**Probability and Statistics Final Exam Review – DUE THURSDAY 3/12 FOR 50 POINTS!**

Chapter 12

1. Let Q = {A, B, C, D}. List all of the ways that you can select two different members of Q. The order in which you select the members is not important.
2. Let Q = {A, B, C, D}. List all of the ways that you can select two different members of Q. The order in which you select the members is important.
3. A club has 28 members. In how many ways can they select a person to be President and a different person to be Treasurer?
4. A thirteen-sided die is rolled three times. In how many ways can this happen?
5. How many license plates are possible consisting of 3 letters followed by 2 digits, if the first letter must be a F.
6. Using the digits 3, 4, 5, 6, and 7, how many 4-digit numbers can be constructed if the number must begin with an odd digit and digits may not be repeated?
7. Evaluate P(6, 3) 8. Evaluate C(8, 0) 9. Evaluate P(2, 0)
8. Describe where C(22, 4) can be found in Pascal’s triangle.

Chapter 13

1. A box contains 4 blue cards numbered 1 through 4, and 2 green cards numbered 1 through 2. List the sample space of picking a blue card followed by a green card.
2. The Ace’s are separated from a deck of standard playing cards and shuffled. One is randomly selected, and then a normal die is rolled. List all equally likely outcomes in the sample space.
3. Consider the genetic possibilities for a child of parents in which one parent has sickle cell anemia (a recessive disorder), and the other parent is a carrier of the disease. What is the probability that the child will have the disease? Be a carrier?
4. In crossbreeding certain type of flowers, color does not dominate. For example, a flower with one green gene and one red gene will have orange flowers. Consider the result of crossing a pure-bred green flower with a pure-bred red flower. What is the probability of getting red flowers in the first generation of plants?

\*\**in the following problems be careful whether it’s ODDS for or ODDS against something!!!!!*

1. Five slips of paper marked with the numbers 1, 2, 3, 4, and 5 are placed in a box and mixed well. Two are drawn. What are the ODDS that the sum of the numbers on the two selected slips is not 4?
2. What are the ODDS of drawing a 3 from the cards in #15?
3. What are the ODDS of drawing an odd number from the cards in #15?
4. If two fair dice are rolled, what is the probability that a total of 5 shows?
5. If a card is selected randomly from a standard 52-card deck, what is the probability that we draw a 9?
6. If P(A) = 5/9, then find the ODDS *against* A happening.
7. If it has been determined that the probability of an earthquake occurring on a certain day in a certain area is 1/75, what are the ODDS *against* an earthquake?

Chapter 14

\*\**complete the frequency and relative frequency tables below*

1. Jack asked his buddies how many hours they worked during the previous week at their after-school jobs. The data follows:

5 5 8 9 2 0 4 10 2 2 8 9 9 6

|  |  |  |
| --- | --- | --- |
| Hours | Frequency | Relative frequency |
| 0-2 |  |  |
| 3-5 |  |  |
| 6-8 |  |  |
| 9+ |  |  |

1. On a math test, the scores of 10 students were as follows:

99 85 74 56 68 68 74 99 95 90

|  |  |  |
| --- | --- | --- |
| Scores | Frequency | Relative frequency |
| 50-59 |  |  |
| 60-69 |  |  |
| 70-79 |  |  |
| 80-89 |  |  |
| 90-99 |  |  |

1. Construct a bar graph for the *relative frequency* data in the table below (winners of a game played each year)

|  |  |  |
| --- | --- | --- |
| Winner | Frequency  | Relative frequency |
| Joe | 3 | 0.25 |
| John | 1 | 0.08 |
| Jack | 2 | 0.17 |
| Josh | 6 | 0.50 |

1. Construct a bar graph for the *frequency* data in the table below (winners of a game played each year)

|  |  |  |
| --- | --- | --- |
| Winner | Frequency  | Relative frequency |
| Joe | 3 | 0.25 |
| John | 1 | 0.08 |
| Jack | 2 | 0.17 |
| Josh | 6 | 0.50 |

1. Students in Ms. D’s class collected stuff from outside. Below is what they collected. Construct a bar graph for the frequency data.

Rocks, 10

Bugs, 5

Sticks, 8

1. The ages of people randomly surveyed on a college campus are summarized in a bar graph. How many people were surveyed?



1. The ages of people randomly surveyed on a college campus are summarized in a bar graph. How many people were 41 years or older?



1. Find the mean, median and mode of : 6, 7, 4, 5, 5, 8, 9, 2, 3, 8, 2, 2, 1
2. What is the mode of this data: 44, 56, 75, 23, 56, 71, 82, 93, 46, 44, 61
3. What is the mean for the data in #30?
4. Assume that in you Spanish class you have earned the following test scores: 55, 78, 85, 91, 62, and only one test remains. If you need a mean score of 70 to earn a C, then what minimum score must you obtain on the last test?
5. Assume that in a 30-day month you begin with a $20 balance due on your credit card, you charge an item for $50 on the 14th, and an item for $200 on the 21st of the month. What is your average daily balance on your credit card for this month?
6. Test scores of 20 students are below. Construct a box and whisker plot of the data.

55 77 85 84 98 96 76 55 42 99

87 78 88 76 78 79 66 65 97 55

1. Find the range for the data: 8 15 9 4 1 23
2. Find the standard deviation of the numbers in #35
3. Find the mean and standard deviation of the following data:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number | 3 | 4 | 5 | 6 | 7 |
| frequency | 2 | 1 | 5 | 2 | 3 |

1. The table below gives the annual incomes, in thousands of dollars, for 4 families. Find the number of standard deviations d’s income is from the mean (z-score stuff..)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Family | a | b | c | d |
| Annual income | 35 | 62 | 51 | 44 |

1. Assume that a distribution has a mean of 25, and a standard deviation of 3. What percentage of the values in the distribution do we expect to fall between 22 and 25?
2. Find the area under the normal curve between z = 0 and z = 1.46
3. 10% of the area under the standard normal curve is above the score z = \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Mean is 75, standard deviation is 5, raw score is 83. Find z-score.
5. Assume that among the members of a lady’s gym, the distribution of body weights has a mean of 165 pounds, and a standard deviation of 8 pounds. If 333 women belong to the gym, how many women do you expect to be over 175 pounds?
6. If you score an 85 on an exam that has a mean score of 77, and a standard deviation of 4, to what percentile does your score correspond?
7. You are playing a game in which a single die is rolled. If a 1 or a 3 comes up, you win $12, otherwise you lose $12. What is your expected value for the game?
8. We roll a pair of dice. If the sum of the dice is 7, you pay me $22. If the sum is not 7, I pay you the number of dollars indicated by the sum of the dice. What is your expected value for the game? (\*tricky – take your time to consider all pay-outs…)
9. You are playing a game in which a single die is rolled. If an even number comes up, you win $16. If an odd number comes up, you lose $16. Is this a fair game?
10. In a raffle, one thousand tickets are sold at $20 apiece. There is a grand prize of $8000, three second place prizes of $2000, and five third place prizes of $1000. Is this a fair game?
11. Suppose that there is a lottery that cost $2 to play. You must pick 5 digits from 0 to 9, and duplicates are allowed. If you win, the prize is $4000. What is the expected value of this lottery?
12. You are playing a game in which a single die is rolled. If a 1 or a 4 comes up, you win $33, otherwise you lose $10. What is the price that you should pay to play the game that would make the game fair?