**Due Wednesday, June 15, 2022 (11:59 pm)**

**Assigned problems**

*Problem 1*: A certain brand of shoes comes in 5 different styles, with each style available in 4 distinct colors. If the store wishes to display pairs of these shoes showing all of its various styles and colors, how many diﬀerent pairs will the store have on display?

5 styles with 4 distinct colors: 5 \* 4 = 20

**Answer: 20**

*Problem 2*: John is going to graduate from an industrial engineering department in a university by the end of the semester. After being interviewed at two companies he likes, he assesses that his probability of getting an oﬀer from company A is 0.8, and his probability of getting an oﬀer from company B is 0.6. If he believes that the probability that he will get oﬀers from both companies is 0.5, what is the probability that he will get at least one oﬀer from these two companies?

P(A) = 0.8, P(B) = 0.6, P(A and B) = 0.5. P(A or B)?

P(A or B) = P(A) + P(B) – P(A and B) = 0.8 + 0.6 – 0.5

**Answer: 0.9**

*Problem 3*: A box contains 500 envelopes, of which 75 contain $100 in cash, 150 contain $25, and 275 contain$10. An envelope may be purchased for $25. What is the sample space for the diﬀerent amounts of money? Assign probabilities to the sample points and then ﬁnd the probability that the ﬁrst envelope purchased contains less than $100.

**Answers: all listed below**

S = {$10, $75, $100)

P($10) = 275/500 = 0.55

P($25) = 150/500 = 0.3

P($100) = 75/500 = 0.15

P(1st envelope <$100) = P($25) + P($10) = 0.55 + 0.3 = 0.85

*Problem 4*: Three cards are drawn in succession, without replacement, from an ordinary deck of playing cards. Find the probability that the event A1 ∩ A2 ∩ A3 occurs, where A1 is the event that the ﬁrst card is a red ace, A2 is the event that the second cardis a 10 or a jack, and A3 is the event that the third card is greater than 3 but less than 7.

3 cards picked no replacement: Totals will be, 52 51 50, for each successive draw

P(A1) = 2/52 because there are 2 red aces

P(A2) = 8/51 because 4 10s and 4 Jacks

P(A3) = 12/50 because 3 cards between 3 and 7 and 4 suits

P(Event) = 2/52 \* 8/51 \* 12/50

**Answer: 8/5525 or 0.001**