

Answer Key

1. $n = 3$
2. $4x - 4 + 5x + 10 = 3x - 24$
 $9x + 6 = 3x - 24$
 $6x = -30$
 $x = -5$
3. $3x + 3 + 8x - 4 = 10x + 15$
 $11x - 1 = 10x + 15$
 $x = 16$
4. Multiply both sides by 18:
 $6(x + 7) - 3(x + 9) = 10$
 $6x + 42 - 3x - 27 = 10$
 $3x + 15 = 10$
 $3x = -5$
 $x = -5/3$
5. Multiply both sides by 4:
 $2(x - 4) + 12 = x - 2$
 $x + 4 = -2$
 $x = -6$
6. (2, -3)
7. (21, -8)
8. (-11, 5)
9. (-5, -4)
10. (2, 1)
11. (-8/3, -5/3)
12. -12, 36
13. 0.6, 0.09
14. $(2x - 7)^2$
15. $(3x - 2)^2$
16. 49, $(4x + 7)^2$
17. 4, -2.4, -30
18. 4, -48, 3
19. 5, -40, 19
20. 9, -18, 30
21. 2, 8, 11
22. 2, 24, 10
23. 32, -112, 4
24. 2, 1.2, 10
25. 27, 54, 17
26. 75, -120, 30
27. $4\sqrt{2}$
28. $3\sqrt{13}$
29. $4\sqrt{10}$
30. $6\sqrt{5}$
31. $9\sqrt{3}$
32. 16
33. 512
34. 256
35. 10
36. 1000
37. 5
38. 25
39. 9
40. 20
41. 8000
42. 15
43. 30
44. 50
45. 39
46. 65
47. 130
48. 39
49. $2\sqrt{5}$
50. $3\sqrt{5}$
51. $4\sqrt{5}$
52. Method I:
 There are 6 handshakes among the politicians and $4 \times 3 = 12$ between politicians and lawyers. The total of handshakes is $6 + 12 = 18$.
 Method II:
 Let A, B, C and D be the politicians. Let X, Y and Z are the lawyers. Use the following table to label all the handshakes. For example, "1" means the first handshake is the one between A and B. Another example, "18" means the last handshake is the one between D and Z. Each shaded cell indicates there is no handshake needed or repeated between the two persons.

	A	B	C	D	X	Y	Z
A		1	2	3	4	5	6
B			7	8	9	10	11
C				12	13	14	15
D					16	17	18
X							
Y							
Z							

53. $84 \div 2 = 42$
 $42 \times \frac{2}{2+5} = 12$ in (width)
 $42 \times \frac{5}{2+5} = 30$ in (length)
 $12 \times 30 = 360$ in²
54. $\frac{3}{10}$

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55. $\frac{7}{10}$
56. $\frac{3}{7}$
57. $\frac{7}{3}$
58. $24 \div 60 = \frac{2}{5}$
59. $32.50 \div 0.65 = \$50$
60. 21 ft and 42 ft
61. There are 11 letters in total. There are 4 letters of 's'. The chance of getting a 's' is $\frac{4}{11}$.
62. $\frac{4}{11}$
63. $3 \times 9 = 27$ different paths
64. Assume he got x points for his lowest grade, so the highest one is $3x - 9$.
 $x + 3x - 9 = 135$
 $4x = 144$
 $x = 36$
 $3x - 9 = \boxed{99 \text{ points (highest)}}$
65. Assume the angle is x° . Its complement is $90 - x$.
 $x + 3(90 - x) = 202$
 $270 - 2x = 202$
 $68 = 2x$
 $x = 34$
66. $1 - \frac{1}{3} = \frac{2}{3}$
 $\frac{1}{3} \div \frac{2}{3} = \frac{1}{2}$ (ratio between used gas and un-used gas)
 $\frac{1}{2} \times 8 = 4$ gallons
67. $110 + 75 + 315 = 500$
 $110 + 75 = 185$
 $185 \div 500 = 37\%$
68. 45 miles = 45×5280 ft
 $45 \times 5280 \times \frac{1}{60 \times 60} = 66$ ft per sec
69. Let x be amount invested at 10% and, therefore, $x + 250$ at 15%.
 $0.25x + 37.5 = 225$
 $0.25x = 187.5$
 $x = \$750$ (at 10%)
 $x + 250 = \$1000$ (at 15%)
70. Let x be the amount he saves.
 $1.15x = 3,450$
 $x = \$3000$
71. Let x : the amount invested at 20%
 $x + 500$: the amount at 25%
 $1.2x + 1.25(x + 500) = 3075$
 $2.45x + 625 = 3075$
 $2.45x = 2450$
 $x = \$1000$ (at 20%)
 $x + 500 = \$1500$ (at 25%)