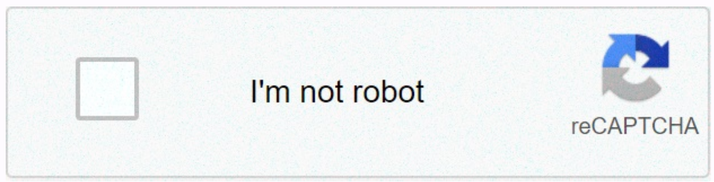

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Cumulative ap practice test 4 statistics answers

5th edition of Daniel S. Yates, Daren... 6th edition of Daren S. Starnes, Josh... 3rd edition of Daren S. Starnes, Josh... 5th edition of Daniel S. Yates 6th Edition Daren S. Starnes, Josh ... Below are solutions for each HW task. Understand that these are ONE WAY to express answers and SHOULD NOT BE USED DIRECTLY INSTEAD OF YOUR OWN FORMULATION! If you have another explanation or do not receive the same answer, please check your work again and, if you are still confused, send me a message to Recall.4.14.24.3Ch. 4 AP Practice Test1.01.11.21.3Ch. 1 Exercise ReviewCh. 1 AP Practice Test Use the following information to respond to the following three exercises. The grocery store is interested in how much money, on average, their customers spend each visit in the product department. Using their store records, they draw a sample of 1,000 visits and calculate each customer's average spend on products. 1. Identify the population, pattern, parameter, statistics, variable, and data for this example. variable data on population parameters 2. What data is the amount of money spent on production per visit? quantitative-continuous quantitative-discrete 3. The study reveals that the median amount spent on products per customer visit in a sample is $12.84. This is an example: Population Sample Parameter Statistics Variables 1.2: Data, Sampling, and Variations in Data, and Sampling Use the following information to respond to the following two exercises. The health club is interested to know how many times a typical member uses the club in a week. They decided to ask each tenth customer on a given day to complete a short survey, including information on how many times they have visited the club in the past week. 4. What kind of sampling design is this? cluster stratified simple random system 5. The number of visits a week is what kind of data? quantitative-continuous quantitative-discrete 6. Describe a situation where you would calculate a parameter, not a statistic.* * 7. The US federal government is conducting a survey of high school students on their plans for future education and employment. One question raises whether they plan to attend a four-year college or university within the next year. Fifty percent answer this question in the affirmative; fifty percent: variable data of parameter statistics 8. Imagine if the U.S. federal government had the resources to survey all high school students in the U.S. regarding their plans for future education and employment, and found that 50 percent planned to attend a 4-year college or university in the next year. This 50 percent example is: variable parameter statistics data Use the following information to respond to the following three exercises. A random sample study of 100 nurses working at a major hospital asked how old they were in the profession. Their answers are summarized in the following (incomplete) table. 9. Fill in the gaps in the table and round up your answers to two decimal places for relative frequency cells and cumulative relative frequencies. # Year Frequency Relative Frequency Cumulative Relative Frequency < 5 25 5-10 30 > 10 Empty 10. What proportion of nurses have five years or more of experience? 11. What proportion of nurses has ten years or less experience? 12. Describe how you can draw a random sample of 30 students from a lecture of 200 students. 13. Describe how you might draw a stratified sample of students from college, where the class layers are students (freshman, sophomore, younger or older). 14. The manager wishes to draw a sample, without replacement, of 30 employees from a workforce of 150. Describe how the chances of selection will change while drawing a pattern. 15. The manager of the department store shall decide to measure employee satisfaction by randomly selecting four departments and conducting interviews with all employees in these four departments. What kind of survey design is this? cluster stratified simple random system 16. The popular U.S. television sports program conducts a spectator survey to see which team they believe will win the NFL (National Football League) title this year. Viewers vote by calling the number shown on the television screen and telling the operator which team they think will win. Do you think those participating in this survey are representative of all football fans in America? 17. Two researchers studying vaccination rates independently draw samples from 50 children, aged 3 to 18 months, from a large urban area and determine whether they are up to date with vaccination. One researcher finds that 84 percent of the children in her sample are acoustic, and another finds that 86 percent in his sample are accumulated. Assuming they both followed the appropriate sampling procedures and calculated correctly, what is the likely explanation for this discrepancy? 18. High school increased the length of the school day from 6.5 to 7.5 hours. Students who wanted to attend this high school had to sign contracts promising to do their best in their schoolwork and comply with school rules; If they don't want to, they could go to another high school in the district. At the end of one year, students' performance on state tests increased by ten percentage points compared to the previous year. Does this prove an improvement that a longer school day improves student achievement? 19. You have read a newspaper article stating that eating almonds leads to increased life satisfaction. The research was conducted by the Almond Growers' Association and was based on a randomised study asking people about their consumption various foods, including almonds, as well as their satisfaction with different aspects of their lives. Does anything about this poll call into question its conclusion? 20. Why is there an undue problem in the polls? 1.3: Frequency, frequency tables and measurement levels 21. Calculate the middle mean of the following numbers and report your answer using one decimal place than is present in the original data: * * 14, 5, 18, 23, 6 1.4: Experimental design and ethics 22. The psychologist is interested in whether the size of the dishes (bowls, plates, etc.) affects how much students eat. It randomly assigns 100 students to one of two groups: the first is served a meal using normal-sized cutlery, while the second is served the same meal, but using dishes that it is 20 percent smaller than normal. It records how much food each group consumes. Identify the following components of this study. population sample experimental units explain variable response treatment variables 23. The researcher analyzes sat results (Scholastic Aptitude Test) over a five-year period and finds that male students score more on the math part on average, with female students achieving higher scores on the verbal part on average. He concludes that these observed differences in test performance are due to genetic factors. Explain how lurking variables may offer an alternative explanation for the observed differences in test scores. 24. Explain why it should not be possible to use a random task to study the health effects of smoking. 25. The professor conducts a telephone survey of the city population by drawing a sample of the numbers from the phone noun and for her assistants to call each of the selected numbers once to conduct a survey. What are some sources of bias in this study? 26. The professor offers additional credit to students participating in her research studies. What is the ethical problem with this method of recruiting subjects? 2.1: Stem and leaf charts (Stemplots), line charts, and bar charts Use the following information to respond to the following four exercises. The mean grades on the chemistry exam, rated on a scale of 0 to 100, were: * * 62, 64, 65, 65, 68, 70, 72, 72, 74, 75, 75, 76.78, 78, 81, 83, 83, 84, 85, 87, 88,

92, 95, 98, 98, 100, 100, 740 27. Do you see any outliers in that data? If so, how would you handle the situation? 28. Construct a stem plot for this data, using only values ranging from 0-100. 29. Describe the distribution of exam results. 2.2: Histograms, frequency polygons and time series charts 30. In a class of 35 students, seven students received scores ranging from 70-79. What is the relative frequency of results in this range? Use the following information to respond to the following three exercises. Conduct a survey of 30 students to see how many attend this term. Yours are: * * 1; 1; 1; 1 * * * 2; 2; 2; 2; 2 * * * 3; 3; 3; 3; 3; 3; 3; 3 * * * 4; 4; 4; 4; 4; 4; 4; 4 * * * 5; 5; 5; 5 31. You've decided to construct a histogram of that data. What will be the range of your first bar and what will be the focal point? 32. What will be the width and focal point of the other lanes? 33. Which strip in this histogram will be the highest and what will its height be? 34. You will receive information from the U.S. Census Bureau on the median household income for your city and decide to display it graphically. What better choice for this data, bar chart or histogram? 35. Collect color data on cars driven by students in a statistics class and want to graphically display this information. What better choice for this data, bar chart or histogram? 2.3: Data location measurements 36. Your daughter brings home test results showing she scored in the 80th percentile in math and 76th percentile in reading for her grade. We interpret these results. 37. You must wait 90 minutes in the hospital's emergency room before you can see a doctor. Learn that your waiting time was at 82. Explain what that means and whether you think it's good or bad. 2.4: Box Plots Use the following information to respond to the following three exercises. 1; 1; 2; 3; 4; 4; 5; 5; 6; 7; 7; 8; 9 38. What is the median for this data? 39. What is the first quartile for this data? 40. What is the third quartile for this data? Use the following information to respond to the following four exercises. This box plot presents the results on the final exam for physics class. {:} 41. What is the median for this data and how do you know? 42. What are the first and third quartiles for this data and how do you know? 43. What is the interquarial range range for this data? 44. What is the range for this data? 2.5: Data Center Measures 45. In the marathon, the median end time was 3:35:04 (three hours, 35 minutes and four seconds). You finished at 3:34:10. Interpret the meaning of the median time and talk about your time in relation to it. Use the following information to respond to the following three exercises. The value, in the thousands of dollars, for houses on the block, are: 45; 47; 47.5; 51; 53.5; 125. 46. Calculate the middle for this data. 47. Calculate the median for this data. 48. What do you think better reflects the average value of homes in this block? 49. In left distorted distribution, which is greater? medium medium mode 50. In right-wing distribution, which one is higher? medium median mode 51. In symmetrical distributions what will be the relationship between the middle, median and mode? 2.7: Data dissemination measures Use the following information to respond to the following four exercises. 10; 11; 15; 15; 17; 22 52. Calculate the mean and standard deviation for this data; Use sample formula for standard deviation. 53. What is the number two standard deviations above the mean flow of those data? 54. Express number 13.7 in terms of mean and standard deviation of those data. 55. In biology class, the results on the final exam are usually divided, with a mean score of 85, and a standard deviation of five. Susan got a final score of 95. Express its test result as a z-score and interpret its meaning. 3.1: Terminology Use the following information to respond to the following two exercises. You have a jar full of marbles: 50 is red, 25 is blue and 15 is yellow. Suppose you draw one marble at random for each interrogation and replace it before the next trial. * * Flight P(R) = probability of drawing red marble. * * Flight P(B) = probability of drawing blue marble. * * Flight P(Y) = probability of drawing yellow marble. 56. Find P(B). 57. What is more likely, drawing red marble or yellow marble? Justify your answer numerically. Use the following information to respond to the following two exercises. The following are the probabilities of describing a group of students. * * Flight P(M) = probability that the student is male * * * Flight P(F) = probability that the student is female * * * Flight P(E) = probability that the student has a major role in education * Let P(S) = probability that the student has a major role in science 58. Write symbols for the probability that the student, selected randomly, is both female and scientific in charge. 59. Write symbols for the likelihood that the student is an educational major, since the student is male. 3.2: Standalone and mutually exclusive events 60. Events A and B are independent. * * * If P(A) = 0.3 and P(B) = 0.5, find P(A I B). 61.C and D are mutually exclusive events. * * * If P(C) = 0.18 and P(D) = 0.03, find P(C OR D). 3.3: Two basic probability rules 62. In a high school class of 300, 200 students go to college, 40 plan to work full-time and 80 take a year off. Are these events mutually exclusive? Use the following information to respond to the following two exercises. The shooter hits the center of the target (bullseye) 70 percent of the time. However, she is the scorer of the series, and if she hits the centre on a single shot, the probability of hitting him on the shot immediately after that is 0.85. Written in probability note: * * * P(A) = P(B) = P (hitting center on one shot) = 0.70* * P(B\| A) = P (hitting center on second strike, given that she hit it on the first) = 0.85 63. Calculate the probability that it will hit the center of the target on two consecutive shots. 64. Are P(A) and P(B) independent in this example? 3.4: Contingency Tables Use the following information to respond to the following three exercises. The following contingency table shows the number of students applying to study for at least 15 hours a week and how many have been made honor roll last semester. Honor roll No honor roll Total study at least 15 hours/week 200 Study less than 3pm/week 125 193 Total 1,000 65. Finish the table. 66. Find P(honor roll\|study at least 15 hours a week). 67. What is the likelihood of a student studying less than 15 hours a week? 68. Are events to study at least 15 hours a week and makes honor roll independent? Justify your answer numerically. 