

Answer Key

1. 4
2. 12
3. 10
4. 16
5. 7
6. 4
7. 6
8. 27
9. 6
10. 15
11. 2
12. 9
13. 20
14. 8
15. 8
16. 3
17. 9
18. 21
19. 2
20. 7
21. 18
22. 2
23. 30
24. 3
25. 28
26. 4
27. 36
28. 8
29. 12
30. 30
31. $14 + 12 = 26$ birds (Duck is a kind of birds.)
32. (a) $7 - 2 = 5$, $5 \times 5 = 25$ lollipops
(b) $42 \div 7 = 6$ days
(c) $20 \div 2 = 10$, $10 \times 5 = 50$ lollipops
33. $30 - 17 - 3 = 10$
34. $22 - 5 - 3 - 2 = 12$
35. $111 - 11$
36. $150 \div 30 = 5$ hrs
37. 0, 1, 2, 3, 4, 5, 6
 $0 + 6 = 6$
38. $91 - 1 = 90$
 $90 \div 2 = 45$
 $45 + 1 = 46$
39. $4 \times 12 = 48$ cm
40. $15 - 6 - 5 = 4$
41. $48 \div 3 = 16$
42. $15 + 19 = 34$ cups
43. $5 \times 24 = 120$
44. $8 + 7 = 15$
 $8 \times 15 = 120$ mi
45. $52 \div 4 = \$13$
46. $900 \div 6 = 150$ coins
47. $70 \div 14 = 5$ balloons
48. $165 - 16 - 27 = 122$ books
49. $16 - 10 = 6$
 $6 \div 2 = 3$ marbles
50. (a) 11 (b) 5
51. 91
52. $8 - \frac{1}{2}(12) = 2$
53. $32 \div 4 = 8$
 $8 \times 3 = 24$ (not white)
54. $1 - \frac{1}{4} = \frac{3}{4}$
 $120 \times \frac{3}{4} = \90.00
55. $12 \times \frac{3}{2} = 18$
56. $\frac{5}{15} = \frac{1}{3}$
Ans = 15
57. 3 A & 6 B & 9 C
58. $2013 - 1989 - 6 = 18$
59. half dozen = $12 \div 2 = 6$
 $6 \times 10 = 60$ ounces
60. $91 + 81 + 92 = 264$
 $264 \div 3 = 88$
61. $50 \times 16 = 800$ ounces
62. $80 \div 2 = 40$
 $40 \times 5 = 200$
63. $\frac{1}{3} \times 36 = 12$
 $\frac{1}{4} \times 36 = 9$
 $10 + 12 + 9 = 31$
 $36 - 31 = \$5.00$
64. $7 \times 0.25 + 5 \times 0.5 = 1.75 + 2.5 = \2.00
65. $\frac{1}{3}(11 + 12 + 13) = 12$
66. D
67. 2 quarters + 2 nickels + 3 pennies = 67¢
68. $3 \times 7 \times 4 = 84$ meals
69. $4 \times 8 = 32$

70. $\frac{1}{2} \times 12 = 6$

$6 + 5 = \underline{11}$

Answer Key

1. 60
2. 60
3. 600
4. 100
5. 0.01
6. 0.06
7. 0.12
8. 0.4
9. 400
10. 4000
11. 0.5
12. 0.25
13. 0.5
14. 0.75
15. 1.5
16. 2.25
17. 50
18. 25
19. 50
20. 75
21. $170 - 61 = 109$
22. $6 \times 7 = 42$
23. (a) $6 \times 2 = 12$
(b) $7 \times 2 = 14$
(c) $2 \times 8 = 16$
24. (a) $60 \times (3/4) = 45$
(b) $60 \times (3/4) = 45$
25. $10.00 - 2 \times 4.50 = 1$
26. $(16 + 34)/2 = 25$
27. D
28. (a) $28/4 = 7$
(b) $32/8 = 4$
29. (a) 52 (b) 38 (c) H
30. (a) $63 \times (1 - 8/9) = 7$

