# Answer Key

1. 4.5
2. -1.6
3. 0.5
4. $\frac{5}{3}$
5. -2
6. -0.6
7. -7
8. 0.5
9. -1.25
10. 0.5
11. $x^2 + 10x + 16$
12. $x^2 + 11x + 18$
13. $x^2 + 6x + 8$
14. $3x^2 + 22x + 24$
15. $x^2 + 9x + 14$
16. $x^2 + 8x + 12$
17. $x^2 + 8x + 15$
18. $x^2 + 12x + 27$
19. $2x^2 - 3x - 9$
20. $2x^2 + 7x + 6$
21. $(x + 3)(x + 10)$
22. $(x – 8)(x – 5)$
23. $(x + 2)(x + 11)$
24. $(x + 4)(x + 5)$
25. $(x + 2)(x + 10)$
26. $(x + 1)(x + 20)$
27. $(x + 4)(x – 5)$
28. $(x – 2)(x + 10)$
29. $(x + 2)(x – 10)$
30. $(x – 5)(x + 2)$
31. $(x + 1)(3x + 2)$
32. $(x + 3)(2x – 1)$
33. $(3x + 1)(x + 2)$
34. $(2x – 3)(x – 1)$
35. $x = -1$
36. $x = -2$
37. $x = 2$
38. $x = 3$
39. $x = 2$
40. $x = 4$
41. $2(2x + 3) = 12$
    $4x + 6 = 12$
    $4x = 6$
    $2x = 3$
    $x = \frac{3}{2} = 3/2$
42. 0.4
43. 0.625
44. $-\frac{2}{3}$
45. 5
46. .056
47. 0.125
48. $4^5 = 2^{10}$
    $2^{10} \div 2^5 = 2^5$
    $\square = 5$
49. $\frac{1.2}{16} = \frac{3}{40} = 3/40$
50. $(\frac{5}{3} \times \frac{12}{5})^2 = 4^2 = 16$
51. 44½ = 44.5
52. $30 \div 125 = (30 \times 8) \div (125 \times 8) = .24 = 24\%$
53. $40 \times 26 = 20 \times 52$
    $52 - 40 = 12$
    $12 \div 40 = 30\%$
54. The speed of Betsey is ¼ and the speed of her mother is ½, so their combined speed is ¼ + ½ = ¾, at which the room can be finish cleaning within
    $\frac{1}{\frac{3}{4}} = \frac{4}{3}$ hours = 1⅓ hours = 1 hour 20 min.
55. You get 1 free out of 5,
    Ans = 20% discount.
56. ½ = 1/2
57. $60 \times 30 \times 4 = 7200$ cu. ft Since each cu. ft needs 7.5 gallons of water, so $7200 \times 7.5 = 54{,}000$ (gallons)
58. 8½+7¾+7½+7½+8¾ = 40 hrs
    $40 \times 7.2 = \$288$
59. $200 \div 5 = 40$
    $40 + 1 = 41$
    $41 \times 2 = 82$ trees
60. $\frac{1}{2} \times b \times h = \frac{1}{2} \times 24 \times 5 = 60$ in$^2$
61. 90
    60:40 = 3:2 (black : white) = 90:60
62. $300 \div 12 = 25$ dz
    $100 \div 25 = \$4$ /dz
63. $300 \div 12 = 25$ dz
    $6 \times 25 = 150$
    $150 - 100 = \$50$

64. $5\times12 \div 6 = 10$
$6\times12\div6 = 12$
$10\times12 = 120$ pieces

65. 6

66. 64

67. C

68. $1/x^{14}$
$(x^1)^{-2}(x^3)^{-4} = 1/x^{14}$
$m = 14$

69. .111

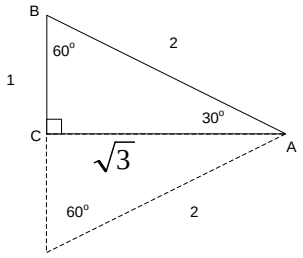
70. $132 = 12\times11$
$2(11 + 12) = 46$ ft

71. C = 24
B = 18
A = 9
A + B = 27

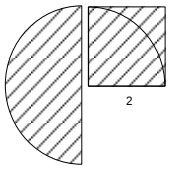
72. $x^2 = 15^2 + 36^2$
$13^2 = 5^2 + 12^2$
$x = 3\times13 = 39$

73. $(5 - 2)\times180° = 540$
$540°\div5 = 108°$

74. AB = 2, AC = $\sqrt{3}$
Ans = 2 & 1.732 (nearest 1000th)




75. B
$3\pi + (4 - \pi) = 2\pi + 4$
or
Move a quarter of the circle to fill the square as below. The area is
half-circle + square = $\frac{1}{2}(4\pi) + 4 = 2\pi + 4$.




76. $8\times7 = 56$

77. $4^2 = 16$
$4^3 = 64$
$4^4 = 256$
$4^5 = 1024$
$4^6 = 4096 > 4000$
$n = 5$

78. 15/8

79. 1|2|3|4|5|6|7|8|9|10 = 10 triangles
(12, 2,3)×5 = 10 triangles
(206,208)×5÷2 = 5
(123)×5 = 5 triangles
(2,0,7,8,10)×5 = 5 triangles

10 + 10 + 5 + 5 + 5 = 35 triangles

80. $12\div4 = 3$
$3\times\frac{8.4}{12}=\frac{8.4}{4}$ = \$2.10

81. $(16 + 6)\div2 - 6 = 5$

82. Method I)
$2\cdot8 = 16$
16 - 2 = 14

Method II)
R = $x$
P = $x + 8$
In two years,
$x + 10 = 2(x + 2)$
$x = 6$
P = 6 + 8 = 14

83. The total age of the three is $12\times3 = 36$. The total age of Alice and Betty is $10\times2 = 20$. Christine's age :36 - 20 = 16

84. $(x + 1)^2 - x^2 = 55$
$2x + 1 = 55$
$x = 27$