

Math 21 – Summer – Written Project 2 (Chapters 5-7)

Chapter 5

1) The faculty senate has 24 members.

a) In how many different ways can the senate elect a president, a vice president, and a secretary?

b) In how many different ways can the senate select a 4-person committee to attend a statewide conference?

c) In how many different ways can the senate elect a person to oversee grievances and a 3-person support committee?

2) The probability of getting an A on this exam is 0.08, and the probability of getting a B is 0.14.

a) Find the probability that a student gets an A or a B.

b) Find the probability that a student gets a C or lower.

3) The probability that a COS student is female is 0.55, the probability that a COS student plans to transfer is 0.33, and the probability that a COS student is female and a transfer student is 0.11.

a) Find the probability that a COS student is female or a transfer student.

b) If a female student is selected at random, find the probability that she is a transfer student.

4)

a) A card is drawn from a well-shuffled deck. Find the probability that it is a face card.

b) Three cards are drawn at random from a well-shuffled deck. Find the probability that all 3 are face cards.

5) Nine males and four females are to be interviewed for a job as a community college instructor.

The top three candidates are sent forward to the president for a second interview. If all the candidates are equally qualified, ...

a) find the probability that three males get a second interview.

b) find the probability that at least one male gets a second interview.

Chapter 6

6) The number of bike crashes on a certain college campus follows a Poisson distribution with a mean of 2.9 crashes per day. Find the probability that there will be 2 bike crashes on that campus today.

7) According to company data, 32% of the people who take cruises are at least 60 years old. If 7 people on a cruise ship are selected at random, find the probability that at least one of them is at least 60 years old.

8) Ten percent of the adults in a certain city hold a bachelor's or higher degree. If 5 adults from this city are selected at random, find the probability that at least 3 do not have a bachelor's or higher degree.

9) The number of teachers absent in a small school district follows a Poisson distribution with a mean of 2 absences per day. If the district has 5 substitute teachers available, find the probability that the district will not have enough substitute teachers on a given day.

10) The number of runs scored by a minor league baseball team follows a Poisson distribution with a mean of 4.7 runs per game. Find the probability that the team scores exactly 11 runs in the next two games.

Chapter 7

11) IQ scores are approximately normally distributed with a mean of 100 points, and a standard deviation of 15 points. Find the probability that a person has an IQ of 110 or lower.

12) The weights of salmon fillets at a fish market follow a normal distribution with a mean of 21 ounces and a standard deviation of 2.3 ounces. Find the probability that an individual salmon fillet will weigh more than 25 ounces.

13) The lengths of newborn baby girls follow a normal distribution with a mean of 21 inches and a standard deviation of 0.8 points. Find the probability that a randomly selected newborn baby girl has a length between 21.5 inches and 23 inches.

14) The heights of adult males are normally distributed with a mean of 69.0 inches and a standard deviation of 2.8 inches. What height separates the shortest 15% of adult males from the rest?

15) Here are the IQ's of 15 randomly selected statistics students. Are they normally distributed? (The critical value is $r = 0.939$.)

95, 97, 98, 98, 99, 100, 100, 101, 103, 103, 104, 106, 108, 110, 125