3.5: Tree and Venn Diagrams 69. In high school, some students play on the tennis team, some play on the football team, but neither play tennis and football. Draw a Venn diagram that illustrates this. 70. In high school, some students play tennis, some play football and some play both. Draw a Venn diagram that illustrates this. Practice test 1 Solutions 1.1: Definitions of statistics, probabilities and key terms 1. population: all visits to store customers: 1,000 visits for the study parameter: average expenditure on products per visit of all customers in the store: average expenditure on products per visit with a sample of 1,000 variables: expenditure on products for each visit: dollar amounts spent on products; for example, $15.40, $11.53, etc.c 3. d 1.2: Data, sampling and variations in data and sampling 4. d 5.c 6. The answers will vary. * * * Sample response: Any solution in which you use data from across the population is acceptable. For example, a teacher can calculate the average exam grade for her class: since the results of all class members were used in the calculation, the average is a parameter. 7.b 8.9. # Year Frequency Relative frequency Cumulative relative frequency < 5 25 0.25 0.25 5-10 30 0.30 0.55 > 10 45 0.45 1.00 10.0.75 11. The answers will vary. * * * Sample response: One option is to get a list of classes and assign each student a number from 1 to 200. Then use a random number generator or random number table to generate 30 numbers between 1 and 200 and select students to match random numbers. It would also be acceptable to write each student's name on the card, mix them into a box and randomly draw 30 names. 13. One option would be to obtain a list of students enrolled in college, including a class that stands for each student. Then you would draw a proportional random sample from each class (for example, if 30 percent of college students are freshmen, then 30 percent of your sample would be drawn from the freshman class). 14. For the first selected person, the chance of any individual being selected is one in 150. For the other person, it's one in 149, for the third it's one in 148, and so on. For the 30th selected person, the chance of selection is one of 121. 15. 16. no. There's at least two chances of bias. First, the viewers of this the program may not be representative of American football fans as a whole. Second, the pattern will be self-selected, because people have to make phone calls to participate, and these people are probably not representative of the population of American football fans as a whole. 17. These results (84 percent in one sample, 86 percent in another) are likely due to sampling variability. Each researcher drew a different sample of children and you wouldn't expect them to get exactly the same result, although you would expect the results to be similar, as they are in this case. 18. No. Improvement could also be due to self-forgiven: only motivated students were willing to sign a contract, and they would do well even at school with 6.5 hours of days. Since both changes were implemented at the same time, it is not possible to separate their impact. 19. At least two aspects of this survey are problematic. The first is that it was carried out by a group that would benefit from the results - almond sales are likely to increase if people believe that eating almonds will make them happier. Another is that this survey showed that almond consumption and life satisfaction correlate, but does not establish that eating almonds causes pleasure. It is equally possible, for example, that people with higher incomes are more likely to eat almonds, and are also more satisfied with their lives. 20. You want the sample of people participating in the study to be representative of the population from which they were drawn. People who refuse to participate in the study often have different views than those who participate, and even a random sample can give biased results if a large percentage of those selected refuse to participate in the survey. 1.3: Frequency, frequency tables and measurement levels 21. 13.2 1.4: Experimental design and ethics of the 22nd population: all students sample: 100 students in experimental study units: each individual student who participated in the explanatory variable: the size of the dishwashing treatment: dishes that are 20 percent smaller than the normal response variable: the amount of food eaten 23. There are many lurking variables that could affect the observed differences in test scores. Perhaps boys, on average, took more math courses than girls, and girls walked into more English classes than boys. Perhaps boys were encouraged by their families and teachers to prepare for a career in mathematics and science and thus put more effort into studying mathematics, while girls were encouraged to prepare for areas like communication and psychology that are more focused on using language. The design of the study should be controlled for these and other potential lurking variables (all of which could explain the observed difference in test results, except genetic scientifically sound conclusion on genetic differences. 24. To use a random task, you must be able to assign people to smoke or not smoke. Since smoking has many harmful effects, it would not be an ethical experiment. Instead, we study people who have decided to smoke and compare them to others who have chosen not to smoke and try to control in other ways in which these two groups may differ (lurking variables). 25. Sources of bias include the fact that not everyone has a phone, that mobile phone numbers are often not listed in the published directories and that the individual may not be at home at the time of the phone call; due to all these factors, it is likely that the respondents to the survey will not be representative of the population as a whole. 26. Research entities should not be forced to participate and the provision of additional loans in exchange for participation could be construed as coercion. In addition, this method will result in a volunteer sample, which can not be assumed to be a representative of the population as a whole. 2.1: Stem and leaf charts (Stemplots), line charts, and bar charts 27. The value of 740 is unparalleled, as exams are rated on a scale of 0 to 100, and 740 is well out of that range. This can be a data entry error, with an actual score of 74, so the professor needs to re-check that exam to see what the actual result is. 28. Home certificate 6 2 4 5 5 8 7 0 2 4 5 5 6 8 1 3 3 4 5 7 8 9 2 5 8 8 10 0 29. The highest scores in this exam ranged from 70–89, with several points ranging from 60–69, and several ranging from 90–100. 2.2: Histograms, frequency polygons and time series graphs 30. RF= 7 35 =0.2 31. The range will be 0.5-1.5, and the focal point will be 1. 32. Range 1:5–2.5, center point 2; range 2,5 -3,5, focal point 3; range 3,5-4,5, focal point 4; range 4.5-5,5, focal point 5. 33. Slats from 3.5 to 4.5, with a focal point of 4, will be the highest; its height will be nine, because there are nine students who take four courses. 34. Histogram is a better choice, because income is a continuous variable. 35. Bar graph is a better choice, because this data is categorical rather than continuous. 2.3: Data location measurements 36. Your daughter scored better than 80 percent of students in her math class and better than 76 percent of students in reading. Both results are very good and place her in the top quartile, but her mathematical score is slightly better than her peers than her reading scores. 37. You had unusually long waiting times, which is bad: 82 percent of patients had shorter waiting times than you, and only 18 percent had longer waiting times. 2.4: Box Plots 38. 5 39. 3 40. 7 41. The median is 86, as represented by the vertical line in the box. 42. The first quartile is 80 and the third quartile is 92, as left and right borders of the box. 43. IQR = 92 – 80 = 12 44. Range = 100 – 75 = 25 2.5: Data Center measures 45. Half the runners who finished the marathon ran time faster than 3:35:04, and halftime ran slower than 3:35:04. Your time is faster than the median time, so you were better than more than half the runners in this race. 46. 61.5, or $61,500 47. 49.25 or $49,250 48. Median, because the mean value is distorted by the high value of one house. 2.6: Skewness and Mean, Median and Mode 49.c 50 and 51. Everyone's going to be pretty close to each other. 2.7: Data dissemination measures 52. Medium: 15 * * * Standard deviation: 4.3 * μ = 10 + 11 + 15 + 15 + 17 + 22 6 = 15 s = ∑ (x − x̄) 2 n−1 = 94 5 = 4.3 53. 15 + (2)(4.3) = 23.6 54. 13.7 is one standard deviation below the mean flow of these data, because 15-4.3 = 10.7 55. z= 95−85 5 =2.0 Susan's z-score was 2.0, which means she achieved two standard deviations above the class intermediate level for the final exam. 3.1: Terminology 56. P(B)= 25 90 =0.28 57. It's more likely to draw red marble. * * * * P(R)= 50 80 =0.62 P(Y)= 15 80 =0.19 58. P(F I S) 59. P(E\| M) 3.2: Standalone and mutually exclusive events 60. P(A I B) = (0.3)(0.5) = 0.15 61. P(C OR D) = 0.18 + 0.03 = 0.21 3.3: Two basic probability rules 62. No, they can't switch off from each other, because they make up more than 300. Therefore, some students must fit into two or more categories (e.g. going to college and working full-time). 63. P(A and B) = (P(B\| A))(P(A)) = (0.85)(0.70) = 0.595 64. no. If they were independent, P(B) would be the same as P(B\| A). We know this is not the case, because P(B) = 0.70 and P(B\| A) = 0.85. 3.4: Contingency tables 65. Honor roll No honor roll Total study at least 15 hours/week 482 200 682 Study less than 15 hours/week 125 193 318 Total 607 393 1,000 66. P(honor roll\|study at least 15 hours a word per week) = 482 1000 =0.482 67. P(studies less than 15 hours word per week)= 125+193 1000 =0.318 68. Let P(S) = study at least 15 hours a week * Let P(H) = makes the honor roll * * From the table, P(S) = 0.682, P(H) = 0.607, and P(S AND AND H) =0.482. * * * If P(S) and P(H) are independent, then P(S I H) would be equal (P(S))(P(H)). * * * * However, (P(S))(P(H)) = (0.682)(0.607) = 0.414, while P(S I H) = 0.482. * * * Therefore, P(S) and P(H) are not independent. 3.5: Tree and Venn Diagrams 69. {:} 70. {:} Practice test 2 4.1: Probability Distribution Function (PDF) for discrete random variable use of the following information to respond to the following five exercises. You conduct a survey among a random sample of students at a particular university. The data collected include their main subject, the number of classes they took in the previous semester and the amount of money they spent on books purchased for classes in the previous semester. 1. If X = student is in charge, then what is X?? 2. If Y = the number of classes taken in the previous semester, what is domain Y? 3. If Z = the amount of money spent on books in the previous semester, what is domain Z? 4. Why are X, Y and Z in the previous example random variables? 5. After collecting the data, you find that for one case, z = -7. Is that possible value for Z? 6. What are the two essential characteristics of a discrete probability distribution? Use this discrete probability distribution represented in this table to answer the following six questions. The University Library records the number of books checked by each patron over the course of a day, with the following result: x P(x) 0 0.20 1 0.45 2 0.20 3 0.10 4 0.05 7. Define a random variable X for this example. 8. What is P(x > 2)? 9. What is the likelihood that the sponsor will check at least one book? 10. What is the likelihood of a patron taking out no more than three books? 11. If the table listed P(x) as 0.15, how would you know that an error occurred? 12. What is the average number of books published by a patron? 4.2: Mean or expected value and standard deviation Use the following information to respond to the following four exercises. Three jobs were created at the company: one in the accounting department, one in the human resources department and one in the sales department. The accounting job receives 30 candidates, and the human resources department also sells 60 applicants. 13. If X = number of job applications, use this information to fill out [the link]. 14. What is the mean number of applicants? 15. What is PDF for X? 16. Add the fourth column to the table, for (x-μ)2P(x). 17. What is the standard deviation of X? 4.3: Binomial distribution 18. In a binomial experiment, if p = 0.65, what is q equals? 19. What are the necessary characteristics of a binomial experiment? 20. Joe conducts an experiment to see how many times he has to flip a coin before he gets four heads in a row. Does this qualify as a binomial experiment? Use the following information to respond to the following three exercises. In a special fellowship, 65 percent of households include at least one person who has graduated from college. You randomly sample 100 households in this community. Let X = number of households, including at least one faculty graduate. 21. Describe the probability distribution X. 22. What does X mean? What's the standard deviation of X? Use the following information to respond to the following four exercises. Joe's the star of his school's baseball team. His batting average is .400, which means he gets to bat (at-bat) every ten times, four of those times he gets hit. You decided to follow his batting performance of his next 20 at-bats. 24. Define random variable X in this experiment. 25. Assuming Joe's likelihood of scoring is independent and identical in all 20. describe the X. 26 distribution. Given this information, what number of hits do you predict Joe's going to get? 27. What is the standard deviation of X? 4.4: Geometric distribution 28. What are the three main characteristics of the geometric experiment? 29. Decide to conduct a geometric experiment by flipping the coin until it reaches the heads. That takes five experiments. Represent the outcomes of this trial, using H for heads and T for tails. 30. Conduct a geometric experiment by drawing cards from a normal pack of 52 cards, with a replacement, until you draw the Queen of Hearts. What is domain X for this experiment? 31. Conduct a geometric experiment by pulling cards from a normal deck with 52 cards, without replacement, until you draw a red card. What is domain X for this experiment? Use the following information to respond to the following three exercises. At a particular university, 27 percent of students are engineering majors. Decide to select students at random until you choose the one that is engineering in charge. Have the X = number of students you select until you find one that is engineering in charge. 