

Answer Key

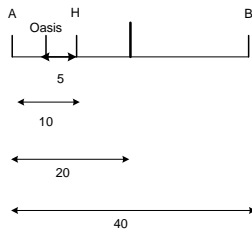
1. N/A
2. N/A
3. N/A
4. N/A
5. N/A
6. N/A
7. N/A
8. N/A
9. N/A
10. N/A
11. 2
12. 5
13. 7
14. 21
15. 110
16. 120
17. 12
18. 90
19. 15
20. 63
21. +
22. 1.6
23. 7.7
24. 9.9
25. +
26. 16.3
27. +
28. 14.1
29. +
30. 4.1
31. A=4, B=9, C=3
Ans=4 (for A) & 9 (for B) & 3 (for C)
32. A=8, B=9, C=5
Ans=8 (for A) & 9 (for B) & 5 (for C)
33. A=9, B=4, C=1
Ans=9 (for A) & 4 (for B) & 1 (for C)
34. A=5, B=7, C=0
Ans=5 (for A) & 7 (for B) & 0 (for C)
35. A=1, B=5, C=3
Ans=1 (for A) & 5 (for B) & 3 (for C)
36. A=5, B=2, C=8
Ans=5 (for A) & 2 (for B) & 8 (for C)
37. A=2, B=3, C=0
Ans=2 (for A) & 3 (for B) & 0 (for C)
38. A=8, B=8, C=0
Ans=8 (for A) & 8 (for B) & 0 (for C)
39. A=2, B=9, C=6
Ans=2 (for A) & 9 (for B) & 6 (for C)
40. A=6, B=4, C=4
Ans=6 (for A) & 4 (for B) & 4 (for C)
41. A=2, B=4
42. A=4, B=6
43. 55
44. A=6, B=6
45. 59
46. A=4, B=0
47. A=6, B=1
48. A=4, B=9
49. 61
50. A=7, B=8
51. $24 \div 8 = 3$
52. $29 - 11 = 18$
53. $25 + 20 + 75 = 120$
 $250 - 120 = 130$
54. $1:30 + 0:45 = 1:75 = 2:15 = 2 \text{ hr \& } 15 \text{ min}$
55. $15 + 28 = 43$
56. $3 + 7 = 10$
 $10 + 8 = 18$
57. $8 \times 70 = 560$
58. 14
59. $12 + 114 + 8 + 10 = 144$ students
60. $12 - 4 = 8$
61. $2 \times 2 = 4$
 $13 - 4 = 9$
 $9 \div 3 = 3$
62. There are 5 different flavors, each with 4 different sizes. Ans = 20 choices
63. $12 \div 4 = 3$
64. $81 \div 9 = 9$
65. $5 + 3 \times (15 - 1) = 5 + 42 = 47$
66. $65 + 55 = 120 = 2 \text{ min}$
67. 9 marbles
68. $21 \div 3 = 7$ rounds
69. $35 \div (6 + 1) = 5$
70. $2(12 + 10) = 44$

