Statistics Second Semester Final Review Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Fayetteville Public Schools, is viewing the number of classes Senior took in the 1980’s. Here is the group of probabilities for each the classes. The following has a normal distribution.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Classes | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Probability | .05 | .1 |  |  | .20 | .1 | .05 |

What is the probability of seniors who took four classes in the 1980’s? \_\_\_\_\_

What is the probability of seniors who took three classes in the 1980’s? \_\_\_\_\_

1. Students are tired of riding busses for several hours. They want to look at the number of minutes that students ride the bus. The following data is listed below. The probability of riding the bus from 31-50 minutes is the same.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Minutes on the Bus | 0-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 |
| Probability  | .04 | .1 | .15 |  |  | .2 | .15 | .1 | .04 |

What is the probability of riding the bus for 31-40 minutes? \_\_\_

What is the probability of riding the bus for 41-50 minutes? \_\_\_

1. You are graduating from Fayetteville High School; the following table lists the average GPA of students at FHS. Students at FHS have twice the probability of a GPA 3.0-3.2 as a GPA of 1.3-1.9.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| GPA | 0<1.2 | 1.3-1.9 | 2.0-2.9 | 3.0-3.2 | 3.3-3.4 | 3.5-3.9 | X>4 |
| Probability | .03 |  | .15 |  | .14 | .13 | .11 |

What is the probability of GPA from 1.3-.19? \_\_\_\_\_

What is the probability of GPA from 3.0-3.2? \_\_\_\_\_

1. You Father comes back from Las Vegas and tells you that he won most of the time when rolling a dice. He said this is the probability model. Is he correct?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Roles a 1 | Roles a 2 | Roles a 3 | Roles a 4 | Roles a 5 | Roles a 6 |
| .2 | .05 | .2 | .1 | .1 | .3 |

Is he correct Yes or No? \_\_\_\_\_\_\_\_

Explain why you put this answer?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The teacher explained to the class that the following table gives the probabilities of grades for all students in Linear Systems.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| F | D | C | B | A | Incomplete |
| .2 | .2 | .1 | .2 | .1 | .2 |

Is the teacher correct? Yes or No

Explain why you put this answer?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The local Sheriff looked at reasons why people go to jail.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Drugs | DWI | Theft |  Disorderly Conduct | Revoked License | Fighting |
| .1 | .1 | .3 | .1 | .2 | .2 |

Is this correct? Yes or No

Explain why you put this answer?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Use the Table for the next three questions.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| GED | High School Diploma | Associates Degree | Bachelor’s Degree | Master Degree | Doctors Degree |
| .05 | .4 | .2 | .2 | .1 | .05 |

1. What is the probability that a student will get above a High School Diploma? \_\_\_\_\_\_\_
2. What is the probability that a student will get less than a Bachelor’s degree? \_\_\_\_\_\_\_

**Create a probability table that gives the probability on the sum of two dice. Use the table to answer the following questions**

9. If, you have two dice what is the probability of getting a 12? \_\_\_\_\_\_

10. If you have two dice what is the probability of getting a 7? \_\_\_\_\_\_

11. If you have two dice what is the probability of getting a 6? \_\_\_\_\_\_\_

12. If, you have two dice what is the probability of getting less than a 5? \_\_\_\_\_\_

13. If, you have two dice what is the probability of getting a 2 or an 11? \_\_\_\_\_\_

14. If, you have two dice what is the probability of getting an even number? \_\_\_\_\_\_

15. Is the probability of getting a 4 and the probability of getting a 7 the same? \_\_\_\_\_\_\_

16. Twenty in a sample of 700 students enjoy meat. Fourteen students favor steak, three favor poultry, two favor fish, and one favors pork. What is the chance that a person chosen at random would like fish? \_\_\_\_\_

Show the fractional amount to determine the probability of enjoying steak? \_\_\_\_\_

The animal shelter wants people to adopt dogs and cats from the shelter. Use this to answer the next three questions.

|  |  |  |
| --- | --- | --- |
|  | Adopted | Not Adopted |
| Dogs | 46 | 185 |
| Cats | 34 | 105 |

17. What is the percent of animals adopted? \_\_\_\_\_\_

18. What is the percent of dogs adopted? \_\_\_\_\_

19. What is the percent of cats not adopted? \_\_\_\_\_

20. A number of people enjoy going to football games. When asking people who like sports, how many games do you attend a year. So how many attend four games a year? \_\_\_\_

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Games | 0 | 1 | 2 | 3 | 4 | 5 | 6 or more |
| Probability | .2 | .1 | .1 | .17 | ? | .3 | .25 |

21. Some students enjoy eating out during lunch. How many students eat out twice a week? \_\_\_\_\_\_

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Students that eats out per week | 0 | 1 | 2 | 3 | More than 4 |
| Probability | .5 | .3 | ? | .02 | .04 |

22. What is the probability of eating out more than three times a week? \_\_\_

23. Among seniors, 15% of the students enjoy drinking Pepsi, 30% enjoy drinking Dr. Pepper, 5% enjoy drinking Mountain Dew, and 50% enjoy drinking Coke. If a student is selected a random what is the chance of enjoying Dr. Pepper or Mountain Dew? \_\_\_

24. A friend designs a new game. It cost a dollar to play the game. And the average winnings per bet are $.95. What is the statistical value after four games? \_\_\_\_\_\_

What do you call the average winnings or loss per bet? \_\_\_\_\_\_

25. You play a game with multiple outcomes. Outcome A has a probability of .3 and outcome B has a probability of .7. You decide to play the game. When B occurs you have to pay $4. When A occurs you win $6. What is the expected value of this game? \_\_\_

26. In Backgammon, person roles two dice. What is the probability of getting a five? \_\_\_\_

27. Mr. Smith loves to gamble at Las Vegas on roulette. It costs $100 to place a bet and the average winning is $.92. What is the statistical term for $.92? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

28. A group of teachers enjoy Chocolate and Vanilla ice cream. 40% like Chocolate, 70% like Vanilla, and 30% like both. What is the probability that a teacher chosen at random likes either Chocolate or Vanilla but not both? \_\_\_\_\_\_. Use a Venn diagram to compute your answer.