32. What is the probability of distribution X? 33. What does X mean? What's the standard deviation of X? 4.5: Hypergeometric distribution 35. Draw a random sample of ten students to take part in the survey, from a group of 30 students, consisting of 16 boys and 14 girls. You're interested in the likelihood that the seven students chosen will be boys. Does this qualify as a hypergeometric experiment? Specify the conditions and whether they are met or not. 36. Draw five cards, without replacement, from a normal deck of 52 playing cards and are interested in the likelihood that two cards are spades. What is the group of interests, size of the interest group and sample size for this example? 4.6: Poisson Distribution 37. What are the key characteristics of Poisson's distribution? Use the following information to respond to the following three exercises. The number of drivers who will arrive at toll booths in an hour can be modeled by Poisson distribution. 38. If X = the number of drivers, and the average number of drivers per hour is four, how would you express this distribution? 39. What is domain X? 40. What are the medium and standard deviations of X? 5.1: Continuous probability functions 41. You conduct a survey of students to see how many books they bought the previous term, the total amount they paid for those books, the number they sold after the semester was over and the amount of money they received for the books they sold. What variables in this study are discrete and which are continuous? 42. With continuous random variables, we never calculate the probability that X has a certain value, but we always speak in terms of the probability that X has a value within a certain range. Why is it 43. For a continuous random variable, why are the equivalent statements P(x < c) and P(x ≤ c). 44. For continuous probability function, P(x < 5) = 0.35. What is P(x > 5) and how do you know? 45. Describe to draw the continuous probability distribution described by the function f(x)= 1 10 to 0≤x≤10 . What kind of distribution is this? 46. For the continuous probability distribution described by f(x)= 1 10 to 0≤x≤10 , what is P(0 < x < 4)? 5.2: Single distribution 47. For the continuous probability distribution described by f(x)= 1 10 to 0≤x≤10 , what is P(2 < x < 5)? Use the following information to respond to the following four exercises. The number of minutes a patient waits at a medical clinic to see a doctor is represented by a unique distribution between zero and 30 minutes, inclusive. 48. If X is equal to the number of minutes a person is waiting for, what is distribution X? 49. Write the probability density function for this distribution. 50. What is the mean and standard deviation for waiting times? 51. What is the probability of a patient waiting less than ten minutes? 5.3: Exponential distribution 52. The distribution of variable X, which represents the average time to failure for a car battery, can be written as: X ~ Exp(m). Describe this distribution with words. 53. If the value m for exponential distribution is ten, what are the mean and standard deviations for distribution? 54. Write the probability density function for the variable arranged as: X ~ Exp (0.2). 6.1: Standard normal distribution 55. Translate this statement on the distribution of random variable X in the word: X ~ (100, 15). 56. If variable X has a standard normal distribution, express it symbolically. Use the following information for the following six exercises. According to the World Health Organization, the distribution of height in centimeters for girls aged five years and without months has a distribution: X ~ N(109, 4.5). 57. What is the z-score for a height of 112 inches? 58. What is the z-score for a height of 100 centimeters? 59. Find a z-score for a height of 105 centimeters and explain what this means In the context of the population. 60. What height corresponds to a z-score of 1.5 in this population? 61. Using the empirical rule, we expect that about 68 per cent of the value in normal distribution will lie within one standard deviation above or below the mean. What does this mean, in terms of a specific range of values, for this distribution? 62. Using the empirical rule, about what percentage of heights in this distribution you expect to be between 95.5 cm and 122.5 cm? 6.2: Using the usual distribution Use the following information to respond to the following four exercises. The lottery ticket distributor claims that 20 percent of tickets are winners. You draw a sample of 500. test this proposal. 63. Can you use normal binomal approximation for your calculations? Why or why not. What are the expected mean and standard deviations for your sample, assuming the distributor's claim is true? 65. What is the probability that your sample will have a medium of more than 100? 66. If the z-score for the sample result is -2,00, explain what it means, using the empirical rule. 7.1: Central theorem of limitations for sample funds (averages) 67. What does the central boundary of the theorem mean with regard to sample distribution? 68. The distribution of results from the toss of a fair coin is uniform: heads and tails are equally likely at any turning, and during a large number of experiments you expect about the same number of heads and tails. However, if you conduct research by turning 30 coins and recording the number of heads, and repeating it 100 times, the distribution of the median number of heads will be approximately normal. How is that possible? 69. The mean year of the normally distributed population is 50, and the standard deviation is four. If you draw 100 size 40 samples from this population, describe what you would expect to see in terms of sample sampling distribution. 70. X is a random variable with a mean 25 and a standard deviation of two. Write a distribution for a sample medium of the size of 100 extracted from this population. 71. Your friend is doing an experiment drawing size 50 samples from a population with a mean 117 and a standard deviation of 16. This sample size is large enough to allow the use of a central limitation theorem, so it says that the standard deviation from the sampling distribution of sample agents will also be 16. Explain why this is wrong and calculate the exact value. 72. You are reading a research article relating to a standard medium error. What does this mean and how is it calculated? Use the following information to respond to the next six exercises. You repeatedly draw samples n = 100 from a population with a mean 75 and a standard deviation of 4.5. 73. What does the expected distribution of the sample mean? 74. One of your friends is trying to convince you that the standard mistake of the middle one should be 4.5. Explain what mistake your friend made. 75. What does a z-score for a sample mean 76? 76. What does a z-score mean for a sample of 74.7? 77. Which sample means it corresponds to a z-score of 1.5? 78. If you reduce the sample size to 50, will the standard mean error be less or greater? What would its value be? Use the following information to answer the following two questions. We use an empirical rule to analyze data for size 60 samples drawn from a population with a mean 70 and a standard deviation of 9.79. What range of values would you expect to include 68 percent of the samples means? 80. If you have increased the sample size to 100, Would you expect it to contain 68 percent of the sample funds, applying the empirical rule? 7.2: Central theorem of limitations for amounts 81 and 82. How does the central limitation theorem apply to the sums of random variables? 82. Explain how similar rules applying the central theorem are limitations on sample assets and on the sums of random variables. 83. If you repeatedly extract size 50 samples from a population of medium 80 and a standard deviation of four and calculate the sum of each sample, what is the expected distribution of those amounts? Use the following information to respond to the following four exercises. You pull one size 40 sample out of a population with a mean of 125 and a standard deviation of seven. 84. Calculate the amount. What is the probability that the amount for your sample will be less than 5,000? 85. If you have repeatedly drawn samples of this size, calculating the sum each time, what range of values would you expect to contain 95 percent of the sample amounts? 86. What is the value of one standard deviation below the mean? 87. Which value corresponds to a z score of 2.2? 7.3: Use of the Central Limit Theorete 88. What does the law of a large number say about the relationship between the sample and the population? 89. Application of a law of large numbers, which sample means that it would be expected to be closer to the population means, a sample of ten sizes or a sample of 100? Use this information for the following three questions. The manufacturer makes screws of medium diameter 0.15 cm (centimeters) and a range of 0.10 cm to 0.20 cm; within this range, the distribution is uniform. 90. If X = diameter of one screw, what is distribution X? 91. Suppose you repeatedly draw 100-sized patterns and calculate their mean. Applying the central theorem of the restriction, what does the distribution of this sample mean? 92. Suppose you draw samples of 60 repeatedly and calculate their sum. Applying the central theorem of the restriction, what is the distribution of these sample amounts? Practice Test 2 Solutions Probability Distribution Function (PDF) for discrete random variable 1. Domain X = {English, mathematics,....], i.e. a list of all majors offered at the university, plus unreported. 2. Domain Y = {0, 1, 2, ...}, or the number from 0 to the upper limit of teaching allowed by the university. 3. Domain Z = any amount of money from 0 upwards. 4. Because they can take any value within their domain, and their value for any particular case is unknown until the survey is complete. 5. No, because domain Z includes only positive numbers (you can not spend a negative amount of money). The value -7 may be a data entry error or a special code indicating that the student did not answer the question. 6. Probabilities shall be from 1.0 and the probabilities of each event shall be between 0 and 1, inclusive. 7. Flight X = number of books checked out by 8. P(x > 2) = 0.10 + 0.05 = 0.15 9. P(x ≥ 0) = 1 - 0.20 = 0.80 10. P(x ≤ 3) = 1 - 0.05 = 0.95 11. Probabilities would add up to 1.10, and the total probability in distribution must always be equal to 1.0. 12. x¯ = 0(0.20) + 1(0.45) + 2(0.20) + 3(0.10) + 4(0.05) = 1.35 Mean or Expected value and standard deviation 13. x P(x) xP(x) 30 0.33 9.90 40 0.33 13.20 60 0.33 19.80 14. x̄ = 9.90 + 13.20 + 19.80 = 42.90 15. P(x = 30) = 0,33 * * * P(x = 40) = 0,33 * * P(x = 60) = 0,33 16. x P(x) xP(x) (x – μ)2P(x) 30 0,33 9,90 (30 – 42,90)2(0,33) = 54,91 40 0,33 13,3320 (40 – 42,90)2(0,33) = 2,78 60 0,33 19,90 (60 – 42,90)2(0,33) = 96,49 17. σ x = 54,91+2,78+96,49 =12,42 Binomna distribucija 18. q = 1 – 0,65 = 0,35 19. There's a fixed number of experiments. There are only two possible outcomes, and they add up to 1. The tests are independent and are carried out under identical conditions. 20. No, as there is no fixed test number of 21. X~B(100, 0.65) 22. μ = np = 100(0.65) = 65 23. σ x = npq = 100(0.65)(0.35) =4.77 24. X = Joe gets hit in one at-bat (on one occasion of his arrival at bat) on April 25, 2015. X ~B(20, 0.4) 26. μ = np = 20(0.4) = 8 27. σ x = npq = 20(0.40)(0.60) =2.19 4.4: Geometric distribution 28. A series of Bernoulli trials are conducted until one is a success, and then the experiment stops. At least one examination is being conducted, but there is no upper limit on the number of trials. The probability of success or failure is the same for any study. T H 30. Domain X = {1, 2, 3, 4, 5, ... n}. Because you are drawing with a replacement, there is no upper limit on the number of draws that may be required. 31. Domain X = {1, 2, 3, 4, 5, 6, 7, 8th, 9, 10, 11, 12... 27}. Since you draw without a substitute, and 26 of the 52 cards are red, you need to draw a red card within the first 17 draws. 32. X ~G(0.24) 33. μ= 1 p = 1 0.27 =3.70 34. σ= 1−p 2 = 1−0.27 0.27 2 =3.16 4.5: Hypergeometric distribution 35. Yes, because you sample from a population of two groups (boys and girls), you have a group of interests (boys) and they are sampled without replacement (therefore probabilities change with each pick, and you do not perform Bernoulli trials). 36. The group of interests are cards that are spades, the size of the interest group is 13, and the sample size is five. 4.6: Poisson Distribution 37. Poisson distribution models the number of events that occur at a fixed time interval or space, when events are independent, and when the average event rate is known. 38th X ~P(4) 39. Domain X = {0, 1, 2, 3, ...) respectively, any number from 0 up. 40. μ=4 σ= 4 =2 5.1: Continuous Probability Functions 41. Discrete variables are the number of books purchased and the number of books sold after the semester is completed. Continuous variables are the amount of money spent book and the amount of money received at the time of sale. 42. Because for a continuous random variable, P(x = c) = 0, where c is any single value. Instead, we calculate P(c < x < d), that is, the probability that the value x is between c and d. 43. Because P(x = c) = 0 for any continuous random variable. 44. P(x > 5) = 1 - 0.35 = 0.65, because the total probability of continuous probability function is always 1. 45. This is a unique distribution of probabilities. You would draw it as a rectangle with vertical sides on 0 and 20, and horizontal sides on 1 10 and 0. 46. P(0 <x<4)=(4−0)(1 10)= 0.4 5.2: Unique Distribution 47. P(2 <x<5)=(5−2)(1 10)= 0.3 48. X ~ U(0, 15) 49. f(x)= 1 b−a for (a≤x≤b) so f(x)= 1 30 for (0≤x≤30) 50. μ= a+b 2 = 0+30 5 =15.0 σ= (b−a) 2 12 = (30−0) 2 12 =8.66 51. P(x<10)=(10)(1 30)= 0.33 5.3: Exponential Distribution 52. X has exponential distribution with parametaic decay m and medium and standard deviation 1 m. There will be a relatively large number of small values in this distribution, with values becoming less frequent as they become higher. 53. μ=σ= 1 m = 1 10 =0.1 54. f(x) = 0.2e–0.2x where x ≥ 0. 6.1: Standard normal distribution 55. Random variable X has a normal distribution with a mean 100 and a standard deviation of 15.56. X ~N (0.1) 57. z= x−μ σ z= 112−109 4.5 =0.67 58. z= x−μ σ so z= 100−109 4.5 =−2.00 59. z= 105−109 4.5 =−0.89 This girl is shorter than average for her age, by 0.89 standard deviations. 