MATH-1230 (DUPRÉ) PRACTICE TEST PROBLEMS

FIRST: PRINT YOUR LAST NAME IN LARGE CAPITAL LETTERS ON THE UPPER RIGHT CORNER OF THIS SHEET.

SECOND: PRINT YOUR FIRST NAME IN CAPITAL LETTERS DIRECTLY UNDERNEATH YOUR LAST NAME.

THIRD: WRITE YOUR FALL 2010 MATH-1230 LAB DAY DIRECTLY UNDERNEATH YOU FIRST NAME.

STANDARD INFORMATION: A **Standard Dice** has six faces and each face has a number of spots, that number being a positive whole number no more than six. The total number of spots on any pair of opposite faces is seven. Since there are exactly three pair of opposite faces, the total number of spots on a dice is twenty one. Therefore if we think of the spots as distributed evenly over the faces, there are on average 3.5 spots per face. A **Standard Deck of Cards** has 52 cards, four suits of 13 cards (denominations) each. The four suits are spades ($\spadesuit$), hearts($\heartsuit$), diamonds($\diamondsuit$), and clubs($\clubsuit$). Each suit has 3 face cards: Jack, Queen, King, and an Ace. In each suit, the cards which are not face cards each have a number of spots in the shape of the particular suit, the number of spots being a whole number no more than ten, the card with a single spot being the Ace of that suit. For example, the card with four spots each in the shape of a diamond is called "the four of diamonds($4\diamondsuit$)", whereas the card with the face labelled with "J" and a spade shaped spot is "Jack of spades($J\spadesuit$)". In many card games, an Ace can count as a denomination value of one or as a denomination higher King as a player desires. A Jack has denomination value eleven, a Queen has denomination value twelve, and a King has denomination value 13, in many card games. In the game of Black Jack or Twentyone, all face cards are given denomination value ten and all aces have denomination value eleven or one as desired by the player. A **Standard (American) Roulette Wheel** has a spinner with 38 slots which spins in a large bowl. A ball is sent rolling in opposite direction to the spin of the wheel near the upper rim of the bowl and as both the spinning wheel and ball slow down, the ball falls into one of the 38 slots. Two of the slots are colored green, one labelled zero (0) and the other labelled with two zeros (00), and referred to as "double zero". The remaining slots are each colored either red or black and numbered with the positive whole numbers no more than 36. At the roulette table a player can bet on zero or on double zero or on a specific positive whole number, or on even or on odd or on red or on black or on one through eighteen, or on one through twelve, or on 13 through 24, or on 25 through 36. There are therefore many possibilities for placing bets at the roulette wheel. The game of craps is played on a large oblong table with rounded ends and with vertical walls around the edges. The player who rolls the dice is called "the shooter" and must toss a pair of standard dice so as to hit the table's horizontal surface and bounce off the wall at the opposite end of the table back on the horizontal surface where it finally comes to rest. If any side is touching a vertical wall or is tilted off horizontal or goes off the table, then it does not count and the pair of dice must be tossed again-it is a "do over". Notice that it is virtually impossible to tell what faces will come up when a pair of dice is thrown, or which card will come up when a card is taken off the top of a shuffled deck, or what slot the ball will land on when the roulette wheel is spun. All the processes obey the laws of physics which are completely deterministic. However, the circumstances are guaranteed to make the use of physics to predict the outcomes virtually useless, as there is no practical way to keep track of the information required. Thus, the so-called "random" processes are really "randumb" processes, as they depend on reducing our information below what can be used to make any effective prediction. On the other hand, it is known that a very few people with practice have learned to throw the dice so as to have a fair amount of control over the outcomes and as of this time the major casinos do not admit that as a possibility so these few players have a tremendous advantage at the crap table.

1. Suppose that Sam guesses that his Master Charge card balance is 1450 dollars and his Visa card balance is 2500 dollars. What should he guess for the total he owes on both credit cards in order to be consistent?

2. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted, then based only on this information (whether or not you believe it) what should you guess is the probability that the face on top has 4 spots?

3. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted, then based only on this information (whether or not you believe it) what should you guess is the probability that the face on top has an even number of spots?

4. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted, then based only on this information (whether or not you believe it) what should you guess is the probability that the face on top has an odd number of spots?

5. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted and the top face has an even number of spots, then based only on this information (whether or not you believe it) what should you guess is the probability that the face on top has 4 spots?

6. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted and the top face has an even number of spots, then based only on this information (whether or not you believe it) what should you guess is the probability that the face on top has 5 spots?

7. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted and the top face has an even number of spots, then based only on this information (whether or not you believe it) what should you guess is the number of spots on the top face?

8. If a dice is in a box where you cannot see it and I look into the box and see it and tell you it is sitting with one of its faces on the floor of the box and one face on top-it is not tilted and the top face has an odd number of spots, then based only on this information (whether or not you believe it) what should you guess is the number of spots on the top face?

9. If X is a positive whole number that I have chosen and you think X is three times as likely to be even as odd, then what should you think is the probability that X is odd?

10. If X is a positive whole number with $X \leq 6$ that I have chosen and you think X is three times as likely to be even as odd, and if K is a symbol that stands for this information, then what is $E(X|K)$?

11. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the top card is a heart?

12. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the top card is a diamond?

13. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the second card is a heart?

14. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the third card is a heart?

15. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the fourth card is a heart?

16. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the last card is a heart?

17. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the second and fifth cards ares hearts?

18. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the fourth is a heart, given that the fifth is a spade?

19. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the fourth is a heart given that the third is a spade?

20. If fourteen cards are dealt from the top of a well shuffled deck of cards one after another without replacement, what is the chance that the fourth is a heart given that the third is a heart, the fifth is a heart, the sixth is a club, and the seventh is a club?

21. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the first block drawn is red?

22. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the last block drawn is red?

23. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the fourth block drawn is red?

24. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the second block drawn is red given that the first is red?

25. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the first block drawn is red given that the second is red?

26. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the second block drawn is red given that the first and third are both red?

27. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the fifth block drawn is red given that the first and third are both red and the seventh is green?

28. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the fifth block drawn is red given that the first and third are both red the seventh is green and the eighth is blue?

29. A box contains 5 red blocks, 8 blue blocks, and 7 green blocks. A lab assisitant who is totally color blind is told to remove the blocks from the box one by one without replacement. What is the probability that the fifth and ninth blocks drawn are both red given that the first and third are both red the seventh is green and the eighth is blue?

30. Suppose that A, B and C are statements and that $P(A|B\&C) = .4$, that $P(A|C) = .7$, and that $P(B|C) = .6$. Calculate $P(B|A\&C)$.

31. Suppose that X and Y are unknowns with $\sigma_X = 3$ and $\sigma_Y = 10$ and with $\rho = .8$. Calculate $Cov(X, Y)$.

32. Suppose that X and Y are unknowns with $\sigma_X = 3$ and $\sigma_Y = 10$ and with $\rho = .8$. Calculate the regression slope β_1 of Y on X.

33. Suppose that X and Y are unknowns with $\sigma_X = 3$ and $\sigma_Y = 10$ and with $\rho = .8$. Suppose that $E(X) = 80$ and $E(Y) = 50$. Calculate β_0, the regression intercept.

34. Suppose that X and Y are unknowns with $\sigma_X = 3$ and $\sigma_Y = 10$ and with $\rho = .8$. Suppose that $E(X) = 80$ and $E(Y) = 50$. Calculate $E(Y|X = 60)$.

Suppose that the Big Forest contains 3 bears, Papa Bear, Mama Bear, and Baby Bear. Papa Bear weighs 2000 pounds and eats 20 pounds of porridge a day, Mama Bear weighs 1500 pounds and eats 15 pounds of porridge a day, and Baby bear weighs 200 pounds and eats 7 pounds of porridge a day. Suppose we think of these three bears as a population of size $N = 3$.

35. What is the population mean weight?

36. What is the population mean porridge consumption?

37. What is the standard deviation in weight?

38. What is the standard deviation in porridge consumption?

39. What is the correlation coefficient of the relationship between weight and porridge consumption?

40. What is the covariance between weight and porridge consumption in this population?

41. If Baby Bear gains 100 pounds, based on the regression of Y on X using the information given above, what would be a good guess as to Baby Bear's new porridge consumption?

