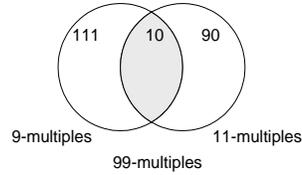


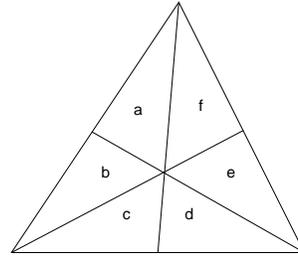
Answer Key

1. B
2. D
3. D
4. D
5. B
6. E
7. C
8. B
9. D
10. C
11. B
12. B
13. B
14. C
15. B
16. A
17. A
18. C
19. D
20. D
21. A
22. D
23. $1 = 1$
 $3 = 1+2$
 $6 = 1+2+3$
 $10 = 1+2+3+4$
 $1 + 3 + 6 + 10 = \boxed{20}$
24. $1 = 1$
 $3 = 1+2$
 $6 = 1+2+3$
 $12 = 1+2+3+6$
 $1 + 3 + 6 + 12 = \boxed{22}$
25. $1 + 4 + 9 + 16 = \boxed{30}$
26. $1000 \div 9 = 111 \text{ R } 1$
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.

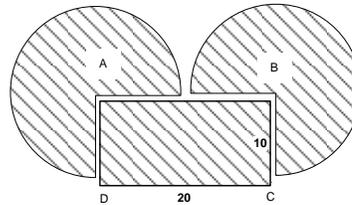
$$111 + 90 - 10 = 191$$



27. 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: $\boxed{16}$



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



29. $n = 1, 6 + 2 = 8$
 $n = 2, 8 + 2 = 10$
 $n = 3, 10 + 2 = 12$
 $n = 100, 6 + 200 = \boxed{206}$
30. A = 1
B = 5
C = 3
D = 7
 $1535 \times 5 = 7675$
 $C + D = 3 + 7 = \boxed{10}$
31. $5 \times 8 = 4 \times \boxed{10 \text{ days}}$
32. $20 \times 12 = 16 \times \boxed{15 \text{ men}}$