(b) $63 \times (8/9) = 56$
31. $90 - 55 = 35$
32. $2 \times 8/8 = 2$
33. (a) $5 + 2 + 5 = 12$
(b) $5 \times 2 \times 5 = 50$
34. $21 \times \frac{2}{7} = 6$
35. $50 \times 2 = 100$
36. $2 \times 30 = 60$
37. (a) $320/(7 + 1) \times 7 = 280$
(b) $320/(7 + 1) = 40$
38. (a) $78 \times 4/(4 + 9) = 24$
(b) $78 \times 9/(4 + 9) = 54$
39. $(2 \times 50 - 69) = 31$
40. $6 \times (12/9) = 8$
41. (a) $(52 + 6)/2 = 29$
(b) $(52 - 6)/2 = 23$
42. $\frac{35}{100} = \frac{7}{20} = 7/20$
43. 3
44. $\square = 4$
45. 4
46. $\square = 35$
47. $\square = 60$
48. $\frac{3}{4} = 3/4$
49. $24 \times 60 = 1440$ min
50. $52 + 2 - 5 = \boxed{49}$
51. $2 \times 0.75 = 1.5$
 $4 \times 0.75 = 3$
 $6 \times 0.75 = 4.5$

Ans = 6 cans only
52. $1600 \div 8 = 200$
53. $31 \div 5 = 6R1$
Ans =

7 boxes

 are needed
54. $3 \times 12 \times 0.3 = \10.80
55. $4:55 \text{ am} + 1:17 = 6:12 \text{ pm}$
56. Sat, Sun, Mon, Tue, Wed
Wed - Sat = 4 days
 $2 \times 2 \times 2 \times 2 = 2^4 = 16$
 $6 \times 16 = \boxed{96 \text{ inches}}$
57. Tom = $5 + 2 = 7$ yrs old
Sam = $3 \times 7 = \boxed{21 \text{ yrs old}}$
58. 16
59. $20 \times 2 - 15 = \boxed{25}$
60. $80 + 10 = 90$
 $90 \div 2 = \boxed{45}$
61. $20 \times 5 = 100$
 $120 - 100 = 20$
 $20 \div 10 = 2$ (dimes)
62. $(1.2 \times 5)^2 = 6^2 = \underline{36}$
63. 1.4
64. $(-3) \times (-4) + (-6) \times (-7) = 12 + 42 = 54$

MAP 240 (T1) Issue 4

65. $\frac{60}{16} = \frac{15}{4} = 3\frac{3}{4} = 3\frac{3}{4} \text{ lb}$

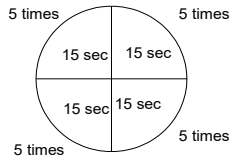
66. $2(100 + 1) = 202$

67. 25% (absent)
 $1 - 25\% = 75\%$ (present)
 $75\% = 3(25\%)$
 $3(5) = 15$ students (present)

68. $24 \times \frac{5}{6} = 20$

69. $(-3, -2)$

70. $60 \div 15 = 4$
 $5 \times 4 = 20$ times



71. C

$25 + 35 + 30 = 90$
 $100\% - 90\% = 10\%$
 $300 \times 10\% = 30$

72. $200 \times \frac{1}{4} = \50

73. $200 \div \frac{4}{5} = 250$ or $200 + 50 = \$250$

74. 6 possible outcomes
 $(1, 2), (1, 3), (1, 4),$
 $(2, 3), (2, 4),$
 $(3, 4).$

75. $\frac{12}{4} \times 15 = 45 \text{ mi}$

76. $\frac{\text{distance}}{\text{time}} = \frac{180}{3} = 60 \text{ mph}$

77. $12 + 12 - 20 = 4$
 $4 \times 12 = 48$

78. $4(5) = 20 \text{ ft}^2$



79. Saturday : Sunday : weekdays
 $= 2:2:1$

$2000 \times \frac{4}{5} = 1600$

80. $35 \times 2 = 70$
 $94 - 70 = 24$

(a) $24 \div 2 = 12$ (rabbits)

(b) $35 - 12 = 23$ (chickens)

81. C

Let's use # of quarters for simplicity.