Suppose that X **is an unknown which is a number in the set** $S = \{2, 5, 7\}$. **Suppose that** $P(X = 2) = .3$, $P(X = 5) = .5$, **and** $P(X = 7) = .2$. **Suppose that** Y **is an unknown which is a number in the set** $\{3, 4\}$ **with** $P(Y = 3) = .6$ **and** $P(Y = 4) = .4$. **Suppose that** X **and** Y **are independent of each other.**

42. What is the moment generating function of X?

43. What is the moment generating function of Y?

44. What is the moment generating $X + Y$?

45. What are the possible values for $X + Y$ and their probabilities?

Suppose that X **is a random variable and** $X_1, X_2, X_3, ..., X_n$ **is a sequence of** n **observations of** X **thus forming a sample of size** n. **Let** T **be the sample total and let** $\bar{X}$ **be the sample mean. As usual,** $E(X) = \mu_X$ **is the expected value of** X, **and** $SD(X) = \sigma_X$ **is the standard deviation of** X. **Always,** SD =**Standard Deviation.**

46. What is the expected value of T if $\mu_X = 40$ and $n = 5$?

47. What is the expected value of $\bar{X}$ if $\mu_X = 40$?

48. If $\sigma_X = 10$ and $n = 25$, and if the n observations are independent unknowns, then what is $SD(T)$?

49. If $\sigma_X = 10$ and $n = 25$, and if the n observations are independent unknowns, then what is $SD(T)$?

50. Suppose $\sigma_X = 10$, and that the sample observations form a Simple Random Sample (for short, SRS) from a population of size $N = 101$ and that $n = 25$. Now what is $SD(T)$?

51. Suppose $\sigma_X = 10$, and that the sample observations form a Simple Random Sample (for short, SRS) from a population of size $N = 101$ and that $n = 25$. Now what is $SD(\bar{X})$?

52. Suppose we form U, the sum of the squared deviations from the sample mean, so

$$U = \sum_{k=1}^{n} (X_k - \bar{X})^2,$$

and assume IRS. If $\sigma_X = 10$, and $n = 25$, what is $E(U)$, the expected value of U?

53. Suppose we form U, the sum of the squared deviations from the sample mean, so

$$U = \sum_{k=1}^{n} (X_k - \bar{X})^2,$$

and assume IRS. If $\sigma_X = 10$, what is $E([1/(n-1)]U)$, the expected value of $[1/(n-1)]U$?

Suppose that X and Y are both random variables with $E(X) = \mu_X,\ E(Y) = \mu_Y,\ SD(X) = \sigma_X,\ SD(Y)\ \sigma_Y$, and suppose that ρ is the correlation coefficient of X with Y. Suppose that a sample of size n is to be made with the pairs of observations being $(X_1, Y_1), (X_2, Y_2), (X_3, Y_3), ..., (X_n, Y_n)$.

54. Suppose that $\mu_X = 40,\ \mu_Y = 50,\ \sigma_X = 10,\ \sigma_Y = 8$, and suppose that $\rho = .6$. What is $Cov(X, Y)$, the covariance of X with Y?

55. Suppose that $\mu_X = 40,\ \mu_Y = 50,\ \sigma_X = 10,\ \sigma_Y = 8$, and suppose that $\rho = .6$. Suppose that

$$W = \sum_{k=1}^{n} (X_k - \bar{X})(Y_k - \bar{Y}).$$

If $n = 25$, with IRS what is $E(W)$?

56. Suppose that $\mu_X = 40,\ \mu_Y = 50,\ \sigma_X = 10,\ \sigma_Y = 8$, and suppose that $\rho = .6$. Suppose that

$$W = \sum_{k=1}^{n} (X_k - \bar{X})(Y_k - \bar{Y}).$$

With IRS what is $E((1/(n-1))W)$?

57. Let β_0 and β_1 be the regression coefficients for the linear regression of Y on X. Suppose that $\mu_X = 40,\ \mu_Y = 50,\ \sigma_X = 10,\ \sigma_Y = 8$, and suppose that $\rho = .6$. Give the values of β_0 and β_1.

Suppose that h is the non-negative function given by

$$h(x) = 1 - |x| = 1 - \sqrt{x^2},\ -1 \leq x \leq 1,$$

and $h(x) = 0$, otherwise.

58. Can h be a probability density function for some continuous random variable?

59. If X is a random variable with h as its pdf, then what is $E(X)$?

60. If X is a random variable with h as its pdf, then what is $E(X^2)$?

61. If X is a random variable with h as its pdf, then what is $Var(X) = \sigma_X^2$, the varicance?

62. If X is the unknown with pdf given by $f_X = 2x \cdot I_{[0,1]}$, then what is the power series expansion for m_X, the moment generating function of X.