Answer Key

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|----------|--|
| 1. 0.55 | 43. 8 |
| 2. 0.6 | 44. 30 |
| 3. 0.65 | 45. 5 |
| 4. 0.7 | 46. $7 + 8 + 2 = 17$ |
| 5. 0.75 | 47. $164 - 72 + 32 = 124$ |
| 6. 0.8 | 48. $60 - 12 = 48$ |
| 7. 0.85 | 49. $54 - 38 = 16$ |
| 8. 0.9 | 50. $65 + 18 + 15 = 98$
$100 - 98 = 2$ (pounds <u>less</u>) |
| 9. 0.95 | 51. $2\frac{1}{2} + 3\frac{1}{2} = 6$ (lb) |
| 10. 1 | 52. $26 \times 2 = 52$ |
| 11. 4 | 53. $3 \times 12 = 36$ |
| 12. 18 | 54. B
$8 \times 6 = 48$ (blue)
$7 \times 7 = 49$ (<u>white</u> ✓) |
| 13. 16 | 55. $48 - 14 \times 2 = 20$ |
| 14. 10 | 56. $50 \div 6 = 8R2$
$8 + 1 = 9$ <u>tables</u> |
| 15. 20 | 57. $12.6 \div 3 = \$4.20$ |
| 16. 14 | 58. $20 \div 5 = 4$ (oz) |
| 17. 7 | 59. $5 \times 4 = \$20$ |
| 18. 8 | 60. $4 \times 30 = 120$ |
| 19. 8 | 61. $3 + 5 + 2 = \boxed{10}$ |
| 20. 9 | 62. $17 + 71 = 88$
$26 + 62 = 88$
$35 + 53 = 88$
$44 + 44 = 88$
Ans = $\boxed{7}$ |
| 21. 60 | 63. B: 2
C: 6
F: 9
J: 10 - 12
P: 13
S: 20
Ans = 10 & 11&12 |
| 22. 5 | 64. The largest possible sum arises in
$12 \times 1 \times 1 \times \dots \times 1$.
$12 + 11 = \boxed{23}$ |
| 23. 75 | 65. $33 + 4 + 0 = 37$ (total age)
$55 - 37 = 18$
$18 \div 3 = 6$ (6 years have passed)
$4 + 6 = \boxed{10}$ |
| 24. 192 | 66. $16 + 23 - 31 = \boxed{8}$ |
| 25. 4 | |
| 26. 49 | |
| 27. 34 | |
| 28. 48 | |
| 29. 60 | |
| 30. 66 | |
| 31. 45 | |
| 32. 27 | |
| 33. 15 | |
| 34. 68 | |
| 35. 34 | |
| 36. 396 | |
| 37. 552 | |
| 38. 713 | |
| 39. 768 | |
| 40. 3654 | |
| 41. 2 | |
| 42. 10 | |

MAP 230 (T2) Issue 8

67. Ans = 40



68. $3 + 5 = 2 + 6$ (7 can serve the center)
 $2 + 7 = 3 + 6$ (5 can serve the center)
 Ans = 5 & 7

69. Method I)
 $500 - 250 = 250$
 $250 \div 2 = 125$
 $150 + 125 = \boxed{275}$

Method II)
 $250 - 150 = 100$
 $250 - 200 = 50$ (jar weight alone)
 $500 - 50 = 450$
 $450 \div 2 = 225$ (half-filled yogurt alone)
 $225 + 50 = \underline{275}$ (jar with half-filled yogurt)

70. $100 + 200 + \dots + 900 = \underline{4500}$

Answer Key

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|------------------------------------|--|
| 1. 0.04 | 43. $\frac{7}{17}$ |
| 2. 0.08 | 44. $1\frac{5}{7}$ |
| 3. 0.12 | 45. $\frac{5}{7}$ |
| 4. 0.16 | 46. $\frac{8}{21}$ |
| 5. 0.2 | 47. $1\frac{1}{9}$ |
| 6. $\frac{5}{100} = \frac{1}{20}$ | 48. $\frac{6}{7}$ |
| 7. $\frac{10}{100} = \frac{1}{10}$ | 49. $\frac{2}{7}$ |
| 8. $\frac{15}{100} = \frac{3}{20}$ | 50. $\frac{9}{20}$ |
| 9. $\frac{20}{100} = \frac{1}{5}$ | 51. .16 |
| 10. $\frac{25}{100} = \frac{1}{4}$ | 52. .064 |
| 11. $\frac{5}{100} = 5\%$ | 53. 0.0256 |
| 12. $\frac{10}{100} = 10\%$ | 54. 0.01024 |
| 13. $\frac{15}{100} = 15\%$ | 55. $\frac{1}{16}$ |
| 14. $\frac{20}{100} = 20\%$ | 56. $\frac{1}{32}$ |
| 15. $\frac{25}{100} = 25\%$ | 57. $\frac{1}{64}$ |
| 16. 480,000 | 58. 0.0016 |
| 17. 81,000 | 59. 0.00032 |
| 18. 180,000 | 60. 0.000064 |
| 19. 180,000 | 61. $\frac{5}{24}$
LCD = 24 |
| 20. 18,000 | 62. $\frac{7}{6}$
LCD = 6 |
| 21. 12 | 63. $\frac{13}{180}$
LCD = 180 |
| 22. 8 | 64. $\frac{5}{72}$
LCD = 72 |
| 23. 20 | 65. $\frac{1}{16}$
LCD = 16 |
| 24. 16 | 66. $\frac{3}{40}$
LCD = 40 |
| 25. 27 | 67. $\frac{3}{80}$
LCD = 80 |
| 26. 2 | 68. $\frac{1}{36}$
LCD = 36 |
| 27. 1.6 | 69. $\frac{1}{4}$ ($=\frac{3}{12}$)
LCD = 12 |
| 28. 80 | 70. $\frac{8}{63}$ ($=\frac{16}{126}$)
LCD = 126 |
| 29. 120 | 71. $\frac{3(\text{pure})}{7(\text{alcohol})} = \frac{\Delta(\text{pure})}{56(\text{alcohol})}$
$\Delta = 24$ |
| 30. 80 | 72. 175:100 = 7:4 |
| 31. 15 | 73. 120:144 = 10:12 = 5:6 |
| 32. 15 | |
| 33. 0 | |
| 34. 63 | |
| 35. 2 | |
| 36. 11 | |
| 37. 1 | |
| 38. 29 | |
| 39. 12 | |
| 40. 3 | |
| 41. $\frac{2}{3}$ | |
| 42. $3\frac{1}{7}$ | |