CP = Color pencil = 1 quarter = Q_1

DP = Drawing pencil = 2 quarters = Q_2

FT Felt-tip markers = 3 quarters = Q_3

Total = 10Q

Ans = 14 ways

FT | DP | CP

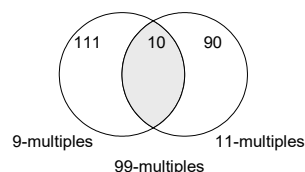
$Q_3 | Q_2 | Q_1 | \text{Tot}$

1		3		0		1		10Q
2		2		2		0		10Q
3		2		1		2		10Q
4		2		0		4		10Q
5		1		3		1		10Q
6		1		2		3		10Q
7		1		1		5		10Q
8		1		0		7		10Q
9		0		5		0		10Q
10		0		4		2		10Q
11		0		3		4		10Q
12		0		2		6		10Q
13		0		1		8		10Q
14		0		0		10		10Q

Answer Key

1. 375
2. 0.11
3. 0.11
4. 0.81
5. 0.098
6. 5
7. 50
8. 50
9. .0008
10. 90
11. 100
12. 0.01
13. 400
14. 0.04
15. 0.008
16. $\frac{3}{4}$
17. 2
18. $1\frac{3}{4}$
19. $2\frac{1}{4}$
20. $1\frac{3}{4}$
21. $\frac{5}{8} = 5/8$
22. $\frac{3}{14} = 3/14$
23. 66
24. $\frac{2}{3} \times 6 - \frac{1}{4} \times 12 = 4 - 3 = 1$
25. 0.6
26. 60
27. 500
28. $146 - 2 = 144 = 16 \times 9$
Ans = 9
29. $3\frac{1}{8} = 3.125 = 312.5\%$
30. $50 \div 2 = 25$
 $25 - 10 = 15$
 $10 \times 15 = 150 \text{ in}^2$
31. A
32. $40 \times 2 \div 8 = 10$
33. $36 = 6 \times 6$
 $2 \times (1 + 3) = 8$
 $8 \times 6 = 48 \text{ in}$
34. $80 \times 4 - 90 \times 3 = 50$

35. $1000 \div 9 = 111 \text{ R } 1$
There are 111 multiples of 9.
 $1000 \div 11 = 90 \text{ R } 10$
There are 90 multiples of 11.
 $1000 \div 99 = 10 \text{ R } 10$
There are 10 multiples of 99.
 $111 + 90 - 10 = 191$



36. $500 \div 2 = 250$
 $\frac{12}{200} \times 250 = \frac{6}{100} \times 250 = 6 \times 2.5 = 15 \text{ (min)}$
37. $150 \times \frac{2}{3} \times \frac{1}{2} = 50$
38. 50 (min)
39. $40 \div 8 = 5$
40. $5 \times 5 = 25$
 $25 \times 3 = 75$
41. 0.034
42. 8
43. $2/3$
44. $\frac{13}{20} = 13/20$
45. $104\frac{1}{12} = 104 \frac{1}{12}$
$$\begin{array}{r} 3\frac{2}{3} \\ + 100\frac{5}{12} \\ \hline 103\frac{13}{12} = 104\frac{1}{12} \end{array}$$
46. $\frac{25}{9} = \left(\frac{5}{3}\right)^2 = \left(1\frac{2}{3}\right)^2$
 $a = 2$
47. 12449
48. 7
 $1^2 = 1, 2^2 = 4, \dots, 7^2 = 49$
49. $30 \div 2.5 = 12$ packets
50. $3 \times 10 = 30$ (total)
 $30 - (10 + 12) = 8$ years old (Charlie)
51. D
52. $80 \div 4 = 20$
 $20^2 = 400 \text{ ft}^2$
 $10^2 \pi = 314 \text{ ft}^2$
 $400 - 314 = 86 \text{ ft}^2$

MAP 250 (T1) Issue 4

53. $401 \div 5 = 80R1$

$R = 1$

54. $\frac{1}{2} \times 6 \times 12 = 36$

$6 \times 6 = 36$

$x = 6$

55. $40\% \times 20 = .4 \times 20 = 8$

56. $720 \div 12 = 60$

$60 + 50 + 50 = \boxed{160}$

57. C

Nancy: 46 sec

Jennifer: 45 sec

Alex: 50 sec

Joy: 45.8 sec

58. $24 \div 3 = 8$ rows

$15 \div 3 = 5$ columns

$8 \times 5 = 40$ (plates)