63. If X is the unknown with pdf given by $f_X = 3x^2 \cdot I_{[0,1]}$, then what is the power series expansion for m_X, the moment generating function of X.

64. If X is the unknown with pdf given by

$$f_X = A[6 + 2(x - 1)]I_{[1,2]},$$

then what is A and what is the moment generating function of X?

65. Suppose that the fish in my pond have mean length 20 inches with a standard deviation of 4 inches, and that we know nothing else about the distribution of lengths for this population of fish. What is the probability that a fish caught from this pond will be between 19 and 23 inches in length?

66 AVERAGE. Suppose that the fish in my pond have mean length 20 inches with a standard deviation of 4 inches, and that we know nothing else about the distribution of lengths for this population of fish. What is the probability that an independent random sample of 5 fish caught from this pond will average between 19 and 23 inches in length?

66 TOTAL. Suppose that the fish in my pond have mean length 20 inches with a standard deviation of 4 inches, and that we know nothing else about the distribution of lengths for this population of fish. What is the probability that in an independent random sample, the total length of 5 fish caught from this pond will be between 95 and 110 inches in length?

67. Suppose that the fish in my pond have mean length 20 inches with a standard deviation of 4 inches, and that we know nothing else about the distribution of lengths for this population of fish. What is the shortest a fish can possibly be and still be in the top 20 percent of fish as regards length?

68. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I know that the standard deviation in fish weight for the fish in my pond is 2 pounds. What is the margin of error in the 95 percent confidence interval for the true mean weight of the fish in my pond?

69. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I do not know the standard deviation in the weight of fish in my pond, but the sample standard deviation of my sample is 2 pounds. What is the margin of error in the 95 percent confidence interval for the true mean weight of the fish in my pond?

70. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I know that the standard deviation in fish weight for the fish in my pond is 2 pounds. What is the significance of this data as evidence that the true mean weight of the fish in my pond actually exceeds 7.5 pounds?

71. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I do not know the standard deviation in the weight of fish in my pond, but the sample standard deviation of my sample is 2 pounds. What is the significance of this data as evidence that the true mean weight of the fish in my pond actually exceeds 7.5 pounds?

72. Suppose that in my pond are found both red fish and blue fish and I do not know the true mean weight for either of these two populations. Suppose that I would like to make a 95 percent confidence interval for the amount the redfish on average exceed blue fish in weight. Suppose that I happen to know the population standard deviation in weight of red fish is 3 pounds whereas for the population of blue fish it is 2 pounds. Suppose also that I assume both populations are normal. If I have an independent random sample of 10 red fish having a mean weight of 8.5 pounds with standard deviation 2.8 pounds and an independent random sample of 12 blue fish having mean weight of 7.3 pounds with a standard deviation of 2.3 pounds, then what is the confidence interval for the difference in true means, $\mu_R - \mu_B$, where μ_R denotes the true mean weight of red fish and μ_B denotes the true mean weight of blue fish.

73. Suppose that in my pond are found both red fish and blue fish and I do not know the true mean weight for either of these two populations. Suppose that I would like to make a 95 percent confidence interval for the amount the redfish on average exceed blue fish in weight. Suppose that I do not know the population standard deviation in weight of red fish nor the population standard deviation of blue fish. Suppose also that I assume both populations are normal. If I have an independent random sample of 10 red fish having a mean weight of 8.5 pounds with standard deviation 2.8 pounds and an independent random sample of 12 blue fish having mean weight of 7.3 pounds with a standard deviation of 2.3 pounds, then what is the confidence interval for the difference in true means, $\mu_R - \mu_B$, where μ_R denotes the true mean weight of red fish and μ_B denotes the true mean weight of blue fish.

74. Suppose that in my pond are found both red fish and blue fish and I do not know the true mean weight for either of these two populations. Suppose that I would like to make a 95 percent confidence interval for the amount the redfish on average exceed blue fish in weight. Suppose that I do not know the population standard deviation in weight of red fish nor the population standard deviation of blue fish. Suppose also that I assume both populations are normal, but that their standard deviations may not be the same. If I have an independent random sample of 10 red fish having a mean weight of 8.5 pounds with standard deviation 2.8 pounds and an independent random sample of 12 blue fish having mean weight of 7.3 pounds with a standard deviation of 2.3 pounds, then what is the MARGIN OF ERROR in the confidence interval for the difference in true means, $\mu_R - \mu_B$, where μ_R denotes the true mean weight of red fish and μ_B denotes the true mean weight of blue fish.

