Question 7:

A. Exercise 6.1.5 Section B-D
    a. 13 * C(4,3) * C(12,2) * 4^2 = 54,912 / C(52,5) = ~.0211
    b. C(13,5) = 1,287 * 4 = 5,148 / C(52,5) = ~.00198
    c. 13 * C(4,2) * C(12,3) * 4^3 = 1,098,240 / C(52,5) = ~.4226
B. Exercise 6.2.4, Section A-D
    a. 1 - C(39,5) / C(52,5) = 1 - 69,304 / 2,598,960 = ~.9733
    b. 1 - (C(13,5) * 4^5 / C(52,5)) = 1 − 1,287,304 / 2,598,960 = ~.5045
    c. (C(13,1) * C(39,4)) / C(52,5) * 2 = = ~.0301
    d. 1 - (C(26,5) / C(52,5)) = ~.9747

Question 8

A. Exercise 6.3.2 Section A-E
   a. p(A) = 6! / 7! = 1 / 7 = ~.1429, p(B) = 15 * 5! = 15 * 120= 1800 / 7! = ~.3571, p(c) = 5! * 3! / 7! = ~.1429
   b. p(A|C) = ⅕ = .2
   c. p(B|C) = ⅖ = .4
   d. p(A|B) = ⅓ = .33
   e. p(A∩C) = 1/49 = Independent

B. Exercise 6.3.6, Section B, C
   a. $(⅓)^5 * (⅔)^5 = 2^5 / 3^{10}$ = ~.0054
   b. $⅓ * (⅔)^9 = 2^9 / 3^{10}$ = ~.0173

C. Exercise 6.4.2, Section A
   a. $⅙^6 / (⅙)^6 + 2 * .15^2 * .25^2$ = ~.2857

Question 9

A. Exercise 6.5.2, Sections A, B
    a. {0, 1, 2, 3, 4}
    b. P(A=0) = ~.65, P(A=1) = ~.29, P(A=2) = ~.0399, P(A=3) = ~.0014, P(A=4) = ~.00003
B. Exercise 6.6.1, Section A
    a. (0 * 1/15) + (1 * 7/15) + (2 * 7/15) = 21/15 = 1.4
C. Exercise 6.6.4, Sections A, B
    a. 91/6 = ~15.167
    b. 24/8 = 3
D. Exercise 6.7.4, Section A
    a. $E[X_i] = 1/10 * 10 = 1$

Question 10

A. Exercise 6.8.1, Sections A-D
    b. $P(X=2) = C(100,2) * (.01)^2 * (.99)^{98} = \sim.0027$
    c. $P(X \geq 2) = 1 - (P(X=0) + P(X=1)) = \sim.00736$
    d. $E[X] = 100 * .01 = 1$
    e. $P(X \geq 1) = 1 - P(X=0) = 1 - C(50,0) * (0.01)^0 * (0.99)^{50} = \sim.394$, $E[X] = 2 * 50 * .01 = 1$
B. Exercise 6.8.3, Section B
    b. $P(X=0) + P(X=1) + P(X=2) + P(X=3)$
        i. $C(10,0) * (0.3)^0 * (0.7)^{10} + C(10,1) * (0.3)^1 * (0.7)^9 + C(10,2) * (0.3)^2 * (0.7)^8 + C(10,3) * (0.3)^3 * (0.7)^7 = 0.282 + .1211 + .2335 + .2668 = \sim.6496$