**Collection 1:**

The following work is expressing my take on the following examples for each specific section regarding the topic covered. This is my understanding of what I have understood from reading the chapter and previous knowledge by writing a paragraph showing how to perform and resolve each example. Problems 4.3, 4.17, 4.27, and 5.1, 5.19, 5.23.

4.3) To complete this problem they gave us a chart four subject and a total probability P like I will continue to write of 90.the first question is what is the probability for A to solve this we have to understand that the total is 90 or X and A total is Y so to find P=Y/X. For part b is the same it would be P of A divided by the total chances. For part c it changes we have to find P=A and B the “and” is a key word the means A and B = y divided by the total P that is X so ABy/Px=P. For part d. P(AorB) or is also a key word to solve this we have to A row and the B row dived by total P minus the similar number both have that is 10 in this case divide by total p gives us the probability.

4.17) To solve part a. they wand P(A|B) to solve this we have grab A probability under B and Ay divide it by the total B so P=Ay/Bx. To solve part b. P(A’|B’) is the same way as the other we get A’y/B’x=P. For part c P(A|B’) we get the A number under B’ divide it by total B’ column getting Ay/B’x=P. Then we can see that they are not independent from each other.

4.27) This problem they gave us a scenario with a table similar to the previous problem first question P(higher for the year) to get this the sum of the S&P column divided by the total probably. For part b. we have to do week and years so P(higher for the year|higer first week) would be (both the higher row is a number divided by that same number plus first week lower. They are not depended because P don’t equal each other.

5.1) For this problem they gave us the probability distribution we have to compute the expected value for each distribution to do this we have to complete the table first thing would be by x\*px after we get it should equal one that’s how we know we did it right. Then we do the other column (*X*–)2 . Then to get the stander deviation we have to use the formula  and we would do this for both distribution data set. Then for the last part we just compare the data.

5.19)

To answer this question for part a-d we have to use the binomial distribution formula P(X=x|n, Pie)=[n!/x!(n-x)!]\*pie^x(1-pie)^n-x. They will give us x, n, pie equals a number. Note pie is not the mathematical pie so in this exercise it can equal any number they give us. Then we would just substitute the letters for numbers and solve.

5.23) To answer a-d questions of probabilities they gave us x and n. they ask us the Probabilities we would get using information given. This type of problem would look like this, to get 5 out 5 we know that equals 100% if we get all right, that means each chance is worth P(1correct) would be .20 to solve the following question we would use that assumption to solve any question regarding probabilities of getting question right or wrong whatever the scenario is.

**Collection 2:**

4.3 A. The probability of event A is equal to sum of all the numbers in event A divided by the total of the events – 10 +20 = 30/90 = 1/3 or .33

B. The probability of event A' is equal to sum of all the numbers in event A' divided by the total of the events 20 + 40 = 60/90 = 2/3 or .67

C. The probability of event A and B is A and B divided by 90 – 10/90 = 1/9 or .11

D. The probability of event A or B is event A plus event B minus event A and B – 30/90+30/90-10/90= 50/90=5/9 or .56

4.17 A. The probability of event A|B is equal to event AB divided by the total of B – 10/35 = 2/7 or .29

B. The probability of event A'|B is equal to A'B' divided by total of B' – 35/65 or 7/13 or .54

C. The probability of event A|B' is equal to AB' divided by total B' – 30/65 or 6/13 or .46

D. Since A|B is equal to .29 and A is equal to .40, event A and event B are not independent.

4.27 A. The probability that the S&P 500 finished higher for the year is equal all the higher numbers divided by the sum of all the higher and lower numbers – P = 32 + 11/32 + 11 + 5 + 11 = 43/59 or .73

B. The probability that the S&P finished higher after the first 5 days of trading for the year is equal to the higher rate divided by the higher rate plus 5 days – P = 32/32 +5 = 32/37 = .86

C. The events “first-week performance” and “annual performance” are not independent because the higher for the year (.73) is not equal to the higher for the year and higher first week (.86)

5.1 A. To compute the expected value for each distribution, multiply each X by P(X) – Distribution A – 0\*.50=0, 1\*.20=.20, 2\*.15=.30, 3\*.10=.30, 4\*.05=.20 with a mean of 1. Distribution B – 0\*.05=0, 1\*.10=.10, 2\*.15=.30, 3\*.20=.60, 4\*.50=2.0 with a mean of 3.