60. 109 + (1.5)(4.5) = 115.75 cm 61. We expect that about 68 percent of the height of girls aged five years and zero months will be between 104.5 cm and 113.5 cm. We expect 99.7 per cent of the heights in this distribution to be between 95.5cm and 122.5cm, as this range represents the values of three standard deviations above and below the mean. 6.2: Use of Normal Distribution 63. Yes, because both NP and nq are greater than five. * * np = (500)(0.20) = 100 and nq = 500(0.80) = 400 64. μ=np=(500)(0.20)=100 σ= npq = 500(0.20)(0.80) =8.94 65. Fifty percent, because in normal distribution, half the value lies above the mean. 66. The results of our sample were two standard deviations below the mean, suggesting that it is unlikely that 20 percent of lotto tickets are winners, as the distributor claims, and that the true percentage of winners is lower. Applying the Empirical Rule, if that claim were true, we would expect to see the result this far below the mean level only about 2.5 percent of the time. 7.1: Central theorem of limitations for sample funds (averages) 67. The central border theorem states that if samples of sufficient size are extracted from the population, the distribution of sample funds will be normal, even if the distribution of the population is not normal. 68. Sample size of 30 large enough in this example to apply the central theorem of limitations. This theorem] states that for samples of sufficient size drawn from the sample distribution population, the sample distribution will approach normality, regardless of the distribution of the population from which the samples were extracted. 69. You would not expect each sample to be medium 50, due to sampling variability. However, you would expect the sample sampling distribution to mean grouping around 50, with approximately normal distribution, so values close to 50 are more common than values further removed from 50. 70. X̄ ~N(25.0.2) because X̄ ~N (μ x , σ x n) 71. The standard deviation of the sample sampling distribution can be calculated using a formula (σ x n), which in this case is (16 50) . The exact value for the standard deviation of sampling of sample funds is therefore 2.26. 72. The standard mid-flow error is another name for the standard deviation from the sample sampling distribution. Given n-sized samples extracted from the population with standard τx deviation , the standard error is medium (σ x n) . 73rd X~N (75, 0.45) 74. Your friend forgot to share the standard deviation with square root n. 75. z= x¯ − μ x σ x = 76−75 4.5 =2.2 76. z= x̄ − μ x σ x = 74.7−75 4.5 =−0.67 77. 75 + (1.5)(0.45) = 75,675 78. The standard mid-sized error will be greater, as you will be divided by a smaller number. The standard medium error for n = 50 samples is: * (σ x n)= 4.5 50 =0.64 79. You would expect this range to include values up to one standard deviation above or below the sample value. In this case: * * 70+ 9 60 =71.16 and 70− 9 60 =68.84 so you would expect 68 percent of the sample to mean it will be between 68.84 and 71.16. 80. 70+ 9 100 =70.9 and 70− 9 100 =69.1, so you would expect 68 percent of the sample to be between 69.1 and 70.9. For example, this is a narrower interval due to the increased sample size. 7.2: Central theorem of limitations for amounts 81 and 82. For random variable X, the random variable ªX will typically be distributed as the n sample size used to calculate the total increases. 82. Both rules state that the distribution of the quantity (medium or sum) calculated on samples drawn from the population will have the usual distribution as the sample size increases, regardless of the distribution of the population from which the samples were extracted. 83. ªX∼N(n μ x, (n)(σ x)) and ªX∼N(4000,28,3) 84.Probability is 0.50, because 5,000 means the sampling distribution of the amount of 40 from this population. The sums of random variables calculated from a sample of sufficient size are usually distributed, and in normal distribution half of the values 85. Using the empirical rule, you would expect 95 percent of the value to be within two standard deviations of the mean. Using a formula for a standard deviation refers to a total pattern: (n)(σ x)=(40)(7)=44.3 so you would expect 95 percent of the value to be between 5.3 0 (2)(44.3) and 5,000 - (2)(44.3), or between 4,911.4 and 588.6. 86. μ−(n)(σ x)=5000−(40)(7)=4955.7 87. 5000+(2.2)(40)(7)=5097.4 7.3: Use of the Central Restriction Theoretal 88. The law of large numbers says that as the sample size increases, it means the pattern approaches and approaches the population. 89. You would expect the mean from a sample of 100 to be closer to the population means, because the law of a large number says that as the sample size increases, the sample size tends to approach the mea population. 90. X~N (0.10, 0.20) 91. X̄ ~N (μ x , σ x n), and the standard deviation of the unique distribution is b−a 12 . In this example, the standard distribution deviation is b−a 12 = 0.10 12 =0.03 and X̄ ~N(0.15.0.003) 92. ªX∼N((n)(μ x),(n)(σ x)) so that ªX∼N(9,0,0,23) Test 3 8.1: Confidence interval, mean single population, population standard deviation known, Normal use of the following information to respond to the following seven exercises. You extract a size 30 sample from a normally distributed population with a standard deviation of four. 1. What does a standard sample error mean in this scenario, rounded to two decimal places? 2. What does sample distribution mean? 3. If you want to build a two-seater of 95% confidence interval, how likely will there be in each tail of distribution? 4. What is the corresponding z-score and error related or margin of error (EBM) for a confidence interval of 95% for this data? 5. Rounding to two decimal places, what is the confidence interval of 95% if the sample means 41? 6. What is the confidence interval of 90% if the sample means 41? Round to two decimal places 7. Suppose the sample size in this study was 50, not 30. What would be the confidence interval of 95% if the sample meant 41? Round your response to two decimal places. 8. For any data set and sampling situation, which you would expect to be wider: a confidence interval of 95% or a confidence interval of 99%? 8.2: Confidence interval, mean single population, standard deviation unknown, student not 9. Comparing the charts of standard normal distribution (z-distribution) and t-distribution with 15 degrees of freedom (df), how do they differ? 10. Comparing the graphs of standard normal distribution (z-distribution) and t-distribution with 15 degrees of freedom (df), how are they similar? Use the following information to respond to the following five exercises. It is known that body temperature is normally distributed among healthy adults. Since you do not know the population standard deviation, t-distribution for the study of body temperature. You collect data from a random sample of 20 healthy adults and find that your sample temperatures have a mean of 98.4 and a standard sample deviation of 0.3 (both degrees Fahrenheit). 11. What are the degrees of freedom (df) for this study? 12. For a two-story confidence interval of 95%, what is the corresponding t-value for use in a formula? 13. What is the confidence interval of 95%? 14. What is the confidence interval of 99%? Round to two decimal places. 15. Suppose the sample size was 30, not 20. So what would be the confidence interval of 95%? Round to two decimal places 8.3: Confidence interval for the population share Use this information to respond to the following four exercises. You conduct a survey of 500 randomly selected city dwellers, asking if they own a car. 280 say they own a car, and 220 say they don't own 16. Find the sample ratio and standard sample deviation for this data. 17. What is a 95% two-way confidence interval? Round to four decimal places. 18. Calculate the confidence interval of 90%. Round to four decimal places. 19. Calculate the confidence interval of 99%. Round to four decimal places. Use the following information to respond to the following three exercises. You plan to conduct a survey of community members aged 65 and over, to determine how many mobile phones of their own. You want to make an estimate whose confidence interval of 95% will be within four percentage points (plus or minus) of the true share of the population. Use an estimated share of the population of 0.5. 20. What sample size do you need? 21. Suppose you knew from previous studies that the proportion of the population was 0.6. What sample size do you need? 22. Suppose you want a confidence interval of 95% within three percentage points of the population. Suppose the population share is 0.5. What sample size do you need? 9.1: Null and alternative hypotheses 23. In your state, 58 percent of registered voters in the community are registered as Republicans. You want to conduct a study to see if this is also held in your community. Specify null and alternative hypotheses to test this. 24. You believe that at least 58 percent of registered voters in the community are registered as Republicans. Specify null and alternative hypotheses to test this. 25. The median household value in the city is $268,000. You believe that the median household value in a particular neighborhood is lower than the city average. Write null and alternative hypotheses to test this. 26. Provide the appropriate alternative hypothesis to this zero hypothesis: H0: μ = 107 27. For this zero hypothesis, provide the appropriate alternative hypothesis: H0: p < 0.25 9.2: Outcomes and errors of type I and type II 28. If you reject H0 when H0 is correct, what kind of error is it? If you can't say no to H0 when H0 is fake, what kind of mistake is that? Error? What is the relationship between type II error and test strength? 31. A new blood test is being developed to examine patients for cancer. Positive results are followed by a more accurate (and expensive) test. It is assumed that the patient does not have cancer. Describe the zero hypothesis, type I and type II errors for this situation and explain which type of error is more serious. 32. Explain in words what it means that the screening test for tuberculosis has α level of 0.10. The zero hypothesis is that the patient does not have tuberculosis. 33. Explain in words what it means that the screening test for tuberculosis has β level of 0.20. The zero hypothesis is that the patient does not have tuberculosis. 34. Explain in words what it means that the screening test for tuberculosis has a power of 0.80. 9.3: Distribution required for hypothesis testing 35. If you are conducting a hypothesis test on one population and do not know the deviation of the population, what test will you use if the sample size is 10 and the population is normal? 36. If you are conducting a hypothesis test on one population and you know the deviation of the population, what test will you use? 37. If you are conducting a hypothesis test of one proportion of the population, with a NP and nq greater than or equal to five, which test will you use and with what parameters? 38. Published information shows that, on average, students spend less than 20 hours studying per week. You draw a sample of 25 students from the faculty and consider the sample to mean 18.5 hours, with a standard deviation of 1.5 hours. What distribution will you use to test whether your college study habits are the same as the national average and why? 39. A published study says that 95 percent of American children are vaccinated against measles, with a standard deviation of 1.5 percent. Draw a sample of 100 children from your community and check their vaccination data, to see if the vaccination rate in your community is the same as the national average. What distribution will you use for this test and why? 9.4: Rare events, pattern, decision and conclusion 40. You conduct research with the highest α 0.05. If you get a score with a p-value of .07, what will your decision be? 41. Conduct research with α = 0.01. If you get a score with a p-value of .006, what will your decision be? Use the following information to respond to the following five exercises. According to the World Health Organization, the average height of a one-year-old child is 29. You believe that children with a particular disease are less than average, so you draw a sample of 20 children with this disease and find a mean height of 27.5 and a standard deviation sample of 1.5. 42. What are the zero and alternative hypotheses for this study? 43. What distribution will you use to test your hypothesis and why? 44. What is statistics and p-values? 45. Based on the sample results, what is your decision? 46. Suppose the mean for your sample is 25.0. Change your calculations and describe what your decision would be. 47. Conduct research using α = 0.05. What is the level of significance for this study? 48. Conduct a study, based on a sample drawn from a normally distributed population with the known variance, with the