59. $14 \div 3\frac{1}{2} = \boxed{4}$

60. $12 \div \frac{1}{3} = \boxed{36}$

61. A

Roboprint (fastest) prints 120 pages

Voltronn prints 30 pages

Vantek Plus prints 80 pages

DLS Pro prints 100 pages

62. $160 \div 10 = 16$

$256 \div 16 = 16$ gal

63. $1 + 11 + 11 + 1 = 24$

$1 + 1 + 11 + 11 = 24$

$1 + 11 + 1 + 11 = 24$

$11 + 11 + 1 + 1 = 24$

$11 + 1 + 11 + 1 = 24$

$11 + 1 + 1 + 11 = 24$

Ans = 6 ways

64. $40 \div 5 = 8$

$8 \times 2 = 16$

65. $6,000,000 \times 10\% = 6,000,000 \times 0.1 = \$600,000$

66. $16 \times \frac{3}{2} = 24$

67. $30 \div \frac{3}{5} = 50$

68. $99 \times 4 + 1 = 397$

69. (a) $(30 + 6) \div 2 = \$18.00$ (Carl)

(b) $(30 - 6) \div 2 = \$12.00$ (Dave)

70. B

$\frac{40}{60} \times 15$

$= \frac{2}{3} \times 15$

$= 10$ leaps

71. D

$1\frac{12}{60} \times 15$

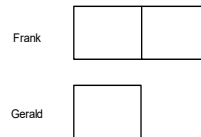
$= 1\frac{1}{5} \times 15$

$= 15 + 3$

$= 18$ leaps

72. Use the diagram below. There are two boxes for Frank and one for Gerald. Therefore, 3 boxes account for 12 marbles, each one representing 4 marbles.

Ans = 8 marbles for Frank & 4 marbles for Gerald



73. $75 \text{ sec} = 1 \text{ min } 15 \text{ sec} = 1\frac{1}{4} = 1 \frac{1}{4} \text{ min}$

74. $85 \times \frac{1}{5} = 17$

$17 - 7\frac{1}{2} = \$9.50$

75. price ending Monday: $25 - 5 = 20$

price ending Tuesday:

$20 \times 10\% = 20 \times 0.1 = 2$

$20 + 2 = 22$

price ending Wednesday:

$22 \times 20\% = 22 \times 0.2 = 4.40$

$22 - 4.40 = 17.60$

76. $2(10^2\pi) = 628 \text{ cm}^2$ (two circles)

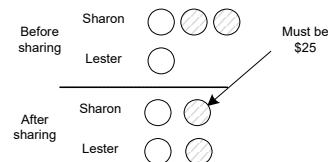
$20\pi = 62.8 \text{ cm}$ (circumference)

$62.8 \times 30 = 1884 \text{ cm}^2$ (lateral surface)

$1884 + 628 = 2512 \text{ cm}^2$ (total surface)

77. \$75 (Sharon) & \$25 (Lester)

(See the following figure.)



78. $6 \times 2 = 12$ different outcomes

(1, H), (1, T),

(2, H), (2, T),

(3, H), (3, T),

(4, H), (4, T),

(5, H), (5, T),

(6, H), (6, T).

79. $3 - 5 + 7 = 5$

$5 + 7 = 12$

$12 + 1 + 12 = 25$

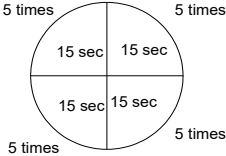
80. D

$m + n + q = (2 + 1 + 3)n = 180$

$n = 30, m = 60, q = 90$

Right triangle

Answer Key

1. 196
 2. 4.84
 3. $1\frac{7}{9} = 1\frac{7}{9}$
 4. 0.0169
 5. 49
 6. 0.25
 7. 27
 8. 512
 9. 256
 10. 1.96
 11. 0.008
 12. 169
 13. 6.25
 14. 110
 15. 50
 16. 1.2
 17. $\frac{5}{4} = 5/4$
 18. 1.4
 19. 0.8
 20. 11
 21. $(1.2 \times 5)^2 = 6^2 = \underline{36}$
 22. 1.4
 23. $(-3) \times (-4) + (-6) \times (-7) = 12 + 42 = 54$
 24. $\frac{60}{16} = \frac{15}{4} = 3\frac{3}{4} = 3\frac{3}{4} \text{ lb}$
 25. $2(100 + 1) = 202$
 26. 25% (absent)
 $1 - 25\% = 75\%$ (present)
 $75\% = 3(25\%)$
3(5) = 15 students (present)
 27. $24 \times \frac{5}{6} = 20$
 28. (-3, -2)
 29. $60 \div 15 = 4$
 $5 \times 4 = 20 \text{ times}$
- 
30. C
 $25 + 35 + 30 = 90$
 $100\% - 90\% = 10\%$
 $300 \times 10\% = 30$
 31. $200 \times \frac{1}{4} = \50
 32. $200 \div \frac{4}{5} = 250$ or $200 + 50 = \$250$
 33. 6 possible outcomes
 (1, 2), (1, 3), (1, 4),
 (2, 3), (2, 4),
 (3, 4).
 34. $\frac{12}{4} \times 15 = 45 \text{ mi}$
 35. $\frac{\text{distance}}{\text{time}} = \frac{180}{3} = 60 \text{ mph}$
 36. $12 + 12 - 20 = 4$
 $4 \times 12 = 48$
 37. $4(5) = 20 \text{ ft}^2$
- 5

5	5
5	5
38. Saturday : Sunday : weekdays
 $= 2:2:1$
 $2000 \times \frac{1}{5} = 400$ (5 whole weekdays)
 $400 \times \frac{1}{5} = \underline{80 \text{ miles}}$
 39. $35 \times 2 = 70$
 $94 - 70 = 24$
 (a) $24 \div 2 = 12$ (rabbits)
 (b) $35 - 12 = 23$ (chickens)
 40. C
 Let's use # of quarters for simplicity.
 CP = Color pencil = 1 quarter = Q_1
 DP = Drawing pencil = 2 quarters = Q_2
 FT Felt-tip markers = 3 quarters = Q_3
 Total = 10Q
Ans = 14 ways
 FT | DP | CP

	Q_3	Q_2	Q_1	Tot
1	3	0	1	10Q
2	2	2	0	10Q
3	2	1	2	10Q
4	2	0	4	10Q
5	1	3	1	10Q
6	1	2	3	10Q
7	1	1	5	10Q
8	1	0	7	10Q
9	0	5	0	10Q
10	0	4	2	10Q
11	0	3	4	10Q
12	0	2	6	10Q
13	0	1	8	10Q
14	0	0	10	10Q
 41. -0.008

MAP 260 (T1) Issue 4

42. $18 \div \frac{3}{4} = 24$ messages
43. $27.50 \times 2 - 2.00 + 2.50 + 17.25$
 $= 55 - 2 + 2.5 + 17.25$
 $= 55.5 + 17.25$
 $= \$72.75$
44. $6 \div 0.75 = 6 \div \frac{3}{4} = 8$ cans
45. $1 + 50\% = 1.5$
 $5 \times 1.5 = \$7.50$
46. $2500 \div 10 \times 3$
 $= 750 \text{ min}$
 $= 12\frac{1}{2} = 12 \frac{1}{2} \text{ hr}$
47. $\frac{3}{4} \times 120 = 90$
 $\frac{2}{3} \times 120 = 80$
 $90 - 80 = 10$
48. $175 \div 25 = 7$
 $7 \times 120 = 840$
or
 $\frac{175}{25} \times 120 = 840$
49. $\frac{1}{4} = 0.25 = 25\%$
50. $120 : \underline{\quad} = 4 : 1$
 $\underline{\quad} = 30$
51. $3 \times 5 = 15$
 $15 \times 6 = 90$
52. D
53. D
54. $(120 \div 8) \times 15 = 225$
55. Method I)
 $45 \times \frac{5}{3} = 75$ books
Method II)
 $1 - \frac{5}{8} = \frac{3}{8}$ (unsold)
 $45 \div \frac{3}{8} = 120$ (total)
 $120 - 45 = 75$ (sold)
56. $7.5 \times 36 = 15 \times 18 = 30 \times 9 = \270
57. $40 \times 8 + 5 \times 12 = 320 + 60 = \380
58. $\frac{580 - 40 \times 10}{15} + 40 = 52 \text{ hr}$
59. $8 - 12 - 6 = 2$
60. $50 \div 2 = 25$
 $90 \div 2 = 45$
 $25 + 45 = 70$
 $180 - 70 = 110$
61. $(\frac{1}{2})^2 - (\frac{1}{3})^3 = \frac{1}{4} - \frac{1}{27} = \frac{23}{108} = 23/108$
62. $1 \frac{9}{16}$
63. 0.9
64. $28/25$
65. 12.5
66. 84
67. 3
68. -2
69. 3
70. 9
71. $\frac{1}{2} = 1/2$
72. $91 = 7 \times 13$
Ans = 7 & 13
73. $5 \times 12 = 60$
 $\frac{1}{3} \times 12 = 4$
 $60 + 4 = 64$
74. \$25
75. $5 \times 12 \div 6 = 10$ pieces of tile
 $6 \times 12 \div 6 = 12$
 $10 \times 12 = 120$ pieces
76. Let's split 12 into 3 parts: 2 for the tens digit, and 1 for the ones digit. So, tens digit is 8 and ones digit is 4.
Ans = 84
77. F(6, 4)
78. -1.25
79. $\frac{1}{2}x - \frac{1}{3}x = 6$
 $\frac{1}{6}x = 6$
 $x = 36$
80. $180 \div 250 = 72\%$