MAP 250 (T2) Issue 8

74. A
✓midsize: $\frac{210}{7} = 30$
 minivan: $\frac{246}{10} = 24.6$
75. A
 Tigers = $\frac{9}{36} = \frac{1}{4} = 0.25 < 0.275 =$ Bucks ✓
76. C
 Both have the same rate.
 $\frac{20}{24} = \frac{5}{6}$
 $\frac{30}{36} = \frac{5}{6}$
77. 6 min
78. 9 min
79. $\frac{40}{50} = \frac{4}{5}$
 $\frac{4}{5} \times 3 = 2.4$ min
80. 10.4 lb
81. (a) $120 \times \frac{5}{30} = 20$ (Ann)
 (b) $120 \times \frac{4}{20} = 24$ (Ben)
82. A
✓A: $2.5 \div 10 = 0.25$ (per ounce)
 B: $1.80 \div 6 = 0.30$ (per ounce)
83. A
84. (a) 5:6
 (b) 14:11
 (c) 7:2
85. (a) 5:2
 (b) 3:2:10
 (c) 4:5:25
86. A
 Roboprint (fastest) prints 120 pages
 Voltronn prints 30 pages
 Vantek Plus prints 80 pages
 DLS Pro prints 100 pages
87. $160 \div 10 = 16$
 $256 \div 16 = 16$ gal
88. $1+11+11+1=24$
 $1+1+11+11=24$
 $1+11+1+11=24$
 $11+11+1+1=24$
 $11+1+11+1=24$
 $11+1+1+11=24$
 Ans = 6 ways
89. $40 \div 5 = 8$
 $8 \times 2 = 16$
90. $6,000,000 \times 10\% = 6,000,000 \times 0.1 = \$600,000$
91. $16 \times \frac{3}{2} = 24$
92. $30 \div \frac{3}{5} = 50$
93. $99 \times 4 + 1 = 397$
94. (a) $(30+6) \div 2 = \$18.00$ (Carl)
 (b) $(30-6) \div 2 = \$12.00$ (Dave)
95. B
 $\frac{40}{60} \times 15$
 $= \frac{2}{3} \times 15$
 $= 10$ leaps
96. D
 $1\frac{12}{60} \times 15$
 $= 1\frac{1}{5} \times 15$
 $= 15 + 3$
 $= 18$ leaps
97. 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
- Frank

Gerald
98. $75 \text{ sec} = 1 \text{ min } 15 \text{ sec} = 1\frac{1}{4} = 1 \frac{1}{4} \text{ min}$
99. $85 \times \frac{1}{5} = 17$
 $17 - 7\frac{1}{2} = \$9.50$
100. price ending Monday: $25 - 5 = 20$
 price ending Tuesday:
 $20 \times 10\% = 20 \times 0.1 = 2$
 $20 + 2 = 22$
 price ending Wednesday:
 $22 \times 20\% = 22 \times 0.2 = 4.40$
 $22 - 4.40 = 17.60$