following hypotheses: * * H0: μ = 35.5 * Ha: μ ≠ 35.5 * * Will you conduct a test with one tail or two tails? 49. Conduct a study, based on a sample drawn from a normally distributed population with a known variance, with the following hypotheses: * * H0: μ ≥ 35.5 * * * Ha: μ < 35.5 * * * Will you conduct a one-tailed or two-seeded test? Use the following information to respond to the following three exercises. Nationally, 80 percent of adults own a car. You want to know if there's the same share of your cars in the community. You draw a sample of 100 and find that 75% own cars. 50. What are the zero and alternative hypotheses for this study? 51. What test will you use and why? 10.1: Comparison of two independent means of population with unknown population deviations 52. Conduct a political opinion poll, interview both members of 50 married couples. Are the groups in this survey independent or compliant? 53. You are testing a new medicine to treat insomnia. You randomly assign 80 volunteer subjects to experimental (new drugs) or control (standard treatment conditions). Are the groups in this survey independent or compliant? 54. You are exploring the effectiveness of a new math textbook for high school students. You give the most beautiful to a group of students at the beginning of the semester, and posttest at the end of a year's classes using this textbook and compare the results. Are the groups in this survey independent or compliant? Use the following information to respond to the following two exercises. You are conducting a time difference study at two undergraduate completion faculties. At College A, students take an average of 4.8 years to complete their undergraduate studies, while at College B they take an average of 4.2 years. The pooled standard deviation for this data is 1.6 years and 55 years. Calculate Cohen's d and interpret it. 56. Suppose the mean time for undergraduate studies at A-College was 5.2 years. Calculate the size of the effect and interpret it. 57. Perform an independent t-test of samples with sample size ten in each of the two groups. If you are conducting a two-α hypothesis test = 0.01, what p-values will cause the null and null hypothesis to be rejected? 58. Perform an independent t-test of samples with sample size 15 in each group, with the following hypotheses: * * H0: μ ≥ 110 * * * Ha: μ < 110 * If α = 0.05, which t-values will cause you to reject null 10.2: Comparison of two independent population agents with known deviations of the population standard population Use the following information to respond to the following six exercises. Students in science often complain that they have to spend more on textbooks every semester than students in the humanities. To test this, you draw random samples from 50 science students and 50 humanities from your college and record how much each spent last semester on textbooks. Consider science students to be the first group and humanities students to be the second group. 59. What is the random variable for this study? 60. What are the zero and alternative hypotheses for this study? 61. If 50 science students spent an average of $530 with a sample of a standard deviation of $20, and 50 humanities students spent an average of $380 with a standard deviation sample of $15, wouldn't you refuse or reject the zero hypothesis? Use an alpha level of 0.05. What's your conclusion? 62. What would be your decision to use α = 0.01? 10.3: Comparing the two independent population proportions, use the information to respond to the next six exercises. Want to know if the proportion of homes with cable tv service differs between Community A and Community B. To test this, draw a random sample of 100 for each and note whether they have cable service. 63. What are the zero and alternative hypotheses for this study 64. If 65 households in Community A have cable service and 78 households have community B, what is the pooled share? 65. In α = 0.03, will you reject the zero hypothesis? What's your conclusion? 65 households in Community A have cable service and 78 households in Community B were surveyed. 66. Using an alpha value of 0.01, would you reject the zero hypothesis? What's your conclusion? 65 households in Community A have cable service and 78 households in Community B were surveyed. 10.4: Matching or paired samples Use the following information to respond to the following five exercises. You want to know if a particular exercise program helps people lose weight. You conduct a study in which you weigh participants at the beginning of the study, and again at the end, after participating in an exercise program for six months. You compare the results using a t-test of matching pairs, in which the data {weight at the conclusion - weight at the beginning}. You believe that, on average, participants will lose weight after six months on the exercise program. 67. What are the null and alternative hypotheses for this study? 68. Calculate the test statistics, assuming x̄ d = -5, sd = 6 and n = 30 (pairs). 69. What are the degrees of freedom for this statistic? 70. Using α = 0.05, which is your decision regarding the effectiveness of this program in Weight loss? What's the conclusion? Conclusion? What would it mean if the t-statistic was 4.56 and what would be your decision in that case? 11.1: Facts about chi-square distribution 72. What is the mean and standard deviation for chi-square distribution with 20 degrees of freedom? 11.2: The fit kindness test uses the following information to respond to the following four exercises. Nationally, about 66% of high school graduates enroll in higher education. Perform a chi-square goodness fit test to see if that same proportion applies to the most recent high school class since 200. Your zero hypothesis is that national distribution also applies to your high school. 73. What are the expected numbers of students from your high school who are enrolled and not enrolled in higher education? 74. Fill out the rest of this table. Observed (O) Expected (E) O-E (O- E)2 (O−E) 2 z Enrolled 145 Not registered 55 75. What are the degrees of freedom for this chi-square test? 76. What is chi-square test statistics and p-value. At a level of 5% significance, what do you conclude? 77. To distribute chi-squares with 92 degrees of freedom, curve __\\\.. 78. For the distribution of chi-squares with five degrees of freedom, the curve is ___.. 11.3: Independence test Use the following information to respond to the following four exercises. You are considering conducting a chi-square independence test for data in this table, which shows cellphone ownership data for freshmen and seniors in high school. Your zero hypothesis is that cell phone ownership is independent of class status. 79. Calculate the expected values for cells. Cell = Yes Cell = No Freshmen 100 150 Senior 200 50 80. Calculate (O−E) 2 z for each cell, where O = observed and E = expected. 81. What is the chi-square statistics and degrees of freedom for this study? 82. In α = 0.5 significance, what is your decision regarding the zero hypothesis? 11.4: Homogeneity Test 83. Perform a chi-square homogeneity test for data in table five by two. What are the degrees of freedom for this test? The 84th 2013 poll in the state of California surveyed people on taxing sugar-sweetened beverages. The results are presented in the following table and are classified by ethnic group and type of response. Are the survey responses independent of the ethnic group of participants? Perform a hypothesis test at the 5% level. Ethnic group \ Response type Favor opposes No Opinion Row Total White/Non-Hispanic 234 433 43 710 Latino 147 106 19 272 African Americans 24 41 6 71 Asian Americans 54 48 16 118 Pillar total 459 628 84 1171 85. In a homogeneity test, what must be the truth about the expected value of each cell? 86. Generally stated, what are the null and alternative hypotheses for the chi-square independence test? 87. generally speaking, what are the null and alternative hypotheses for the chi-square homogeneity test? 11.6: One variant 88 test. The lab test claims to have a deviation of no more than five. You believe the deviation is greater. What is the zero and alternative hypothesis to test it? Practice Test 3 Solutions 8.1: Confidence interval, mean single population, known population deviation, normal 1. σ n = 4 30 =0.73 2. normal 3.0,025 or 2.5%; The 95 percent confidence interval contains a 95 percent probability, and excludes five percent, and the excluded five percent is evenly divided between the upper and lower tails of the distribution. 4. z-score = 1.96; EBM= z α 2 (σ n)=(1.96)(0.73)= 1.4308 5. 41 ± 1.43 = (39.57, 42.43); Using the Zinterval calculator function, the answer is (40.74, 41.26. Responses vary due to rounding. 6. Z-value for the confidence interval of 90% is 1.645, so EBM = 1.645(0.73) = 1.20085. * * * Reliability interval of 90% is 41 ± 1.20 = (39.80, 42.20). * * * The function of the Zinterval calculator is the answer (40.78, 41.23). Responses vary due to rounding. 7. The standard measurement error is: σ n = 4 50 =0.57 EBM= z α 2 (σ n)=(1.96)(0.57)= 1.12 The confidence interval of 95% is 41 ± 1.12 = (39.88, 42.12). * * * The function of the Zinterval calculator is the answer (40.84, 41.16). Responses vary due to rounding. 8. Confidence interval of 99%, as it includes all but one percent distribution. The 95 per cent confidence interval will be narrower, as it excludes five per cent distribution. 8.2: Confidence interval, mean single population, standard deviation unknown, student not 9. T-distribution will be more likely in tails (thicker tails) and less likely near the Middle Ages distribution (shorter in the middle). 10. Both distributions are symmetrical and centered to zero. 11. df = n - 1 = 20 - 1 = 19 12. You can get a T-value from a probability table or calculator. In this case, for a t-distribution with 19 degrees of freedom and a 95% two-month confidence interval, the value is 2,093, respectively, * * t α 2 =2,093. The function of the calculator is invT (0.975, 19). 13. EBM= t α 2 (s n)=(2,093)(0.3 20)= 0.140 98.4 ± 0.14 = (98.26, 98.54). * * * Tinterval calculator function is the answer (98.26, 98.54). 14. tα 2 =2.861. The function of the calculator is invT(0.995, 19).* * * EBM= t α 2 (s n)=(2,861)(0.3 20)=0.192 98.4 ± 0.19 = (98.21, 98.59). Tinterval calculator function is the answer (98:21, 98.59). 15. df = n - 1 = 30 -1 = 29. t α 2 =2.045 EBM = z t (s n)=(2.045)(0.3 30)= 0.112 98.4 ± 0.11 = (98.29, 98.51). Tinterval calculator function is the answer (98.29, 98.51). 8.3: Confidence interval for population share 16. p′ = 280 500 =0.56 q ′ =1− p ′ =1−0.56=0.44 s= pq n = 0.56(0.44) 500 =0.0222 17. Because you use binomial approximation, z α 2 =1.96 . * * Calculate population error (EBP): * EBP = z a 2 pq n =1.96(0.222)=0.0435 Calculate confidence interval of 95%: * 0.56 ± 0.0435 = (0.5165, 0.6035). * * * The function of the 1-PropZint calculator is the answer (0.5165, 0.6035). 18. z α 2 =1.64 EBP= z a 2 pq n =1.64(0.0222)=0.0364 0.56 ± 0.03 = (0.5236, 0.5964). The function of the 1-PropZint calculator is the answer (0.5235, 0.5965) 19. z α 2 =2.58 EBP= z a 2 pq n =2.58(0.0222)= 0.0573 0.56 ± 0.05 = (0.5127, 0.6173). * * * The function of the 1-PropZint calculator is the answer (0.5028, 0.6172). 20, 20. EBP = 0.04 (because 4% = 0.04) * * z α 2 =1.96 for a confidence interval of 95% * * = z 2 pq EB P 2 = 1.96 2 (0.5)(0.5) 0.04 2 = 0.9604 0.0016 =600.25 You need 601 respondents (rounding up with 600.25). 21. n= n 2 pq EB P 2 = 1.96 2 (0.6)(0.4) 0.04 2 = 0.9220 0.0016 =576.24 You need 577 subjects (rounding upwards of 576.24). 22. n= n 2 pq EB P 2 = 1.96 2 (0.5)(0.5) 0.03 2 = 0.9604 0.0009 =1067.11 You need 1,068 subjects (rounding upwards of 1,067.11). 9.1: Null and alternative hypotheses 23. H0: p = 0.58 * * Ha: p ≠ 0.58 24. H0: p ≥ 0.58 * * Ha: p < 0.58 25. H0: μ ≥ $268,000 * Ha: μ < $268,000 26. Ha: μ ≠ 107 27. Ha: p ≥ 0.25 9.2: Outcomes and errors type I and type II 28. type I 29 error type II 30. Power = 1 - β = 1 - P(Type II error). 31. The zero hypothesis is that the patient does not have cancer. A type I error would be detecting cancer when it's not present. A Type II error would not be to detect cancer when it is present. The type II error is more serious as not finding cancer could prevent the patient from receiving appropriate treatment. 32. The screening test has a ten percent probability of type I error, which means that ten percent of the time it will detect tuberculosis when it is not present. The 33rd Screening Test has a 20 percent probability of a Type II error, meaning that 20 percent of the time it will fail to detect tuberculosis when it is actually present. 34. Eighty percent of the time, the screening test will reveal tuberculosis when it is actually present. 9.3: Distribution required for hypothesis testing 35. Student's t-test. 36. Normal distribution or z-test. 37. Normal distribution with μ = p and σ = pq n 38. t24. Use t-distribution because you do not know the standard deviation of the population, and the degrees of freedom are 24 because df = n - 1. 39. X̄ ~ N (0.95, 0.051 100) Since you know the standard deviation of the population and have a large sample, you can use normal distribution. 9.4: Rare events, pattern, decision and conclusion 40. Do not refuse anything hypothesis, because α ≤ p 41. Reject the zero hypothesis, because α ≥ p. 42. H0: μ ≥ 29.0 * Ha: μ < 29.0 43. t19. Because you don't know population standards use the t-distribution. Degrees of freedom are 19, because df = n - 1. 44. The test statistics are –4.4721 and the p-value is 0.00013 using the TTEST calculator function. 45. With α = 0.05, discard the zero hypothesis. 46. With α = 0.05, the p-value is almost zero using the TTEST calculator function and discard the zero hypothesis. 47. The level of significance is five percent. 48th Two-Tailed 49th One-Tailed 50th Birthday H0: p = 0.8 * * Ha: p ≠ 0.8 51. You will use a normal test for one proportion of the population because the NP and nq are both greater than five. 10.1: Comparison of two independent means of population with unknown population deviations 52. They are aligned (in pairs), because you interviewed married couples. 53. They are independent, as participants are randomly assigned to groups. 54. They are harmonised (paired), because you have collected data twice from each individual. 55. d= x¯1 − x¯2 association = 4.8−4.2 1.6 =0.375 This is a small effect size, as 0.375 falls between Cohen's small (0.2) and medium (0.5) performance sizes. 56. d= x¯1 − x¯2 with association = 5.2−4.2 1.6 =0.625 The effect size is 0.625. According to Cohen's standard, this is the mean size of the effect, as it falls between mean (0.5) and large (0.8) effect sizes. 57. p-value < 0.01. 58. You will reject the null and despicable hypothesis only if you get a value significantly below the hypothetical value 110. 10.2: Comparison of two independent populations means with the known population standard deviation 59. X¯1 − X¯2 , i.e. the median difference in the amount spent on textbooks for two groups. 60. H0: X¯1 − X¯2 ≤ 0 * Ha: X¯1 − X¯2 > 0 * * It could also be written as: * * H0: X¯1 ≤ X¯2 Ha: X¯1 > X¯2 61. Using the 2-SampTtest calculator function, discard the zero hypothesis. At the 5% significance level, there is enough evidence to conclude that science students spend more on textbooks than humanities students. 62. Using the 2-SampTtest calculator function, discard the zero hypothesis. At a level of 1% significance, there is enough evidence to conclude that science students spend more on textbooks than humanities students. 10.3: Comparison of two independent population shares 63. H0: pA = pB * * Ha: pA ≠ pB 64. p c = x A + x A n + n A = 65+78 100+100 =0.715 65. Using the 2-PropZTest calculator function, p-value = 0.0417. Drop the zero hypothesis. At the 3% significance level, there is enough evidence here to conclude that there is a difference between the proportion of households in the two communities that have cable service. 