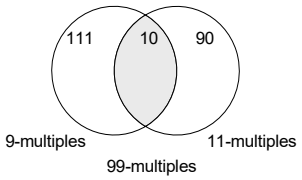
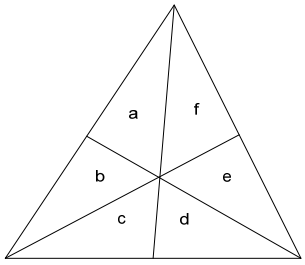
Answer Key

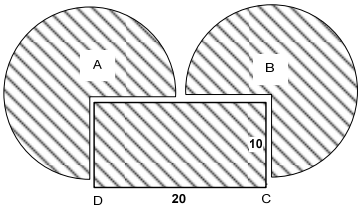
1. 1000÷9 = 111 R 1
   There are 111 multiples of 9.
   1000÷11 = 90 R 10
   There are 90 multiples of 11.
   1000÷99 = 10 R 10
   There are 10 multiples of 99.
   111 + 90 - 10 = 191



2. D
   From smallest to the largest:
   6: a, b, c, d, e, f
   3: ab, cd, ef
   6: abc, bcd, cde, def, efa, fab
   1: abcdef
   total: 16



3. C
   radius = 10
   $\frac{3}{4}\times 2\times 100\pi = 150\pi$
   10×20 = 200
   200 + 150π = 671



4. n = 1, 6 + 2 = 8
   n = 2, 8 + 2 = 10
   n = 3, 10 + 2 = 12
   n = 100, 6 + 200 = 206

5. A = 1
   B = 5
   C = 3
   D = 7
   1535×5 = 7675
   C + D = 3 + 7 = 10

6. 5×8 = 4×10 days

7. 20×12 = 16×15 men

8. 12×20 = h×16
   h = 15 inches

9. 95x + 60 = 90(x + 1)
   5x = 30
   x = 6
   6 + 1 = 7

10. C
    1+2+3+4+5+9 = 24

11. 60×2 + 40×3 = 240
    240÷5 = 48

12. $\frac{2.4}{0.2+0.3}$ = 4.8 miles per hour

13. C
    36 = 6×6 = 4×9 = 3×12 = 2×18 = 1×36
    (6, 6) is not good as they must be different.
    (4, 9) is the only answer.
    Their difference is 9 – 4 = 5.

14. 286

15. 10/25 = 40%

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

17. 600÷300 = 2
    2×20 = 40 gal

18. 1500÷300 = 5
    5×30 = $150

19. C
    It costs $1.5 to travel 15 miles, thus it costs $0.1 for a mile. Therefore, with $100 they can travel 100÷0.1 = 1000 miles. Since they need to come back, they

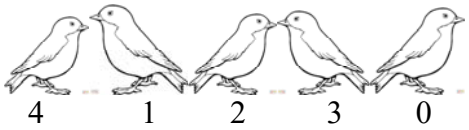
farthest place they can go is Magicwonder, which is 500 mi. away.

20. 49
21. D
    D is not a rotation from A.
22. A
23. B
24. A
25. C
26. $\frac{3}{4} + \frac{1}{8} - \frac{1}{2} = \frac{3}{8}$ liter
27. 1.18×5 = $5.90
28. 60×10×2 = 1200
29. P = 16 heads
30. Q = 44 legs
31. R = 16 - 10 = 6 heads
32. 2×6 + 4×10 = 52 legs
33. X = 2 chickens
34. Y = 4 pigs
35. Darla: 75168÷9 = 8352 feet a year
    Sonia: 62314÷7 = 8902 feet a year
36. 12 - 3 = 9
    3×4 = 12
    9×5 = 45
    12 + 45 = 57
37. 5 min = 300 sec
    (300÷30)×40 = 400
38. 0:30 + 0:45 + 1:00 = 2:15
    2 hours 15 minutes = $2\frac{1}{4}$ hours
39. 24÷(3.5 - 2)
    = 24÷1.5
    = 48÷3
    = $16 per hour
40. 16×(3.5 + 2)
    = 16×5.5
    = 8×11
    = $88 (in total)
41. $5 - 2\frac{2}{3} = 2\frac{1}{3}$ credits
42. $7 \div \frac{1}{2} = 14$
    $14 \div \frac{1}{2} = 28$
43. 20 + 5 = 25 (quarts)
    20 - 5 = 15 (quarts)
44. 36÷2 = 18 (half-perimeter)
    18 - 10 = 8 in (width)
    8×10 = 80 sq. in.
45. $1 - \frac{2}{3} = \frac{1}{3}$ (occupied)
    $\frac{1}{3} \times 2460 = 820$ cars
46. A
    80, 10, 70, 15, 60, …
    10, 15, 20
47. D
    2, 44, 4, 41, 6, 38, 8, 35, 10
48. A
    The middle letters are static, so concentrate on the first and third letters. The series involves an alphabetical order with a reversal of the letters. The first letters are in alphabetical order: F, G, H, I, J. The second and fourth segments are reversals of the first and third segments. The missing segment begins with a new letter.
49. A
    31, 29, 24, 22, 17, 15
    -2 -5 -2 -5 -2
50. D
    -3, -0
51. D
52. B
53. D
54. A
55. D
56. C
57. C
58. D
59. A
60. B
61. C
62. C
    20×10 = 200
    50×4 = 200
63. C
64. C
65. B

66. C
$1 + 5 + 8 + 9 + 10 + 12 + 15 = 60$
$60 = 3\times20 = 4\times15 = 5\times12 = 6\times10$
3 groups with 20: (1, 9, 10), (5, 15), (8, 12)
Cannot be divided into groups with sum of 15, 12, or 10

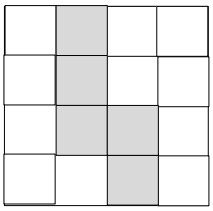
67. D
It can only be 4 or 6. The answer is 4.

68. D
The number of chirps of each bird is as listed.



The total number is $4 + 1 + 2 + 3 = 10$

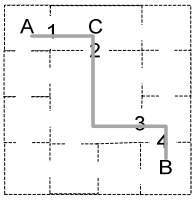
69. D
$4^2 = 16$
$16 - 6 = 10$



70. A
$12 + 8 = 20$

71. D
$18\div2 = 9$ (rooms lit)
$12 - 9 = 3$
$3\times2 = 6$ (windows)

72. B

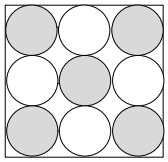


73. C
$20 - 4 = 16$
$16\div2 = 8$ (hens)

74. D
$20 - 8 = 12$
$12\div2 = 6$ (hens)

75. D
$12 - 3 = 9$

76. B



77. C
$57 - 25 + 1 = 33$

78. A
$82\div2 = 41$
$28\div2 = 14$
$41 - 14 + 1 = 28$

79. B
$91 - 19 = 72$
$72\div2 + 1 = 37$

80. B
$10 + 1 = 11$
$11 - 6 = 5$

81. B

82. B

83. D

84. D

85. B