$
109. $576 \div 8 = 72 \text{ gal}$
110. $45 \div \frac{5}{6} = 45 \times \frac{6}{5} = 54 \text{ pounds}$

Answer Key

1. B
 2. D
 3. B
 4. C
 5. D
 6. C
 7. D
 8. A
 9. D
 10. B
 11. D
 12. A
 13. D
 14. A
 15. D
 16. D
 17. D
 18. B
 19. D
 20. B
 21. D
 22. D
 23. B
 24. C
 25. C
 26. D
 27. C
 28. C
 29. B
 30. 11
 31. A
 32. D
 33. A
 $16 + 6 = 22$
 $22 \div 2 = 11$
 $11 - 6 = 5$
 34. A
 35. B
 36. B
 $5a + 6b = 8b + 9p$
 $5a = 2b + 9p$
 $10p = 2b + 9p$
 $p = 2b$
37. C
 $\frac{2x-3}{4} = 8$
 $2x - 3 = 32$
 $2x + 3 = 38$
 38. D
 39. C
 $0.\overline{3} = \frac{1}{3}$
 $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$
 $\frac{1}{9} = 0.\overline{1}$
 40. D
 $9 - x < 7 < 15 - x$ (add x)
 $9 < x + 7 < 15$ (subtract 7)
 $2 < x < 8$
 41. D
 42. D
 43. C
 44. D
 45. A
 46. D
 47. D
 48. D
 $0.75 = \frac{1}{4}$
 $\frac{5}{4} = 1\frac{1}{4}$
 $0.75^2 + 2 \cdot \frac{3}{4} \cdot 1\frac{1}{4} + (\frac{5}{4})^2$
 $= (\frac{3}{4} + 1\frac{1}{4})^2$
 $= 2^2$
 $= 4$
 49. D
 50. C
 51. D
 $2 \text{ yd} = 6 \text{ ft}$
 $6 + 3 = 9 \text{ ft}$
 $18 - 9 = 9$
 $9 \text{ ft} - 7\frac{1}{2} \text{ in}$
 $= 8 \text{ ft } 4\frac{1}{2} \text{ in}$
 $= 96 \text{ in} + 4\frac{1}{2} \text{ in}$
 $= 100\frac{1}{2} \text{ in}$
 52. C
 $1\frac{5}{16} \times 1\frac{1}{3} \times 1\frac{1}{7} = \frac{21}{16} \times \frac{4}{3} \times \frac{8}{7} = 2$
 53. D
 54. C
 55. D
 56. (b) is larger.
 $17 \times 11\frac{1}{3} - 11 \times 17\frac{1}{3} = 17 \times \frac{1}{3} - 11 \times \frac{1}{3} = 6 \times \frac{1}{3} = 2$

MAP 280 (T2) Issue 9 (Unit Test)

57. $131 + 6 = \boxed{137}$

58. $1 + 3\frac{1}{3} = 4\frac{1}{3}$
 $4\frac{1}{3} \times 120 = 520$

59. 85

60. $12 + 8 = 20$

$20 \div 2 = 10$

$10 - 8 = \boxed{2}$

61. $\frac{3}{4} \times \frac{2}{3} \times \frac{1}{2} = \frac{1}{4}$

62. 7/11 or .636

63. Cross-multiply:

$(2x - 1)(2x + 1) = x(4x - 1)$

$4x^2 - 1 = 4x^2 - x$

$x = \boxed{1}$

64. 25

65. $4 \times 4^{13} = 4^{14} = 16\boxed{7}$

66. $1 + 2 + 3 + \dots + n + n + 1$

$- (1 + 2 + 3 + \dots + n)$

$= n + 1$

From $-n$ to $n+1$, there are $2(n + 1)$ numbers, so

the average is $\frac{n+1}{2(n+1)} = \boxed{\frac{1}{2}}$

67. 160000

68. S

69. B

70. $\frac{1+\sqrt{3}}{\sqrt{3}-5} \times \frac{\sqrt{3}+5}{\sqrt{3}+5}$
 $= \frac{(1+\sqrt{3})(\sqrt{3}+5)}{-22}$
 $= \frac{8+6\sqrt{3}}{-22}$
 $= \boxed{\frac{4+3\sqrt{3}}{-11}}$