

## Practice Exam Biostat II VEPP.

\*- Indicates the correct option

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1. The discipline of statistics may be conceptually divided into which of the following categories?  
\*(a) Descriptive and inferential statistics.  
(b) Finite and infinite statistics.  
(c) Exact and approximate statistics.  
(d) Theoretical and research statistics.
  
2. Which of the following statements best describes the process that characterizes inferential statistics?  
(a) Descriptive methods are used to characterize the information in a population so that conclusions may be reached regarding samples taken from that population.  
(b) Descriptive methods are used to obtain parameters that are then used to gain insights into statistics.  
\*(c) Descriptive methods are used to obtain statistics that are then used to gain insights into parameters.  
(d) Finite populations are aggregated to obtain (nearly) infinite populations that can then be used to obtain parameters.
  
3. An ordering of the scales of measurement from least to most informative would be  
(a) ordinal, nominal, interval, ratio.  
(b) ratio, interval, nominal, ordinal.  
\*(c) nominal, ordinal, interval, ratio.  
(d) nominal, ordinal, ratio, interval.
  
4. Which of the following is an example of a continuous variable?  
\*(a) Weight.  
(b) Gender.  
(c) Blood type.  
(d) Number of persons in Tennessee vaccinated against hepatitis B.
  
5. Which of the following is an example of a dichotomous variable?  
(a) Weight.  
\*(b) Gender.  
(c) Blood type.  
(d) Number of persons in Tennessee vaccinated against hepatitis B.
  
6. Which of the following represents a discrete variable?  
\*(a) Number of health code violations given to restaurants in a given geographic area during a one year period.  
(b) Body temperatures of subjects in a study.  
(c) Blood pressures of subjects in a study.  
(d) Amounts of weight lost by subjects in a dietary study.
  
7. A politician wishes to argue for more spending on education by saying that college tuition in the United States is too high. Which measure of center should he report for the distribution of tuitions?  
\* a. The mean  
b. The median  
c. Either the mean or median. It doesn't matter since they will be equal.  
d. Neither the mean nor median. Both will be much lower than the actual average salary.

8. A researcher reports that, on average, participants in a study lost 10.4 pounds after two months on their new diet. A friend of yours comments that she tried the diet for two months and lost no weight. Which of the following statements is then correct?
- Your friend must not have followed the diet correctly since she did not lose weight.
  - Because your friend did not lose weight, the report must not be correct.
  - \* The report gives only the average. This does not imply that all participants in the study lost 10.4 pounds, or even that all lost weight. