

Chapter 2 Homework Solutions

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1. $5 * 4 * 3 * 2$
2. $26 * 25 * 24 * 5 * 5$
3. $4 * 10 * 10 * 5$
4. $7 * 10 * 10 * 10 * 2$
5. $2^6 * 4^5$
6. $5^9 * 7^6$
7. $3 * 14 * 13$
8. (a) $5 * 4 * 4 * 3 * 3 * 2 * 2 * 1 * 1$
(b) $(4! * 5!) * 6$
9. 0
10. $4 * (2 * 1 * 4 * 2 * 3 * 2 * 1) = 384$
11. $26 * 25 * 9 * 9 * 2$
12. $(26 * 25 * 9 * 9 * 2) * 6$
13. $3 * 12 * 10 * 10 * 10 * 10$
14. $(26 * 25 * 24 * 10 * 9) * 10$
15. $(4! * 5! * 2!) * 6$
16. $(3! * 2! * 6! * 5!) * 24$
17. 91
18. 4651
19. 10, 584
20. $8^4 - 5^4$
21. $6(365 * 1 * 364 * 363)$ or
 $C(4, 2) * (365 * 1 * 364 * 363)$
22. $6 * 9 * 5 * 8 * 4 + 9 * 6 * 8 * 5 * 7$
23. Method 1: at least one digit is a seven.
 $1 * 1 * 1 + 8 * 1 * 1 + 1 * 9 * 1 + 1 * 1 * 9 + 8 * 9 * 1 + 8 * 1 * 9 + 1 * 9 * 9$
Method 2: total - don't want
 $9 * 10 * 10 - 8 * 9 * 9$
24. (a) 108336
(b) 108336
(c) 12600
(d) 1200
(e) 3744
(f) 0.97959
(g) 0.012707
- (h) 450
- (i) 450
- (j) 1
- (k) 1
- (l) 14400
25. 210
26. $C(13, 2) * C(13, 3) * C(26, 1)$
27. 120
28. $\frac{11!}{2!3!6!}$
29. $C(10, 2) * c(8, 3)$
30. $c(10, 4)$
31. 336
32. $15 * 14 * 13 * 12$
33. (a) $C(3, 3) * C(9, 3)$
(b) $C(3, 1) * C(9, 5)$
34. $\frac{10!}{2!2!3!}$
35. $\frac{11!}{3!2!}$
36. (a) 249
(b) 100
37. (a) $C(10, 4) * C(50, 3)$
(b) $C(60, 7) - C(10, 7) * C(50, 0)$
38. (a) $C(5, 3)C(4, 1)C(6, 2) + C(5, 3)C(4, 2)C(6, 1) +$
 $C(5, 3)C(4, 3) + C(5, 4)C(4, 1)C(6, 1) +$
 $C(5, 4)C(4, 2) + C(5, 5)C(4, 1)$
(b) $C(5, 2)C(10, 4) + C(4, 3)C(11, 3) -$
 $C(5, 2)C(4, 3)C(6, 1)$
39. (a) $C(5, 3) + C(12, 3)$
(b) $C(2, 1) * C(5, 2) + C(2, 2) * C(5, 1) + C(2, 2) * C(12, 1)$
40. $C(3, 2) * C(12, 8)$
41. 19
42. (a) $C(30, 10)$
(b) $C(8, 3) * C(22, 7)$
43. $C(7, 3)C(5, 2)C(9, 2)$
44. (a) $C(7, 4) + C(4, 4) + C(5, 4)$
(b) $C(7, 3)C(11, 1) + C(4, 3)C(14, 1) + C(5, 3)C(13, 1)$
45. (a) $C(30, 2)C(14, 4)C(21, 1)$
(b) $CC(6, 4)C(59, 3) + C(15, 3)C(50, 4) - C(6, 4)C(15, 3)$
46. $C(43, 3)C(36, 3)$
47. $C(7, 2)C(15, 2) + C(7, 3)C(15, 1) + C(7, 4)$
48. $\frac{20!}{7!2!4!6!}$

49. $C(13, 2) * C(39, 4) + C(13, 3) * C(39, 3) - C(13, 2) * C(13, 3) * C(26, 1)$
50. 630630
51. $C(5, 3)C(6, 4)C(4, 3) + C(5, 3)C(6, 5)C(4, 2) + C(5, 3)C(6, 6)C(4, 1)$
52. $\frac{4*3*4*3}{8*7*6*5}$
53. (a) $\frac{8*7*13}{15*14*13}$
(b) $\frac{8*7*3}{15*14*13}$
54. $\frac{(5!4!2!)*3!}{11!}$
55. $\frac{C(2,2)*C(18,3)*C(1,1)*C(29,4)}{C(20,5)*C(30,5)}$
56. 0.01915
57. 0.0095
58. $\frac{C(4,2)+C(5,2)}{C(9,2)}$
59. $\frac{C(8,4)C(16,2)+C(6,2)C(18,4)-C(8,4)C(6,2)}{C(24,6)}$
60. $\frac{3(4!*8!)}{12!}$
61. 0.5714
62. (a) $\frac{C(2,0)*C(8,4)}{C(10,4)} = \frac{70}{210} = \frac{1}{3}$
(b) $\frac{C(2,1)*C(8,3)}{C(10,4)} = \frac{112}{210} = \frac{8}{15}$
63. $\frac{C(2,2)*C(6,2)}{C(8,4)}$
64. 0.1143
65. $\frac{C(13,9)C(12,1)+C(13,10)}{C(25,10)}$
66. $1 - \left(\frac{11^7}{12^7} + \frac{7*(1*11^6)}{12^7} \right)$
67. (a) $\frac{P(365,20)}{365^{20}}$
(b) $1 - \frac{P(365,20)}{365^{20}}$
68. 0.8409
69. $n = 8; p = 1/5; r = 6, 7, 8$
0.00123136
70. (a) 0.0092856108
(b) 0.8624663485
(c) 0.55147
71. (a) $\left(\frac{1}{6}\right)^4 * \left(\frac{5}{6}\right)^6$
(b) 0.9303
(c) $0.6137 + 0.0022 = 0.6159$
(d) 1.6667
72. (a) 0.14877
(b) 3.75
73. (a) $n=12, p=\frac{1}{6}, r=6$
Answer: 0.0066
(b) $n=12, p = \frac{1}{6}, r=0, 1, 2, 3$
Answer: 0.8748
74. $E(x) = 2.5$
75. 0.7648
76. (a) $n = 20, p = 0.7, r = 18$
Answer: 0.027846
(b) $n=20, p = 0.7, r = 17, 18, 19, 20$
Answer: 0.1071
(c) $0.2106 + 0.3093 = 0.5199$
77. $n = 7; p = 1/12; r = 2, 3, 4, 5, 6, 7$
Answer: 0.1100617
78. 0.6943108
79. (a) $\left(\frac{20}{52}\right)^4 * \left(\frac{32}{52}\right)^2$
(b) $n = 6, p = \frac{20}{52}$ and $r = 4$
Answer: .1243057
(c) $E(x) = 2.30769$