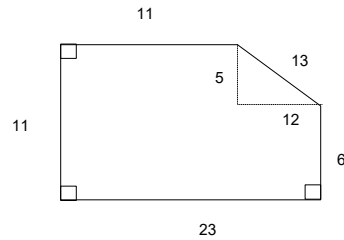
Answer Key

1. 0.005
2. $\frac{14}{25} = \frac{56}{100} = 56\%$
3. 1.21
4. 14400
5. $\frac{169}{9} = 18\frac{7}{9} = 18\frac{7}{9}$
6. 576
7. 625
8. $1.3^2 = 1.69$
9. 5 (for A) & 2 (for B)
10. $2 - .4 + 1.8 = 3.4$
11. $1\frac{2}{3} = 1\frac{2}{3}$
12. $1 + \frac{1}{1\frac{2}{3}} = 1\frac{3}{5} = 1\frac{3}{5}$
13. $\sqrt{5+\frac{4}{9}} = \sqrt{\frac{49}{9}} = \frac{7}{3} = 2\frac{1}{3} = 2\frac{1}{3}$
14. $\frac{1}{4} = 1/4$
15. $\frac{1}{40} = 1/40$
16. $\frac{4.5}{2.88} \times \frac{16}{3} = \frac{1.5}{2.88} \times 16$
 $= \frac{15}{28.8} \times 16$
 $= \frac{15}{1.8} = \frac{75}{9} = \frac{25}{3} = 25/3$
17. $\frac{8}{3} \div \frac{15}{4} \div \frac{51}{10} = \frac{8 \times 4 \times 10}{3 \times 15 \times 51}$
 $= \frac{64}{459} = 64/459$
18. $\frac{60-30+20-15+12}{60} = \frac{47}{60} = 47/60$
19. $1\frac{2}{3} = 1\frac{2}{3}$
20. 25
21. $(\frac{1}{2})^2 - (\frac{1}{3})^3 = \frac{1}{4} - \frac{1}{27} = \frac{23}{108} = 23/108$
22. $1\frac{9}{16}$
23. 0.9
24. $28/25$
25. 12.5
26. 84
27. 3
28. -2
29. 3
30. 9
31. $\frac{1}{2} = 1/2$
32. $91 = 7 \times 13$
 Ans = 7 & 13
33. $5 \times 12 = 60$
 $\frac{1}{3} \times 12 = 4$
 $60 + 4 = 64$
34. \$25
35. $5 \times 12 \div 6 = 10$ pieces of tile
 $6 \times 12 \div 6 = 12$
 $10 \times 12 = 120$ pieces
36. Let's split 12 into 3 parts: 2 for the tens digit, and 1 for the ones digit. So, tens digit is 8 and ones digit is 4.
 Ans = 84
37. F(6, 4)
38. -1.25
39. $\frac{1}{2}x - \frac{1}{3}x = 6$
 $\frac{1}{6}x = 6$
 $x = 36$
40. $180 \div 250 = 72\%$
41. $\frac{1}{8} = 1/8$
42. 1
43. $\frac{9}{14} = 9/14$
44. $\frac{5}{3} \div 1\frac{2}{3} = 1$
45. 0.09
46. $4\frac{1}{3} = 4\frac{1}{3}$
47. $12\frac{5}{6} = 12\frac{5}{6}$
48. 214
49. 9.5
50. $4\frac{1}{4} - 3\frac{1}{3} = 1\frac{1}{4} - \frac{1}{3} = \frac{15-4}{12} = \frac{11}{12} = 11/12$
51. $5\frac{35}{36}$
52. $x^5 = \sqrt{x^{10}}$, a = 10
53. 2.3
54. $3.60 \div 12 = 0.3$
 $2.40 \div 6 = 0.4$
 $0.4 - 0.3 = \$0.10$
55. GCF(84, 96) = 12
 $84 \div 12 \times (96 \div 12) = 7 \times 8 = 56$ pieces
56. 150
57. $360 \times 4 = 1440$
 $40(1 + 2 + 3) = 240$
 $1440 + 240 = 1680$
58. $30 + 45 = 75$
 $40\% \times 75 = 30$
 $30 - 9 = 21$ games