Answer Key

- | | |
|-----------------|--|
| 1. 7 | 43. $10\sqrt{2}$ |
| 2. 7 | 44. $6\sqrt{11}$ |
| 3. -7 | 45. $20\sqrt{3}$ |
| 4. 27 | 46. 24 |
| 5. 4 | 47. 112 |
| 6. 3 | 48. 216 |
| 7. 1 | 49. 540 |
| 8. 25 | 50. 800 |
| 9. -7 | 51. 1.21 |
| 10. -24 | 52. 343 |
| 11. -5 | 53. 0.001 |
| 12. -2 | 54. $\frac{1}{343} = 1/343$ |
| 13. -27 | 55. $\frac{1}{49} = 1/49$ |
| 14. 22 | 56. $\frac{1}{8} = 1/8$ |
| 15. 3 | 57. $\frac{1}{19} = 1/19$ |
| 16. 4 | 58. $\frac{1}{11} = 1/11$ |
| 17. -3 | 59. $\frac{1}{5} = -1/5$ |
| 18. -7 | 60. $2\frac{1}{2} = 2\ 1/2$ |
| 19. 4 | 61. 128 |
| 20. -7 | 62. $1/256$ |
| 21. 36 | 63. 256 |
| 22. 52 | 64. $1/4$ |
| 23. 105 | 65. 1024 |
| 24. 10 | 66. 3 |
| 25. 27 | 67. 4 |
| 26. 18 | 68. 5 |
| 27. 12 | 69. 6 |
| 28. 39 | 70. 9 |
| 29. 60 | 71. $x = -5$ |
| 30. 84 | 72. $23/9$ |
| 31. 46 | 73. $x = 8$ |
| 32. 100 | 74. $x = 4$ |
| 33. 80 | 75. $x = -2$ |
| 34. 36 | 76. $x = 2$ |
| 35. 63 | 77. $x = 1$ |
| 36. 24 | 78. $-6\frac{1}{2} = -6.5$ |
| 37. 30 | 79. $8/5$ |
| 38. 57 | 80. $x = 2$ |
| 39. 17 | 81. $(\frac{1}{6} + 4\frac{1}{3}) \times 12 = 126$ roses |
| 40. 70 | 82. $60 \times \frac{7}{5} = \84 |
| 41. $3\sqrt{2}$ | |
| 42. $6\sqrt{3}$ | |

MAP 260 (T2) Issue 8

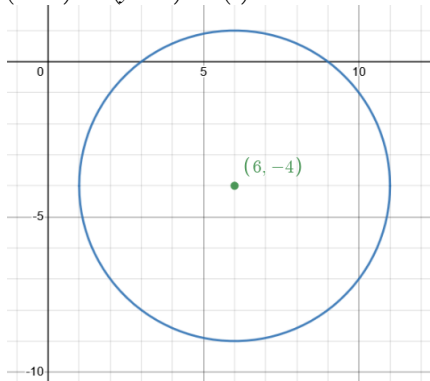
83. $1 - \frac{1}{4} = \frac{3}{4}$
 $9 \div \frac{3}{4} = 12$
84. C
B: 0.17
J: 55% = 0.55
N: 0.57
U: $\frac{1}{5} = 0.2$
Great Britain, United States, Japan, The Netherlands
85. 30 mon
86. $10 \div \frac{1}{3} = 30$
87. $\frac{3}{4} \times (1 - \frac{2}{3}) = \frac{1}{4} = 1/4$
88. $\frac{5}{8} \times 16 = 10$ gal
89. D
90. $6 \div 3 = 2$ (packs)
 $9.25 \times 2 = 18.50$
 $20 - 18.50 = \boxed{\$1.50}$
91. $16 \times \frac{3}{2} = 24$
92. $210,000 \times \frac{3}{7} = 90,000$
93. $12 = 1, 22 = 4, \dots, 72 = 49$
Ans = 7
94. $9 \times 8 = 72$ in = 6 ft
95. $15 \div \frac{5}{8} = 24$ mi
96. $15 \div \frac{3}{8} = 40$ mi
97. D: $36 \div \frac{4}{5} = 36 \times \frac{5}{4} = 45$
G: $45 \div \frac{3}{4} = 45 \times \frac{4}{3} = \boxed{60}$
98. $\frac{2400}{80} - 14 = 16$

