**Section 3.8 through 3.10**

61. A die is to be rolled 8 times. Determine the probability that a 5 is rolled exactly 3 times.



63. The defect rate in a certain manufacturing process is known to be 1%. We now take a sample of 100 items. Determine the probability that there will be 3 or more defects amongst the 100 sampled items.





65. The probability that a person will be helped by a certain medicine is .90. A doctor will be seeing 15 patients today. Determine the following: This is Binomial with and . Use your binomial CDF.

pmf

CDF

a) P(The medicine will help all 15 patients)  

pmf

CDF

b) P(The medicine will help exactly 12 patients)  

pmf

CDF

c) P(The medicine will help more than 9 patients)  

d) P(The medicine helps all of the first 10 people) (This would be 10 out of 10) 

e) P(The medicine helped the first person | The medicine helped exactly 14 people) 

67. A fair coin is to be tossed 18 times. Let *X* count the number of heads tossed. Determine the value of *k*, so that .

Using our Binomial CDF, we see that . So, 

69. An urn contains 5 White Chips, 4 Red Chips and 3 Blue Chips. We will now select 8 chips **with replacement**. Let X count the number of Red Chips selected. Determine the following:

a)   b)   c) 

71. An urn contains 5 White Chips, 4 Red Chips and 3 Blue Chips. We will now select chips, **with replacement**, until we get a Blue Chip. Determine the following:

a) P(The first Blue Chip is selected on the third trial) 

b) P(The first Blue Chip is selected on the fifth trial) 

73. An urn contains 5 White Chips, 4 Red Chips and 3 Blue Chips. We will now select chips, **with replacement**. Determine the following:

a) P(The 2nd Blue Chip is selected on the 5th trial) (1 blue and 3 non-blue in first 4) 

b) P(The 4th Blue Chip is selected on the 10th trial) 

75. An urn contains 5 White Chips, 4 Red Chips and 3 Blue Chips. We will now select 8 chips **without replacement**. Determine the probability that we get exactly three red chips.



77. An urn contains 5 White Chips, 4 Red Chips and 3 Blue Chips. We will now select chips, **without replacement**, until we get a Blue Chip. Determine the following:

a) P(The first Blue Chip is selected on the third trial) 

b) P(The first Blue Chip is selected on the fifth trial) 

79. An urn contains 5 White Chips, 4 Red Chips and 3 Blue Chips. We will now select chips, **without replacement**, until we get a Blue Chip. Determine the following:

a) P(The 2nd Blue Chip is selected on the 5th trial) 

b) P(The 4th Blue Chip is selected on the 10th trial) 0

81. A coin is about to be tossed 50 times. Determine the probability that we get exactly 25 heads.



83. A coin is about to be tossed 50 times. Determine the probability the 4th heads occurs on the 10th toss.



85. Seven cards are selected from a standard deck of cards. Determine the probability that exactly 5 are hearts.



87. Seven cards are selected from a standard deck of cards. Determine the probability that exactly 7 are hearts.



89. Seven cards are selected from a standard deck of cards. Determine the probability that three of them are aces.



91. Seven cards are selected from a standard deck of cards. Determine the probability that the second ace occurs on the sixth card selected.