MAP 270 (T1) Issue 4

59. A
 $900 \div 300 \times 20 = 60$ (gallons)
60. B
 $600 \div 60 = 10$
61. $\frac{4}{9}$
62. -16
63. 8
64. $0.02 \times 16\% = 0.32\%$
65. 12
66. $16^2 = 256$
 $18^2 = 324$
 $20^2 = 400$
 $22^2 = 484$
 $24^2 = 576$
 Ans = 5 perfect squares
67. $5(x - 2) = 4(x + 6)$
 $5x - 10 = 4x + 24$
 $x = 34$
68. -8
69. $0.4 \times 15 = 6$
 $6 + 10 = 16$
 $\frac{16}{25} = 64\%$
70. $12 \div 5 = 2.4$ hr = 2 hr & 24 min
 Note that 0.4 hr = $0.4 \times 60 = 24$ min)
71. 875

72. $4 \times 40 = 160$ mi
73. $8 \text{ feet} = \frac{8}{3} \text{ yards}$
 $15 \text{ feet} = 5 \text{ yards}$
 $\frac{8}{3} \times 5 = \frac{40}{3}$ (sq. yards)
 $14.4 \times \frac{40}{3} = 4.8 \times 40 = \192
74. 1:3
75. the length of the slant side = 13 ($= \sqrt{5^2 + 12^2}$)
 $11 + 11 + 23 + 6 + 13 = 64$

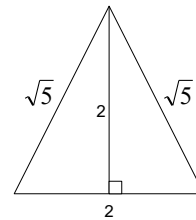


76. 12
77. $2 \text{ hr } 40 \text{ min} = 2\frac{2}{3} \text{ hr}$
 $2\frac{2}{3} \times 360 = 720 + 240 = 960$ miles
78. C
79. $6 \times 12 = 9 \times 8$
 Ans = 8 (men)
80. $36 \times 8 + 24 \times 9 = 504$
 $504 \div 224 = 2.25 = 2\frac{1}{4} = 2 \frac{1}{4} \text{ gal}$

Answer Key

1. 30
2. 1024
3. 4096
4. 0.09
5. 0.008
6. 0.248
7. $0.125 + 0.25 + 0.5 = 0.875$
8. 155
9. 2.0625
10. 16.5
11. 2.8
12. $70 \div 2 \div 3 \div 4 \div 7 \times 5 \times 6 \times 8 \times 9 = 900$
13. $70 \div 2 \div 3 \div 5 \div 7 \times 4 \times 6 \times 8 = 64$
14. $1/9$
15. 8
16. 83
17. 72
18. -8
19. 8
20. -120
21. D
22. B
Let him have x nickels and y pennies. Then the value is
 $5x + y$.
Suppose he had x pennies and y nickels, then the value is
 $5y + x$.
The difference is
 $5x + y - 5y - x$
 $= 5(x - y) - (x - y)$
 $= 4(x - y)$
 $= 80$
 $x - y = 20$
23. B
24. C
25. C
26. $4^2 - 4\pi = 3.44$
27. A
rise = $6 - (-7) = 13$
run = $2 - 7 = -5$
slope = $-\frac{13}{5}$

28. B
The difference is 120
#boys = 360
#girls = 240
29. C
30. D
31. D
32. C
33. B
 $x + (x + 6) + (x - 4) = 3x + 2$
34. C
35. B
36. D
The altitude is 2. Each of the two sides is $\sqrt{5}$. The perimeter is $2 + 2\sqrt{5}$.