Answer Key

1. a) ctr = (6, -4)

b) $r = 5$

c) $(x - 6)^2 + (y + 4)^2 = (5)^2$

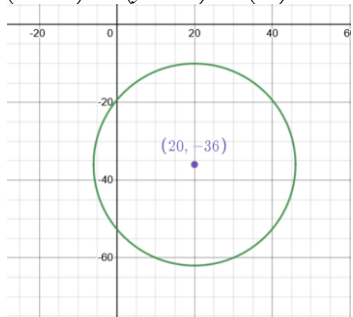


d) -10

2. a) ctr = (20, -36)

b) $r = 26$

c) $(x - 20)^2 + (y + 36)^2 = (26)^2$

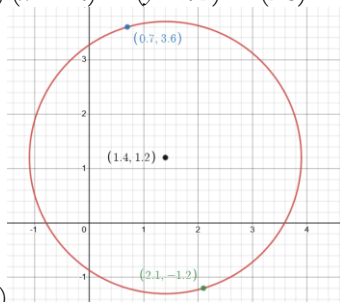


d)

3. a) ctr = (1.4, 4.2)

b) $r = 2.5$

c) $(x - 1.4)^2 + (y - 4.2)^2 = (2.5)^2$



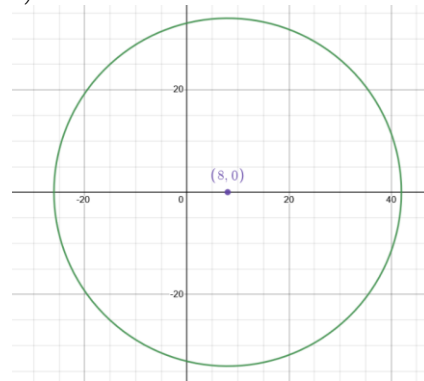
d)

4. a) ctr = (8, 0)

b) $r = 34$

c) $(x - 8)^2 + y^2 = (34)^2$

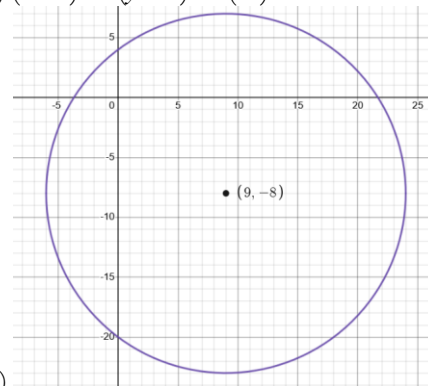
d)



5. a) ctr = (9, -8)

b) $r = 15$

c) $(x - 9)^2 + (y + 8)^2 = (15)^2$



d)