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33. $12 \times 20 = h \times 16$
 $h = \boxed{15 \text{ inches}}$
34. $95x + 60 = 90(x + 1)$
 $5x = 30$
 $x = 6$
 $6 + 1 = \boxed{7}$
35. C
 $1 + 2 + 3 + 4 + 5 + 9 = 24$
36. $60 \times 2 + 40 \times 3 = 240$
 $240 \div 5 = \boxed{48}$
37. $\frac{2.4}{0.2+0.3} = \boxed{4.8 \text{ miles per hour}}$
38. C
 $36 = 6 \times 6 = 4 \times 9 = 3 \times 12 = 2 \times 18 = 1 \times 36$
(6, 6) is not good as they must be different.
(4, 9) is the only answer.
Their difference is $9 - 4 = 5$.
39. 286
40. $10/25 = 40\%$
41. $12 - 3 = 9$
 $3 \times 4 = 12$
 $9 \times 5 = 45$
 $12 + 45 = \boxed{57}$
42. $20 + 5 = 25$ (quarts)
 $20 - 5 = 15$ (quarts)
43. $\frac{3}{4} + \frac{1}{8} - \frac{1}{2} = \frac{3}{8}$ liter
44. $5 - 2\frac{2}{3} = 2\frac{1}{3}$ credits
45. $1.18 \times 5 = \$5.90$
46. $24 \div (3.5 - 2)$
 $= 24 \div 1.5$
 $= 48 \div 3$
 $= \boxed{\$16 \text{ per hour}}$
47. $16 \times (3.5 + 2)$
 $= 16 \times 5.5$
 $= 8 \times 11$
 $= \boxed{\$88 \text{ (in total)}}$
48. $1 - \frac{2}{3} = \frac{1}{3}$ (occupied)
 $\frac{1}{3} \times 2460 = 820$ cars
49. $36 \div 2 = 18$ (half-perimeter)
 $18 - 10 = 8$ in (width)
 $8 \times 10 = 80$ sq. in.
50. $60 \times 10 \times 2 = 1200$
51. P = 16 heads
52. Q = 44 legs
53. R = $16 - 10 = 6$ heads
54. $2 \times 6 + 4 \times 10 = 52$ legs
55. X = 2 chickens
56. Y = 4 pigs
57. 5 min = 300 sec
 $(300 \div 30) \times 40 = 400$
58. $7 \div \frac{1}{2} = 14$
 $14 \div \frac{1}{2} = 28$
59. Darla: $75168 \div 9 = 8352$ feet a year
Sonia: $62314 \div 7 = 8902$ feet a year
60. $0:30 + 0:45 + 1:00 = 2:15$
2 hours 15 minutes = $2\frac{1}{4}$ hours
61. -0.008
62. $18 \div \frac{3}{4} = 24$ messages
63. $27.50 \times 2 - 2.00 + 2.50 + 17.25$
 $= 55 - 2 + 2.5 + 17.25$
 $= 55.5 + 17.25$
 $= \$72.75$
64. $6 \div 0.75 = 6 \div \frac{3}{4} = \boxed{8 \text{ cans}}$
65. $1 + 50\% = 1.5$
 $5 \times 1.5 = \boxed{\$7.50}$
66. $8 - 12 - 6 = 2$
67. $2500 \div 10 \times 3$
 $= 750$ min
 $= 12\frac{1}{2}$ hr
68. $\frac{3}{4} \times 120 = 90$
 $\frac{2}{3} \times 120 = 80$
 $90 - 80 = \boxed{10}$
69. $50 \div 2 = 25$
 $90 \div 2 = 45$
 $25 + 45 = 70$
 $180 - 70 = \boxed{110}$
70. $175 \div 25 = 7$
 $7 \times 120 = 840$
or
 $\frac{175}{25} \times 120 = 840$
71. $\frac{1}{4} = 0.25 = 25\%$
72. $120 : \underline{\quad} = 4 : 1$
 $\underline{\quad} = 30$
73. $3 \times 5 = 15$
 $15 \times 6 = \boxed{90}$
74. E
75. E
76. $(120 \div 8) \times 15 = 225$
77. Method I)
 $45 \times \frac{5}{3} = \boxed{75 \text{ books}}$
Method II)
 $1 - \frac{5}{8} = \frac{3}{8}$ (unsold)
 $45 \div \frac{3}{8} = 120$ (total)
 $120 - 45 = 75$ (sold)
78. $7.5 \times 36 = 15 \times 18 = 30 \times 9 = \270
79. $40 \times 8 + 5 \times 12 = 320 + 60 = \380
80. $\frac{580 - 40 \times 10}{15} + 40 = 52$ hr

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81. a) 111...112
 b) E
 111...112 is divisible by 2, 4, 6, and 8.

82. Black: $9.5 \times 2 = 19$
 Gray: $11 \times 1 = 11$
 $19 + 11 = 30$

83. Reduce the overlap by 1, then the total length will increase by 1.
 $56 - 50 = 6$
 $10 - 6 = \boxed{4 \text{ cm}}$

84. E

85. $5 \times 2 \times 10 = 100$
 $5 \times 10 \div 2 \times 3 = 75$
 $100 + 75 = \underline{175}$

86. E

87. Five different sizes
 $1 \times 1, 2 \times 2, 3 \times 3, 4 \times 4, 5 \times 5$

88. 27 of them

1×1	13
2×2	4
3×3	5
4×4	4
5×5	1
Total	27

89. 2, 3, and 6

90. 5

Let x be the number to start with.

$x + 1$ and $2x + 7$

Apply Euclidean algorithm.

$x + 1$	$2x + 7$	2
	$2x + 2$	
		5

91. 7