37. 12
38. C
39. D
 $4 \times 4 \times 0.425 = 6.80$
40. D
 $4x = 6$
 $x = \frac{3}{2}$
41. 5
42. .00009
43. $1\frac{2}{3} \div 3\frac{3}{4} = \frac{5}{3} \times \frac{4}{15} = \frac{4}{9} = 4/9$
44. 3
45. $-4 = t + 7$
 $t = -3$
46. $x = -5$
47. Multiplying 6 to both sides, we get
 $30 - 2(2x - 3) = 3(3x - 1)$
 $30 - 4x + 6 = 9x - 3$
 $36 - 4x = 9x - 3$
 $13x = 39$
 $x = 3$
48. $17 \div 25 = 0.68 = 68\%$

MAP 280 (T1) Issue 4

49. $200 - 80 = 120$
 $120 \div 30 = 4$
 $4 + 1 = 5$ (min)

50. C
 $80 + (M-1) \times 30 = 30M + 50$

51. 72

52. $3 + 2 = 5$
 $\frac{3}{5} \times 90^\circ = 54^\circ$ (larger)
 $\frac{2}{5} \times 90^\circ = 36^\circ$ (smaller)
 $180 - 54 = 126$
 $180 - 36 = 144$
 $126:144 = 7:8$

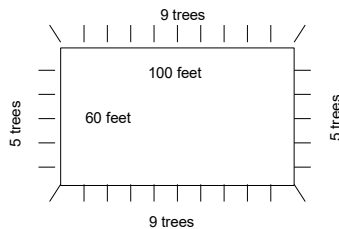
53. D
 $4 \times 4 \times 5 + 16\pi = 80 + 16\pi$

54. B
 $4 \times 4 + 8\pi = 16 + 8\pi$

55. $52 \div 4 = 13$
 $18 - 13 = 5$
 What is the width of the rectangle?
 $13^2 - 5^2 = 12^2$
 The height is 12 ft.
 Thus, the area =
 $13 \times 12 = 156 \text{ ft}^2$

56. $2 \times 2 \times 2 = 8$

57. $9 + 5 + 9 + 5 = 28$ trees
 On the corners, there are 4 trees.
 $28 + 4 = 32$ (total)



58. $15:72 = 5:24$

59. $10 \times 10 \times 2 = 200 \text{ in}^2$

60. $\text{time} = \frac{\text{distance}}{\text{speed}} = \frac{10}{6} \times 60 = 100 \text{ min}$

61. D

62. 8×10^8
 Ans = 8 & 8

63. $\frac{6}{35} = 6/35$

64. $x = 8$

65. 3

66. 3

67. A

68. D
 $(\sqrt{2} + 1)^2 = 3 + 2\sqrt{2}$

69. $(x - 3)^2 = \left(\frac{9}{4}\right)^2$
 $x - 3 = \pm 2.25$
 $x = 0.75 \text{ \& } 5.25$

70. 4×10^{-4}
 Ans = 4 & -4

71. $520 \div (1 - 20\% - 15\%) = 800$

72. $(8-3) \times 8/2 = 20$

73. $\frac{60}{20} + \frac{60}{40} = 3 + \frac{3}{2} = 4\frac{1}{2}$
 $\frac{\text{total distance}}{\text{total time}} = \frac{120}{4.5} = 26\frac{2}{3} = 26\frac{2}{3} \text{ mph}$

74. Method I)
 $80 - 78 = 2$ (the average discrepancy from B)
 $4 \times 2 = 8$ (the total discrepancy from B)
 $80 + 8 = 88$

Method II)
 $80 \times 5 - 78 \times 4 = 88$

75. A
 $2\pi \times 3\pi \times 4\pi = 24\pi^3$