6. a) $-5/2$

b) 5

c) $y = (-5/2)x + 5$

d) $2/5$

e) $y - 2 = 2/5(x - 10)$

f) $y = (2/5)x - 2$

7. a) $-7/1$

b) 7

c) $y = (-7)x + 7$

d) $1/7$

e) $y - 1 = 1/7(x - 14)$

f) $y = (1/7)x - 1$

8. a) $-3/1$

b) 3

c) $y = (-3)x + 3$

d) $1/3$

e) $y - 1 = 1/3(x - 6)$

f) $y = (1/3)x - 1$

MAP 280 (T2) Issue 8

9. a) $+7/6$
 b) 7
 c) $y = (-7/6)x + 7$
 d) $6/7$
 e) $y - 6 = 6/7(x - 14)$
 f) $y = (6/7)x - 6$
10. a) $-5/1$
 b) 5
 c) $y = (-5)x + 5$
 d) $1/5$
 e) $y - 1 = 1/5(x - 10)$
 f) $y = (1/5)x - 1$
11. a) $4/2$
 b) 4
 c) $y = (4/2)x + 4$
 d) $x/-2 + y/4 = 1$
 e)
12. a) $-1/1$
 b) 1
 c) $y = (-1/1)x + 1$
 d) $x/1 + y/1 = 1$
 e)
13. a) $-2/1$
 b) 2
 c) $y = (-2/1)x + 2$
 d) $x/1 + y/2 = 1$
 e)
14. a) $-3/1$
 b) 3
 c) $y = (-3/1)x + 3$
 d) $x/1 + y/3 = 1$
 e)
15. a) $-4/1$
 b) 4
 c) $y = (-4/1)x + 4$
 d) $x/1 + y/4 = 1$
 e)
16. $2\sqrt{3}$
 17. $3\sqrt{2}$
 18. $2\sqrt{22}$
 19. $16\sqrt{2}$
 20. $9\sqrt{7}$
 21. 0.343
 22. 243
 23. 9
 24. 0.729
 25. 1.4641
 26. 1.1
 27. 1.21
 28. 1.1
 29. 3
30. 27
 31. 35
 32. 156
 33. 12.5
 34. $3\sqrt{10}$
 35. $4.5\sqrt{13}$
 36. $7\sqrt{17}$
 37. $12\sqrt{2}$
 38. $0.5\sqrt{29}$
 39. $3\sqrt{34}$
 40. $4.5\sqrt{41}$
 41. 12
 42. $1890 \div 3.5 = 540$ mi per hr
 43. $\frac{540 \times 5280}{60 \times 60} = 9 \times 88 = 792$ feet per second
 44. $9x + 3x + x = 13x = 1$
 $x = \frac{1}{13}$ of the entire fabric
 45. 3
 $2x^2 - 4x + 5 = 11$
 $2x^2 - 4x - 6 = 0$
 $x^2 - 2x - 3 = 0$
 $(x - 3)(x + 1) = 0$
 $x = 3$
 46. Let x be the width, and hence the length is $2x$. The perimeter is $2(3x) = 6x$ ft, and the area is $2x^2$ ft². Further, we have
 $2x^2 = 3(6x)$
 $2x(x - 9) = 0$ (0 not desired)
 $x = 9$ ft (width)
 $2x = 18$ ft (length)
 47. $670 - 250 = 420$
 $420 \div 6\% = \boxed{\$7000}$
 48. $x \frac{10}{110} = 110$
 $x = 1,210$
 49. The truck charges
 $60 + 0.2m$
 for traveling m miles that day. Thus, we need to solve the equation
 $100 = 60 + 0.2m$
 $40 = 0.2m$
 $m = 200$ (miles)
 50. $22 \times 22 = \underline{484}$

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51. Let x be the length, and hence the width is $\frac{1}{3}x + 1$.
The area is $x(\frac{1}{3}x + 1)$, which equals 270. We have
 $x(\frac{1}{3}x + 1) = 270$
 $\frac{1}{3}x^2 + x = 810$
 $x^2 + 3x - 810 = 0$
 $(x + 30)(x - 27) = 0$
 $x = 27$ (length, -30 not desired)
 $\frac{1}{3}x + 1 = 10$ (width)
 $2(27 + 10) = 74$ ft
52. Let x = the length of the shortest side,
 $2x$ = that of the longest side, and
 $x + 2$ = that of the third side.
The perimeter = 54.
 $x + 2x + x + 2 = 54$
 $4x + 2 = 54$
 $4x = 52$
 $x = 13$
 $2x = 26$ yd (longest side)
53. $40 \times 20\% = 40 \times 0.2 = \8.00
54. $\frac{y}{d}$ hours = $\frac{60y}{d}$ min
55. Let x be the width, and, hence, the length is $3x$.
The area is $x(3x) = 3x^2$, which equals 588.
Therefore, we have
 $3x^2 = 588$
 $x^2 = 196$
 $x = 14$ in (width, -14 not desired)
 $3x = 42$ in (length)
 $2(14 + 42) = 112$ in (perimeter)
56. 0
57. $20 \times 10\% = 2$ liters of pure concentrate
To become 25%, we need to add x liters pure
concentrate to the solution,
 $\frac{x+2}{x+20} = \frac{1}{4}$
 $4x + 8 = x + 20$
 $3x = 12$
 $x = 4$ liters
58. $1 + 50\% = 1.5$
 $2.5 \times 1.5 = \$3.75$
59. $7000 \times 10\% = 700$
 $7000 + 700 = 7700$
60. $174 - 145 = 29$
 $29 \div 145 = 0.2 = \boxed{20\%}$