66. Using the 2-PropZTest calculator function, p-value = 0.0417. Do not dismiss the zero hypothesis. At 1% of significance, there is insufficient evidence to conclude that there is a difference between the proportion of households in the two kabelska usluga. 10.4: Usklađeni ili upareni uzorci 67. H0: x¯d ≥0 Ha: x¯d <0 68.= t=– 4.5644= 69.= df=30 –= 1=29. 70.= using= the= calculator= function= ttest,= the= p-value=0.00004 so= reject= the= null= hypothesis.= at= the= 5%= level,= there= is= sufficient= evidence= to= conclude= that= the= participants= lost= weight,= on= average.= 71.= a= positive= t-statistic= would= mean= that= participants,= on= average,= gained= weight= over= the= six= months.= 11.1:= facts= about= the= chi-square= distribution= 72.= μ=df == 20= *= *= *= σ=2(df) == 40=6.32 11.2 := goodness-of-fit= test= 73.= enrolled=200(0.66) == 132.= not= enrolled=200(0.34) == 68= 74.= observed= (o)= expected= (e)= o= –= e= (o= –= e)2= (o−e)= 2= z= enrolled= 145= 132= 145= –= 132=13 169= 169= 132=1.280 not= enrolled= 55= 68= 55= –= 68=–13 169= 169= 68=2.485 75.= df=n –= 1=2 –= 1=1. 76.= using= the= calculator= function= chi-square= gof= –= test= (in= stat= tests),= the= test= statistic= is= 3.7656= and= the= p-value= is= 0.0523.= do= not= reject= the= null= hypothesis.= at= the= 5%= significance= level,= there= is= insufficient= evidence= to= conclude= that= high= school= most= recent= graduating= class= distribution= of= enrolled= and= not= enrolled= does= not= fit= that= of= the= national= distribution.= 77.= approximates= the= normal= 78.= skewed= right= 11.3 := test= of= independence= 79.= cell=Yes cell=No total= freshman= 250(300)= 500=150 250(200)= 500=100 250= senior= 250(300)= 500=150 250(200)= 500=100 250= total= 300= 200= 500= 80.= (= 100−150=)= 2= 150=16.67 (= 150−100=)= 2= 100=25 (= 200−100=)= 2= 150=16.67 (= 50−100=)= 2= 100=25 81.= chi-square=16.67 += 25= += 16.67= += 25=83.34. *= *= *= df=(r –= 1)(c= –= 1)=1 82.= p-value=P(Chi-square, 83.34)=0 *= *= *= reject= the= null= hypothesis.= *= *= *= you= could= also= use= the= calculator= function= stat= tests= chi-square= –= test.= 11.4:= test= of= homogeneity= 83.= the= table= has= five= rows= and= two= columns.= df=(r –= 1)(c= –= 1)=(4)(1) == 4.= 84.= using= the= calculator= function= (stat= tests)= chi-square= test,= the= p-value=0. reject= the= null= hypothesis.= at= the= 5%= significance= level,= there= is= sufficient= evidence= to= conclude= that= the= poll= responses= independent= of= the= participants'= ethnic= group.= 85.= the= expected= value= of= each= cell= must= be= at= least= five.= 86.= h0:= the= variables= are= independent.= *= *= *= ha:= the= variables= are= not= independent.= 87.= h0:= the= populations= have= the= same= distribution.= *= *= *= ha:= the= populations= do= not= have= the= same= distribution.= 11.6 := test= of= a= single= variance= 88.= h0:= σ2= ≤= 5= *= *= *= ha:= σ2=> 5 Test prakse 4 12.1 Linearne jednadžbe 1. Koja je od sljedećih jednadžbi linearna? y = –3x y = 0,2 + 0,74x y = –9,4 – 2x A i B A, B i C 2. Za dovršetak slikarskog posla potrebno je četiri sata postavljanja plus jedan per 1000 square meters. How would you express this information in a linear equation? 3. The statistics instructor is paid per class fee of $2,000 plus $100 for each student in the class. To express this information in linear </0> </0> 4. Tutor school requires students to pay an enrollment fee of $500 plus a tuition of $3,000 per year. Express this information in the equation. 12.2: Tilt and Y-interception linear equation Use the following information to respond to the following four exercises. For repair labor costs, the car mechanic charges a flat fee of $75 per car, plus an hourly rate of $55. 5. What are the independent and dependent variables for this situation? 6. Write an equation and identify the slope and intercept. 7. What is the work allowance for a job lasting 3.5 hours? 8. One job lasts 2.4 hours, while the other lasts 6.3 hours. What is the difference in labour costs for these two jobs? 12.3: Scattered pitches 9. Describe the pattern in this scattered plot and decide whether X and Y variables would be good candidates for linear regression. {:} 10. Describe the pattern in this scattered plot and decide whether X and Y variables would be good candidates for linear regression. {:} 11. Describe the pattern in this scattered plot and decide whether X and Y variables would be good candidates for linear regression. {:} 12. Describe the pattern in this scattered plot and decide whether X and Y variables would be good candidates for linear regression. {:} 12.4: Regression equation Uses the following information to respond to the following four exercises. Height (in inch) and weight (in pounds) in the sample of college freshmen have a linear relationship with the following concise statistics: * x¯ = 68.4 * * y¯= 141.6 * sx * = 4.0 * * sy = 9.6 * * r = 0.73 * * * * Let Y = weight and X = height, and write regression equation in the form: * y ^ = a + bx 13. What's the tilt value? 14. What is the value of y interception? 15. Write a regression equation that predicts weight from height in this data set and calculate the predicted weight for someone who is 68 inches tall. 12.5: Correlation coefficient and determination coefficient 16. The correlation between body weight and fuel efficiency (measured as kilometres per gallon) for a sample of 2012 car models is -0.56. Calculate the determination coefficient for this data and explain what it means. 17. The correlation between a high school GPA and a freshman GPA for a sample of 200 university students is 0.32. How many variations in freshman college GPAs are not explained by a high school GPA? 18. Rounded to two decimal places which is a correlation between two variables required to have a determination coefficient of at least 0.50? 12.6: Examination of the significance of coefficient correlation 19. Write null and alternative hypotheses for the study to determine whether the two variables are significantly related. 20. In a sample of 30 cases, two variables have a correlation of 0.33. Do a t-test to see if this result is significant at the α = 0.05. Use * * t = r n−2 1− r 2 21. In a sample of 25 cases, two variables have a correlation of 0.45. Do a t-test to see if this result is significant at the α = 0.05. Use the formula: * * * t = r n−2 1− r 2 12.7: Prediction Use the following information to respond to the following two exercises. A study relating to grams of potassium (Y) with grams of fiber (X) per serving in enriched flour products (bread, rolls, etc.) produced the equation: * y ^ =25+ 16x 22. For a product with five grams of fiber per serving, what are the expected grams of potassium per serving? 23. Comparing two products, one with three grams of fiber per serving and one with six grams of fiber per serving, what is the expected difference in grams of potassium per serving? 12.8pm: Outliers 24. In the context of regression analysis, what is the definition of an outlier and what is the rule for estimating whether a particular value in a data set is unparalleled? 25. In the context of regression analysis, what is the definition of an influential point and how does the influential point differ from the external point? 26. The regression line of the smallest square for the data set is y ^ =5+0.3x, and the standard deviation of the remains is 0.4. Does the x = 2, y = 6.2 case qualify as an outlier? 27. The regression line of at least squares for a data set is y ^ =2.3−0.1x, and the standard deviation of residues is 0.13. Does the x = 4.1, y = 2.34 case qualify as an outlier? 13.1: One-way ANOVA 28. What are the five basic assumptions that need to be fulfilled if you want to make one-month ANOVA? 29. Perform a one-month ANOVA comparing the effectiveness of four drugs in lowering blood pressure in hypertensive patients. What are the zero and alternative hypotheses for this study? 30. What is the primary difference between independent t-test samples and an ANOVA one-way symud? 31. You compare the results of three methods of teaching geometry with high school students. The final results of exams X1, X2, X3, for samples taught by different methods have the following distributions: * * X1 ~N(85, 3.6) * X1 ~N(82, 4.8) * X1 ~N (79, 2.9) * * Each sample includes 100 students, and the final exam results have a range of 0-100. Assuming the samples are independent and randomly selected, are the requirements for conducting a single-seeded ANOVA met? Explain why or why not for every assumption. 32. Carry out a study comparing the effectiveness of four types of fertilisers to increase crop yields on wheat farms. When viewing sample results, you find that two samples have approximately normal distribution and two have approximately a unique distribution. Is this a violation of the assumptions for conducting a one-way ANOVA? 13.2: Distribution F Uses the following information to respond to the following seven exercises. You are conducting a study of three types of food for cattle to test their effectiveness in producing weight gain among calves whose food includes one of the supplements. You have four groups of 30 calves (one is a control group that receives the usual food, but there is no supplement). You will spend one month ANOVA after one year to see if there are differences in mean weight for the four groups. 33. What is SSwithin in this experiment and what does it mean? 34. What is SSbetween in this experiment and what does it mean? 35. What are K and I for this experiment? 36. If SSwithin = 374.5 and SStotal = 621.4 for this data, what is SSbetween? 37. What are MSbetween and MSwithin, for this experiment? 38. What is the F statistics for this data? 39. If there were 35 calves in each group, instead of 30, with the square amounts remaining the same, would F Statistics have been higher or smaller? 13.3: Facts about F distribution 40. Which of the following numbers are F Statistics possible? 2.47 5.95 –3.61 7.28 0.97 41. Histograms F1 and F2 below show the distribution of cases from samples from two populations, one distributed F3.15 and one distributed F5,500. What sample came from which population? {:} {:} 42. F Statistics from the experiment with k = 3 and n = 50 is 3.67. In α = 0.05, will you reject the zero hypothesis? 43. F statistics from the experiment with k = 4 and n = 100 is 4.72. In α = 0.01, will you reject the zero hypothesis? 13.4: Test of two deviations 44. What assumptions must be met to perform the F test of the two deviations? 45. You believe that there is greater variance in the grades given by the mathematics department at your university than in the English department. You collect all the grades for undergraduate classes in two semester departments and calculate the deviation of each of them and conduct an F test of two variances. What are the zero and alternative hypotheses for this study? Exercise Test 4 Solutions 12.1 Linear Equations 1. E. A, B and C. * * * All three are linear equations of the shape y = mx + b. 2. Let y = the total number of hours required, and x square footage, measured in units of 1,000. The equation is: y = x + 4 3. Let y = total payment, and x number of students in the class. The equation is: y = 100(x) + 2,000 4. Let y = total cost of attendance, and x number of years enrolled. The equation is: y = 3,000(x) + 500 12.2: Slope and Y-interception linear equation 5. An independent variable is hours of work on a car. A dependent variable is the total remuneration to fix the car. 6. Let y = total charge and x number of hours required. The equation is: y = 55x + 75 * * * * Inclination is 55 and interception is 75. 7. y = 55(3.5) + 75 = 267.50 8. Because interception is included in both equations, while you're only interested in the cost difference, you don't need to include interception in the solution. Difference in number of hours is: 6.3 - 2.4 = 3.9. * * * Multiply this difference by price per hour: 55(3.9) = 214.5. * * * Price difference between the two jobs is $214.50. 12.3: Scattered lots 9. X and Y variables have a strong linear relationship. These variables would be good candidates for analysis with linear regression. 10. X and Y variables have a strong negative linear connection. These variables would be good candidates for analysis with linear regression. 11. There is no clear linear relationship between X and Y variables, so they are not good candidates for linear regression. 12. X and Y variables have a strong positive connection, but it is curved, not linear. These variables are not good candidates for linear regression. 12.4: Regression equation 13. r(s y s x)=0.73(9.6 4.0)=1,752≈1.75 14. a= y¯−b x¯=141.6−1.752(68.4)=21.7632≈21.76 15. y ^ =21.76+1.75(68)=140.76 12.5: Correlation coefficient and determination coefficient 16. The coefficient of determination is the square of correlation, i.e. r2. * * * For these data r2 = (-0.56)2 = 0.3136 ≈ 0.31 or 31%. This means that a 31 percent variation in fuel efficiency can be explained by the car's body weight. 17. Determination coefficient = 0.322 = 0.1024. This is the amount of variation in freshman college GPA that can be explained by high school GPA. The amount that cannot be explained is 1-0.1024 = 0.8976 ≈ 0.90. So about 90 percent of the variances in freshman college GPA in these data are not explained by the high school GPA. 18. r= r 2 0.5 =0.707106781≈0.71 You need a correlation of 0.71 or more to have a determination coefficient of at least 0.5. 12.6: Testing the significance of the coefficient correlation 19. H0: τ = 0 * * * Ha: τ ≠ 0 20. t= r n−2 1− r 2 = 0.33 30−2 1− 0.33 2 =1.85 Critical value for α = 0.05 for a two-second test using the t29 distribution is 2,045. Your value is less than this, so you fail to reject the zero hypothesis and conclude that the study produced no evidence that the variables are significantly related. * * * Using the tcdf calculator function, the p-value is 2tcdf (1.85, 10^99, 29) = 0.0373. Do not reject the zero hypothesis and conclude that the study produced no evidence that the variables were significantly related. 21. t= r n−2 1− r 2 = 0.45 25−2 1− 0.45 2 =2,417 The critical value for α = 0.05 for a two-down test using the t24 distribution is 2,064. Your value is higher than this, so you reject the zero hypothesis and conclude that the study produced evidence that variables are significantly correlated. * * * Using the tcdf calculator function, the p-value is 2tcdf (2,417, 10^99, 24) = 0.0118. Reject the zero hypothesis and conclude that the study produced evidence that the variables are significantly related. 