75. Suppose that in my pond are found both red fish and blue fish and I do not know the true mean weight for either of these two populations. Suppose that I happen to know the population standard deviation in weight of red fish is 3 pounds whereas for the population of blue fish it is 2 pounds. Suppose also that I assume both populations are normal. If I have an independent random sample of 10 red fish having a mean weight of 8.5 pounds with standard deviation 2.8 pounds and an independent random sample of 12 blue fish having mean weight of 7.3 pounds with a standard deviation of 2.3 pounds, then what is the significance of this data as evidence that the true means satisfy , $\mu_R > \mu_B$, where μ_R denotes the true mean weight of red fish and μ_B denotes the true mean weight of blue fish.

76. Suppose that in my pond are found both red fish and blue fish and I do not know the true mean weight for either of these two populations. Suppose that I would like to establish that the redfish on average exceed blue fish in weight. Suppose that I do not know the population standard deviation in weight of red fish nor the population standard deviation of blue fish. Suppose also that I assume both populations are normal. If I have an independent random sample of 10 red fish having a mean weight of 8.5 pounds with standard deviation 2.8 pounds and an independent random sample of 12 blue fish having mean weight of 7.3 pounds with a standard deviation of 2.3 pounds, then what is the significance of this data as evidence that the true means satisfy , $\mu_R > \mu_B$, where μ_R denotes the true mean weight of red fish and μ_B denotes the true mean weight of blue fish.

77. Suppose that in my pond are found both red fish and blue fish and I do not know the true mean weight for either of these two populations. Suppose that I would like to establish that the redfish on average exceed blue fish in weight. Suppose that I do not know the population standard deviation in weight of red fish nor the population standard deviation of blue fish. Suppose also that I assume both populations are normal but their population standard deviations may not be the same. If I have an independent random sample of 10 red fish having a mean weight of 8.5 pounds with standard deviation 2.8 pounds and an independent random sample of 12 blue fish having mean weight of 7.3 pounds with a standard deviation of 2.3 pounds, then what is the significance of this data as evidence that the true means satisfy , $\mu_R > \mu_B$, where μ_R denotes the true mean weight of red fish and μ_B denotes the true mean weight of blue fish.

78. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I do not know the standard deviation in the weight of fish in my pond, but the sample standard deviation of my sample is 2 pounds. What is the margin of error in the 95 percent confidence interval for the true mean weight of the fish in my pond?

79. Suppose that I do not know the percentage of ducks that will vote for Donald for Mayor of Duckburg in an upcoming election. Suppose that in a simple random sample of 2000 citizens asked, 1078 say they will vote for Donald in the election. What is the 95 percent confidence interval for the true proportion of citzens of Duckburg who say they will vote for Donald in the upcoming election?

80. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I know that the standard deviation in fish weight for the fish in my pond is 2 pounds. What is the significance of this data as evidence that the true mean weight of the fish in my pond actually exceeds 7.5 pounds?

81. Suppose that I do not know the mean weight of the fish in my pond and I want to estimate it using the sample mean of an independent random sample. Suppose that I have a sample of 36 fish with sample mean $\bar{x} = 8.3$ pounds. Suppose that I do not know the standard deviation in the weight of fish in my pond, but the sample standard deviation of my sample is 2 pounds. What is the significance of this data as evidence that the true mean weight of the fish in my pond actually exceeds 7.5 pounds?

82. Suppose that I do not know the percentage of ducks that will vote for Donald for Mayor of Duckburg in an upcoming election. Suppose that in a simple random sample of 2000 citizens asked, 1078 say they will vote for Donald in the election. What is the significance of this data as evidence that the true proportion of citzens of Duckburg who say they will vote for Donald in the upcoming election actually exceeds .51?

83. Suppose that I do not know the percentage of mice who support Goofy for Mayor of Duckburg but I have asked 10 mice and 7 say they support Goofy for Mayor of Duckburg whereas three support other candidates. What is the significance of this as evidence that the true proportion of mice who support Goofy for Mayor of Duckburg exceeds sixty percent?

85. Suppose that I want to make a 95 percent confidence interval for the true proportion of fish in my pond that are redfish. I want the margin of error to be at most .02. What is the miminum size of an independent random sample that will accomplish this.