29. You play a game the two different outcomes. Outcome A has a .75 change of winning. Outcome B has a .25 chance of losing. It costs $20 to play the game. If you win, you will get a $100. If you lose, you will have to pay $300. Should you play this game basing this on statistics? \_\_\_\_\_\_\_\_\_ Explain your answer. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

30. You decide to play a game. The game cost $10 to play the game. If you roll the sum of two dice and get an even number you win $5. If you roll the sum of the dice and get an odd number you pay $3. Explain the expected value and show your work. Is it profitable to play the game? \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

31. FHS did a statistical survey on number of students who have slept in class. Seventy five students in a SRS of 500 students admitted that they have slept. Currently the school has 1854 students.

With this data what is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Create a 95% confidence interval for question 31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.Explain your solution
2. Create a 90% confidence interval for question 31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Explain your solution
3. Create a 99% confidence interval for question 31. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Explain your solution

32. Which of the questions a – c, will have wider results? Explain your answer.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

33. In a recent random sample of 2300 adults. Of these, 901 wanted free health care. Determine a 95% confidence interval of adults who wanted free health care. Show your work below.

34. A shocking fact: 80% of all teenagers don’t eat enough at lunch. If an opinion poll chooses an SRS of 1000 teens and determines that they have not eat enough at lunch, the percent who say “yes” will vary if the sample is repeated in fact , give the range of 90%,95% and 99% confidence. (Find the standard error to construct your intervals)

90% \_\_\_\_\_\_\_\_ 95% \_\_\_\_\_\_\_ 99% \_\_\_\_\_\_\_

35. A sample survey finds that 40% of a sample of 900 students said the good health was the thing they were most thankful for. If that sample were a SRS from the population of all FHS students, what would be the 90%, 95% and 99% confidence intervals? Explain your answers. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

36. A student reporter at FHS reported a sample survey of 2000 students says, “With a 95% confidence”, between 10% and 22% of all students admit they have skipped class. Explain the phrase “95% confidence”? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

37. A FHS teacher gave an opinion poll asked 1,190 students whether they would prefer to go off campus if lunch were shorter. 1002 said “Yes” they would prefer to go off campus. Create a Confidence Interval for 90%, 95%, and 99%. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*38.* Explain the meaning of Margin of Error? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

39. A student did a quick sample and used a 95% confidence interval, but now needs to do a 99% confidence interval based on the same sample. Explain what would be the difference between these two confidence intervals.

40. In how many different ways can you arrange the letters a, c, e, g, i, k, and l? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

41. How many different selections of three tapes can be made by a consumer choosing from among a collection of six tapes? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. On Saturday morning, 12 people show up to play Ultimate Frisbee. How many different starting teams of 4 could be selected? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The debating club has 10 members and is to hold a debate in which the members are to be divided into 2 teams of 5 each. In how many ways can the 2 teams be chosen? \_\_\_\_\_\_\_\_\_\_\_\_\_
3. A drawing for a first and second prize is to be made from a box containing 750 names. How many arrangements of first and second prize-winners are possible? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. There are 20 empty lockers. Five new students are assigned lockers. How many ways could they be assigned lockers? \_\_\_\_\_\_\_\_\_\_\_\_\_
5. A high school football league has 8 teams. In how many different orders can the teams finish the season, excluding the possibility of ties for a place in the standings? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Using the digits 2, 4, 6, 8, and 9 (each one at most once A box dinner recipes is partitioned into courses. There are 5 recipes under soup, 7 under main courses, and 9 under dessert. In how many ways can recipes for a three course meal be selected from the box?
7. A popular clothing store carries 9 different sizes of shirts, each size in both men’s and women’s designs, each made with either wool, cotton, or silk, and each either knit or woven. How many different kinds of shirts does the store carry? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. At a cafeteria restaurant, there are 5 different types of main courses, four different types of salad, 15 different side dishes and 10 different desserts.
	1. If a person picks two different main courses (in other words, you can’t use the same main course twice), three different side dishes, one salad and one dessert, how many different meals could be chosen?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. If a person picks one main course, four side dishes, two salads and two desserts, how many different meals could be chosen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. A basketball coach wants to know how many different 5-member teams she can play form a roster of 10 teams. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. There are 10 people at a party. If each person shakes hands withy every other person, how many handshakes are exchanged? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. A five-piece band consists of a guitarist, a bass player, a trumpeter, a saxophone player, and a pianist. If three of the band members each play a solo in an introduction to a song, how many different permutations of three band members can be used? \_\_\_\_\_\_\_\_\_\_\_\_\_
4. In how many ways can a 5-student advisory council be selected from the 10 girls and 6 boys who have volunteered to be on the council? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_