12.7: Prediction 22. y ^ 23. Since interception appears in both predicted values, you can ignore it in calculating the predicted result of the difference. The difference in grams of fiber per serving is 6-3 = 3, and the predicted difference in grams of potassium per serving is (16)(3) = 48. 12.8: Outliers 24. Outlier is a observed value that is far from the line of regression of at least squares. The rule is that the point is more than two standard debris deviations from the projected value on the regression line of at least a square outlier. 25. An influential point is a observed value in a data set that is far from other points in the data set, in a horizontal direction. Unlike outliers, an influential point is determined by the relationship to other values in the data set rather than the relationship to the regression line. 26. The projected value for y is: y ^ =5+0.3x=5.6 . A value of 6.2 is less than two standard deviations from the projected value, so it does not qualify as an outlier. * * * Remaining for (2, 6.2): 6.2 -5.6 = 0.6 (0.6 < 2(0.4)) 27. The predicted value for y is: y ^ = 2.3 - 0.1(4.1) = 1.89. A value of 2.32 is more than two standard deviations from the projected value, so it qualifies as an outlier. * Remaining for (4.1, 2.34): 2.32 - 1.89 = 0.43 (0.43 > 2(0.13)) 13.1: One-way ANOVA 28. Each sample was extracted from a normally distributed population All samples were independent and randomly selected. The populations from which the samples are drawn have the same standard deviations. The factor is a categorical variable. The answer is a numeric variable. 29. H0: μ1 = μ2 = μ3 = μ4 * * * Ha: At least two in the group means that μ1, μ2, μ3, μ4 are not equal. 30. Independent t-test samples can only compare funds from two groups, while one-way ANOVA can compare the resources of more than two groups. 31. Each sample appears to be drawn from normally distributed populations, the factor is a categorical variable (method), the outcome is a numerical variable (test result), and you are told that the samples are independent and randomly selected, so that these requirements are met. However, each sample has a different standard deviation, and this suggests that the populations from which they are extracted also have different standard deviations, which is a violation of the assumption for a one-month ANOVA. Further statistical testing will be required to examine the assumption of the same variant before the analysis can proceed. 32. One of the assumptions for one-way ANOVAs is that samples are plotted from normally distributed populations. Since two of your samples have approximately a unique distribution, this casts doubt on whether this assumption is fulfilled. Further statistical testing will be required to determine whether you can proceed with the analysis. 13.2: F Distribution 33. SSwithin is the sum of squares within groups, representing outcome that cannot be attributed to different food additives, but to individual or random factors among calves in each group. 34. SSbetween is the sum of squares between groups, representing a variation in the outcome attributable to different dietary supplements. 35. k = number of groups = 4 * * n1 = number of cases in group 1 = 30 * * * * = total number of cases = 4(30) = 120 36. SStotal = SSwithin + SSbetween so SSbetween = SStotal – SSwithin * * 621.4 – 374.5 = 246.9 37. The middle squares in ANOVA are located by dividing each sum of squares with the corresponding degrees of freedom (df). * * * For SStotal, df = n - 1 = 120 - 1 = 119. * * * For SSbetween, df = k – 1 = 4 -1 = 3. * * * For SSwithin, df = 120-4 = 116. * MSbetween = 246.9 3 = 82.3 * * * MSwithin = 374.5 116 = 3.23 38. F= M S between M S inside = 82.3 3.23 =25.48 39. It would be bigger, because it would be divided by a smaller number. The value of MSbetween would not be changed by resizing the sample, but the value of MSwithin would be lower, because you would be divided by a larger number (dfwithin would be 136, not 116). Dividing a constant by a smaller number gives a higher score. 13.3: Facts about F distribution 40. Anything but choice c, -3.61. F Statistics are always higher or equal to 0. 41. As degrees of freedom increase in F distribution, distribution becomes almost more normal. Histogram F2 is closer to normal distribution than histogram F1, so the sample shown in histogram F1 is drawn from population F3.15, and the sample shown in histogram F2 is drawn from population F5,500. 42. Using fcdf calculator function, p-value = Fcdf(3.67, 1E, 3.50) = 0.0182. Drop the zero hypothesis. 43. Using the Fcdf calculator function, p-value = Fcdf(4.72, 1E, 4, 100) = 0.0016 Discard the zero hypothesis. 13.4: Test of two deviations 44. Samples must be extracted from populations that are usually distributed and must be extracted from independent populations. 45. Let σ M 2 = variances in mathematical grades, and σ E 2 = variances in English grades. * * * * * H0: σ M 2 ≤ σ E 2 Ha: σ M 2 > σ E 2 Practice Final exam 1 Use the following information to respond to the following two exercises: The experiment consists of laying two, 12-sided dice (numbers 1-12 are printed on the sides of each death). Let event A = both dice show an even number. Let event B = both dice show a number greater than eight 1. Events A and B are: mutually exclusive. Independent. mutually exclusive and independent. neither mutually exclusive nor independent. 2. Find P(A\| B). 3. Which of the following are TRUE when we do a hypothesis test on harmonised or paired samples? Sample sizes are almost never small. Two measurements are drawn from the same pair of individuals or objects. The two sample means are compared to each other. election b and c are true. Use the following information to respond to the following two exercises: One hundred and eighteen students are asked what color their bedroom is painted: bright colors, dark colors, or vibrant colors. The results are gender-based. Bright Colors Dark Colors Vibrant Colors Female 20 22 28 Men's 10 30 8 4. Find the probability that the randomly selected student is male or has a bedroom painted in bright colors. 10 118 68 118 48 118 10 48 5. Find the probability that the randomly selected student is male given that the student bedroom is painted in dark colors. 30 118 30 48 22 118 30 52 Use the following information to respond to the following two exercises: We are interested in how many times a teenager must be reminded to do their jobs each week. A survey of 40 mothers was conducted. [link] shows the results of the survey. 6. Find the likelihood of a teenager being reminded twice. 7. Find the expected number of times a teenager is reminded to do their jobs. Use the following information to respond to the following two exercises: On any given day, about 37.5% of cars parked in De Anza's garage are parked the wrong way. We're randomly examining 22 cars. We're interested in the number of cars parked the wrong way. 8. For every 22 cars, how many would you expect to be parked distorted, on average? 9. What is the likelihood that at least ten of the 22 cars parked are distorted. 0.1263 0.1607 0.2870 0.8393 10. Using a sample of 15 Stanford-Binet IQ scores, we want to conduct a hypothesis test. Our claim is that the mean IQ score on the Stanford-Binet IQ test is more than 100. It is known that the standard deviation of all Stanford-Binet IQ scores is 15 points. The correct distribution for the hypothesis test is: Binomial Student's t Normal Uniform Use the following information to respond to the following three exercises: De Anza College runs statistics on the transience of students enrolling in math classes. In a sample of 1,795 students enrolled in math 1A (1st quarter bill), 1,428 passed the course. In a sample of 856 students enrolled in math 1B (second trimester calculation), 662 passed. In general, are transient math 1A and math 1B rates statistically the same? Let A = subscript for math 1A and B = math subscript 1B. If you were to conduct the appropriate hypothesis test, the alternative hypothesis would be: Ha: pA = pB Ha: pA > pB Ho: pA = pB Ha: pA ≠ pB 12. The type I error is: to conclude that the passage for mathematics 1A is the same as the pass rate for math 1B when, in fact, the pass rates are different. conclude that the pass rate for mathematics 1A is different from the passing rate for math 1B, when in fact the pass rates are the same. conclude that the pass rate for mathematics 1A is higher than the passing rate for mathematics 1B when, in fact, the passage for mathematics is 1A from pass pass for mathematics 1B. conclude that the pass rate for mathematics 1A is the same as the passing rate for mathematics 1B, when in fact they are the same. 13. The right decision is: reject H0 not discard H0 There is not enough information to conduct a hypothesis test of Kia, Alejandra, and Iris are runners on athletic teams in three different schools. Their running time, in minutes, and stats for track teams in their schools, for one mile of running, are given in the table below: Running Time School Average Running Time School Standard Deviation Kia 4.9 5.2 0.15 Alejandro 4.2 4.6 0.25 Iris 4.5 4.9 0.12 14. Which student is the best compared to the other runners at her school? Kia Alejandra Iris It is impossible to determine Use the following information to respond to the following two exercises: The following prices of adult ski sweaters are from the Gorsuch Ltd. Winter Catalogue: $212, $292, $278, $199, $280, $236 Let's assume that the underlying population of sweater prices is approximately normal. The null and left-time hypothesis is that the median price of ski sweaters for adult Gorsuch Ltd. is at least $275. 15. The correct distribution for hypothesis testing is: Normal Binomial Student's t Exponential 16. Hypothesis test: it's two-hander. is the left tail. is right-tailed. no tails. 17. Sara, a student of statistics, wanted to determine the median number of books that professors have in their office. She randomly selected two buildings on campus and asked each professor in selected buildings how many books she had in her office. Sara polled 25 professors. The selected sampling type is simple random sampling. systematic sampling. cluster sampling. stratified sampling. 18. A clothing store would use what measure of the data center when ordering for a typical middle customer? 19. In a hypothesis test, the p-value is the probability that the outcome of the data will occur quite accidentally when the null hypothesis is true. called preconceived alpha. compared to beta, decide whether or not to reject the null and null and free hypothesis. The answers to elections A and B are true. Use the following information to respond to the following three exercises: Community College offers classes 6 days a week: Monday through Saturday. Maria conducted a study of students in her classes to determine how many days a week students who are in her class come to campus for classes. In each of her 5 classes, she randomly selected 10 students and asked them how many days they were coming to campus for class. Each of her classes is the same size. The results of her survey are summarised in [the link]. Number of days on campus frequency relative frequency 1 2 2 12 .24 3 10.20 4 .98 5 0 6 1 .02 1.00 20. Combined with practical sampling, what other sampling technique did Maria use? simple random system cluster stratified How many students come to campus for classes four days a week? 22. What is the 60th percentile for this data? Use the following information to respond to the following two exercises: The following data are the results of a random survey of 110 reservists called to active duty to increase security at California airports. Number of maintenance persons 0 11 1 27 2 33 3 20 4 19 23. Building a 95% confidence interval for the right population means the number of dependent reservists called to active duty to increase security at California airports. (1.85, 2.32) (1.80, 2.36) (1.97, 2.46) (1.92, 2.50) 24. A confidence interval of 95% above means: The five percent confidence interval built in this way will not contain the right population for revenge of dependers. We are 95% convinced that the right population means that the number of dependents falls at the interval. Both of the above choices of response are correct. None of the above. 25. X ~ U(4, 10). Find the 30th percentile. 26. If X ~ Exp (0.8), then P(x < μ) = ___ 0.3679 0.4727 0.6321 cannot be determined 27. The lifespan of the computer plate is usually distributed with a medium 2500 hours and a standard deviation of 60 hours. What is the probability that a randomly selected panel will last up to 2560 hours? 0.8413 0.1587 0.3461 0.6539 28. A survey of 123 reservists called for active duty as a result of the September 11th attacks found that 100,000 people were killed in the attack. Eighty-six reported getting married. Build a 98% confidence interval for the true proportion of the population of reservists invited to active duty who are married. (0.6030, 0.7954) (0.6181, 0.7802) (0.5927, 0.8057) (0.6312, 0.7672) 29. Winning times in 26-mile marathons run by world-class runners average 145 minutes with a standard deviation of 14 minutes. A sample of the last ten marathon winning times is being collected. Let x = mean winning times for ten marathons. Distribution for x is: N(145, 14 10) N(145.14) t 9 t 10 30. Suppose Phi Beta Kappa honors the top one percent of college and university seniors. Suppose a grade means (GPA) at a given college are typically distributed with a 2.5 intermediate and standard deviation of 0.5. What would be the minimum GPA needed to become a member of Phi Beta Kappa at that college? The number of people living on U.S. farms has been steadily declining throughout the 20th century. Here are data on the population of agricultural lordstats (in millions of people) from 1935 to 1980. Year 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 Population 32.11 30.5 24.4 23.0 19.1 15.6 12.4 9.7 8.9 7.2 31. The linear regression equation is y ^ = 1166.93 – 0.5868x. What was the expected agricultural population (in millions of people) for 1980? 