B. Standard deviation is the square root of the variance – (X-µ)² \*(P(X)). Distribution A – (0-1)²\*.50=.50, (1-1)²\*.20=0, (2-1)²\*.15=.15, (3-1)²\*.10=.40, (4-1)²\*.05=.45 σ²=1.5 and square root of 1.5 = 1.22 or σ=1.22 Distribution B – (0-3)²\*.05=.45, (1-3)²\*.10=.4, (2-3)²\*.15, (3-3)²\*.20=0, (4-3)²\*.50=.5 σ²=1.5 = 1.22 or σ=1.22

C. Distribution A has a mean of 1 which is greater than the median of 0. It is right-skewed. Distribution B has a mean of 3 which is less than the median of 4. It is left-skewed.

5.19 A. P(X=0)|n=4, $π$=0.12 = (Number of combinations) x (Probability of a particular combination = n!/x!(n-x)! \* $π$ͯ(1-$π)$ⁿ-ͯ = 4!/0!(4-0)! \* 0.12̊(1-0.12) = 4!/1(4)! \* 1(.5996) = .5997

B. P(X=9)|n=10, $π=0.40$ = 10!/9!(10-9)! \* .40(to 9th power)(1-.40)¹°-9 = 10\*.0002621\*.6 = .0016

C. P(X=8)|n=10, $π $=.50 = 10!/8!(10-8)! \* .50(to 8th power)(1-.50)¹°-8 =90/2=45 \* .00390625 \* .25 = .0439

D. P(X=5)|n=6, $π $= .83 = 6!/5!(6-5)! \* .83(to 5th power)(1-.83)6-5 raised = 6 \*.3939040 \*(.17)¹ = 6 \* .3939040 \* .17 = .4018

5.23 A. Looking for probability that 5 questions will be correct if n = 5 and $π $= .25 P(X=5)|n=5, $π$ = .25 = 5!/5!(5-5)! \* .25(raised to 5th power)(1-.25)5-5 raised = 0! \* .0009766 \* (.75)° = 1 \* .009766 \*1 = .0010

B. Looking for probability that at least four questions will be correct if n = 5 and $π $= .25 P(X≥4)= P(X=4) + P(X=5) We already know that P(X=5) = .0010. Now we have to find P(X=4) 5!/4!(5-4)! \* .25(raised to 4th power)(1-.25)¹ = 5 \* .0039062 \* .75¹ = .0146 P(X≥4) = P(X=4) + P(X=5) = .0146 + .0010 = .0156

C. Looking for probability that no questions are correct if n = 5 and $π=.25 $ P(X=0)|n=5, $π $= .25 = 5!/0!(5-0)! \* .25°(1-.25)raised to 5-0 = 1 \* 1(.75)raised to 5th power = .2373

D. Looking for probability that no more than two questions are correct if n =5 and $π= .25$ P(X≤2) = P(X=0) + P(X=1) + P(X=2) We already know that P(X=0) = .2373 Now we need to find P(X=1) and P(X=2) P(X=1)|n=5, $π=.25$ = 5!/1!(5-1)! \* .25¹(1-.25)5-1 raised = 5 \* .25(.75)raised 4th power = .31640 = .3955 P(X=2)|n=5, $π=.25$ = 5!/2!(5-2)! \* .25²(1-.25)³ = 20/2=10 \*.0625(.75)³ = 10 \* .0625 \* .421875 = .2637 P(X≤2) = P(X=0) + P(X=1) + P(X=2) = .2373 + .3955 + .2637 = .8965