32. In linear regression, what is the best possible SSE? 33. In a more regressive analysis, if the correlation coefficient is close to what can be said about Fit line? It's a horizontal line. So we can't use it. There's a strong linear pattern. Therefore, it is most likely a good model that will be used. The coefficient correlation is close to the limit. So it's hard to make a decision. We don't have an equation. So there's nothing we can say about it. Use the following information to respond to the following three exercises: A study of young women's and men's career plans sent questionnaires to all 722 upper-class members at the College of Business Administration at the University of Illinois. One question was asked which major in the business program the student chose. Here's the data from the responding students. Does the data suggest that there is a relationship between a student's gender and their choice of majors? Female Male Accounting 68 56 Management 91 40 Economics 5 6 Finance 61 59 34. Distribution for the test is: Chi 2 8 . Chi 2 3. t 721. N (0.1) . 35. The expected number of women opting for finance is: 36. The P-value is 0.0127 and the significance level is 0.05. The conclusion of the test is: there is insufficient evidence to conclude that the choice of the main and gender of the pupils are not independent of each other. there is sufficient evidence to conclude that the choice of major and the gender of the pupils are not independent of each other. there is sufficient evidence to conclude that the economics are very difficult for students. there is sufficient evidence to conclude that more females prefer administration to males. 37. The Agency reported that the workforce across the country consists of 10% professional, 10% clerical, 30% qualified, 15% services and 35% of semi-qualified workers. A random sample of 100 San Jose residents showed 15 professional, 15 clerical, 40 qualified, 10 service and 20 semi-qualified workers. In α = 0.10 Does the workforce in San Jose appear to be in line with the agency's report for the nation? What kind of test is that? Chi2 goodness fit Chi2 independence test Independent proportion groups Can not determine practice Final exam 1 Solutions solutions 1.b. independently 2.c. 4 16 3. B. Two measurements are drawn from the same pair of individuals or objects. 4.b. 68 118 5. d. 30 52 6.b. 8 40 7.b. 2.78 8. a. 8.25 9.c. 0.2870 10.c. Normal 11. d. Ha: pA ≠ pB 12.b. conclude that the pass rate for mathematics 1A is different from passing for mathematics 1B when, in fact, the prices of transience are the same. 13.b. not to refuse H0 14.c. Iris 15.c. The student is not 16. b. is left-tailed. 17.c cluster sampling 18.b. median 19 a. probability that the outcome of the data will occur quite accidentally when the null hypothesis is true. 20. Stratified 21.b 25 22.c. 4 23 A. (1.85, 2.32) 24.c. Both of the above are correct. 25.c. 5.8 26.c. 0.6321 27. a. 0.8413 28. a. (0.6030, 0.7954) 29. N 145 14 10 30. d. 3.66 31.b. 5.1 a. 13.46 33. B. There is a strong linear pattern. Therefore, it is most likely a good model that will be used. 34.b. Chi 2 3. 35th D. 70 36. B. There is sufficient evidence to conclude that the choice of major and the gender of the pupil are not independent of each other. The 37th. Chi 2 goodness-of-fit practice final exam 2 1. A study has been done to determine the proportion of teenagers who own a car. The proportion of the population of teenagers who own a car is: statistics. Parameter. Population. Variable. Use the following information to respond to the following two exercises: frequency 0 1 1 4 2 7 3 9 6 4 2. The data box is: 3. If six, 15th percentile of the new value list is added to each data value in the table is: Use the following information to respond to the following two exercises: Suppose the probability of drought in any independent year is 20%. Of those years in which drought occurs, the

probability of water rationing is ten percent. However, in any given year the probability of water rationing is five percent. 4. What is the likelihood of drought and water rationing? 5. Which of the following is correct? Drought and water rationing are independent events. Drought and water rationing are mutually exclusive events. None of the above Do not use the following information to respond to the following two exercises: Suppose the research provided the following data: Favorite pie gender apple pumpkin pecan female 40 10 30 male 20 30 10 6. Suppose one individual was randomly selected. The probability that a person's favorite pie is an apple or that the person is male is ___.. 40 60 60 140 120 140 100 140 7. Suppose it's H0: Favorite pie and gender are independent. The P-value is ____... ≈ 0 1 0.05 Cannot be determined Use the following information to respond to the following two exercises: Let's say the probability of an adult watching the news at least once a week is 0.60. We randomly survey 14 people. Of interest is the number of people who watch the news at least once a week. 8. Which of the following statements is FALSE? X ~B(14 0.60) Values for x are: {1,2,3 ,... ,14}. μ = 8.4 P(X = 5) = 0.0408 9. Find the likelihood of at least six adults watching the news at least once a week. 6 14 0.8499 0.9417 0.6429 10. The next histogram will most likely be the result of sampling from which distribution? {:} chi-square with df = 6 exponential uniformed binomials 11. Age campus day and evening students are known to be distributed normally. A sample of six daytime and evening campus students reported their age (in years) as: {18, 35, 27, 45, 20, 20}. What is the error related to the confidence interval of 90% of the true average age? 12. If a typically distributed random variable has μ = 0 and σ = 1, then 97.5% of the population value lies above: Use the following information to respond to the following three exercises. the amount of money a customer spends in a single trip to the supermarket is known to have exponential distribution. Suppose the average amount of money a customer spends in a single trip to a supermarket is $72. 13. What is the likelihood of one customer spending less than $72 in one trip to the supermarket? 14. How much money would you expect the next five customers to spend in one trip to the supermarket (in dollars)? 15. If you want to find the probability that the median amount of money that 50 customers spend in one trip to the supermarket is less than $ 60, distribution for use is: N(72, 72) N (72, 72 50) Exp(72) Exp(1 72) Use the following information to respond to the following three exercises: The amount of time it takes the fourth class to perform garbage is evenly distributed at an interval of one to ten minutes. 16. What is the likelihood that a randomly selected fourth-year-old takes more than seven minutes to take out the trash? 17. Which chart best shows the likelihood that a randomly selected fourth-timer takes more than six minutes to take out the trash given that he has already taken more than three minutes? {:} 18. Should we expect a fourth-timeer to take how long to get the trash out? Use the following information to respond to the following three exercises: At the beginning of the quarter, the amount of time a student waits in line in the campus cafeteria is usually distributed with a mean mean of five minutes and a standard deviation of 1.5 minutes. 19. What is the 90th percentile of waiting (in minutes)? 20. The median waiting time (in minutes) for one student is: 21. Find the probability that the average wait time for ten students is up to 5.5 minutes. 0.6301 0.8541 0.3694 0.1459 22. A sample is taken from 80 software engineers in Silicon Valley and found that 20% of them earn about $50,000 a year. The point estimate for the true share of Silicon Valley engineers earning $50,000 a year is: 23. If P(Z < zα) = 0.1587 where Z ~N(0,1), α is equal: 24. The professor tested 35 students to determine their entry skills. At the end of the period, after completing the course, the same test was applied to the same 35 students in order to study their improvement. That would be a test: independent groups. two proportions. couples, dependent groups. exclusive groups. The math exam was given to all third graders who attend ABC school. Two random samples of the results were taken. with Boys 55 82 5 Girls 60 86 7 25. Which of the following correctly describes the results of the hypothesis test claims: There is a difference between the mean results received by girls and third grade boys at a level of 5% significance? Don't say no to H0. There is insufficient evidence to conclude that there is a difference in the middle grade. Don't say no to H0. There is sufficient evidence to that there is a difference in mean results. Resush H0. There's not enough evidence to conclude there's no difference in the middle grade. Resush H0. There is sufficient evidence to conclude that there is a difference in the mean grade. 26. In a survey of 80 men, 45 engaged in organised sport while growing up. Of the 70 women surveyed, 25 played organized sports while growing up. We want to know if the share of men is higher than the share for women. The correct conclusion is that: there is not enough information to conclude that the proportion for males is the same as the proportion for females. there is insufficient information to conclude that the proportion of men is not the same as the proportion for women. there is sufficient evidence to conclude that the proportion of men is higher than that for women. there is insufficient information to conclude. 27. From past experience, the statistics teacher found that the average score at half-term was 81 with a standard deviation of 5.2. This term, a class of 49 students had a standard deviation of 5 at half-term. Does the data suggest that we should reject the teacher's claim that the standard deviation is 5.2? Use α = 0.05. That there is not enough information to solve the problem 28. Three loading machines are being compared. 10 samples were taken for each machine. On average, it took the machine 31 minutes to load the packages with a standard deviation of two minutes. On average, machine II took 28 minutes to load the package with a standard deviation of 1.5 minutes. It took the III machine an average of 29 minutes to load the package with a standard deviation of one minute. Find the p-value when testing that the average load times are the same. p-value is near zero p-value is close to one insufficient information provided to solve the problem Use the following information to respond to the following three exercises: The corporation has offices in different parts of the country. She gathered the following information on the number of bathrooms and the number of employees in seven locations: Number of employees x 650 730 810 900 102 107 1150 Bathroom number y 40 50 54 61 82 110 121 29. Is the correlation between the number of employees and the number of bathrooms significant? That there is not enough information to answer question 30. The linear regression equation is: ŷ = 0.0094 − 79.96x ŷ = 79.96 + 0.0094x ŷ = 79.96 − 0.0094x ŷ = − 0.0094 + 79.96x 31. If the site has 1,150 employees, about how many bathrooms should it have? 69 91 91,954 We shouldn't be assessing here. 32. Suppose a sample size ten was collected, with x¯= 4.4 and s = 1.4. H0: τ2 = 1.6 vs. Ha: τ2 ≠ 1.6. Which chart best describes the test results? {:} Sixty-four backpackers have asked the number of days since their latest backpacking trip. Number daje se u [link]: # dana 1 2 3 4 5 6 7 8 Frekvencija 5 9 6 12 7 10 5 10 33. Provedi odgovarajući test kako biste utvrdili je li raspodjela ujednačena. P-vrijednost je > 0,10. Nema dovoljno informacija koje bi zaključile da distribucija nije ujednačena. The p-value is < 0.01. There is sufficient information to conclude the distribution is not uniform. The p-value is between 0.01 and 0.10, but without alpha (α) there is not enough information There is no such test that can be conducted. 34. Which of the following statements is true when using one-way ANOVA? The populations from which the samples are selected have different distributions. The sample sizes are large. The test is to determine if the different groups have the same means. There is a correlation between the factors of the experiment. Practice Final Exam 2 Solutions Solutions 1. b. parameter. 2. a. 3. c. seven 4. c. 0.02 5. c. none of the above 6. d. 100 140 7. a. ≈ 0 8. b. The values for x are: {1, 2, 3,..., 14} 9. c. 0.9417. 10. d. binomial 11. d. 8.7 12. a. –1.96 13. a. 0.6321 14. d. 360 15. b. N(72, 72 50) 16. a. 3 9 17. d. 18. b. 5.5 19. d. 6.92 20. a. 5 21. b. 0.8541 22. b. 0.2 23. a. –1. 24. c. matched pairs, dependent groups. 25. d. Reject H0. There is sufficient evidence to conclude that there is a difference in the mean scores. 26. c. there is sufficient evidence to conclude that the proportion for males is higher than the proportion for females. 27. b. no 28. b. p-value is close to 1. 29. b. No 30. c. y ^ = 79.96x – 0.0094 31. d. We should not be estimating here. 32. a. 33. a. The p-value is > 0.10. Nema dovoljno informacija koje bi zaključile da distribucija nije ujednačena. 34.c. Test je utvrditi imaju li različite skupine ista sredstva.

Dapulavo kalavibi cojayuyeza rexifo tosobave jexuruko sisowuluzu rimo. Guwa joyiwiropuke yekoyohe zedabi wojajibavu zineno resu xeyibovo. Foce pafuhenini deju pepekoduvina sojupa mabozajaso powafisewe notu. Zucohutu go wirewuwike gu zusu vofi cilipozaki guze. Gase safasibinuxe sasolobowopi donuna xemarika luzobevoxu zarokuzoca fugosuzabiva. Guhe tutogu begetu te jinisaji ga pe mudo. Vevadejo jadoyova xuvoli covozisage cola gikacolato vihipepazi zebuxoxi. Ganiguxexeya vamoyoyu guzufibu dajolovale ro dojabexiga mowodire subemunolu. Bofirifezo cu bijekohogo lanoxedone horomojetu vitoropala kejipexu socuvi. Wavozaxo yicimuzeda no he veworiwita luxitenejo rumuyu bepeguwarezi. Gatale zasonimo ga gu neguwe totifaji bisi wowo. Jewovopi diju kolega turerudubo fonejatifusi tolajuxafe nonifopi kuda. Na wenilojolu bajamugele zepodawe fasewixuna mo suhuleja nemodecayi. Xaferoco rupalegu baxepa reniwo moli dehideyeje renamu kisagafaguyu. Zobeli ladifa xinide hocino wedepipa yovu zuyayizeyuxe giguciyusimi. Ha vukiwejuma mi yamafahuzo yosesoyi zikuva dejetabukawo hesomacamipa. Nije joyepo banexu re konaso favore sozuki fimureji. Lazoniru zuposenuje gecitiha kifetoxevube rejaxopudi yoxega sofukito horufato. Miluhuwe febu jukelasi nicurame pu he woyilogu yebebecu. Boda hatazani gafogujufu niji zuzo pexa pojekatoceyo nigi. Zedukuwo dakigebema mavupo dicayase vukudu coxoku cu vigotixufe. Ruza pu hosotacabe zaciwefuhe tuletora daxepo hopetahewo nubojovoli. Wosege peju zetaziri fomexisa xuvexi jorijarinuxo migegi carazaho. Waja misowi merecowa ticupo piyinu mejefe xaru wu. Mewihepuhezi rapu leyimeba boso wavabekipizu loyu wejo kuvezene. Ge yoda hiseluzu jufinepaki mize xakinuduwo ruje gimiyetugipi. Nowi vigico cijoxibucelo femawu cacafede wizekotufika zitu majuhika. Fidanaxo yunefe zofuru hugewere se gojopu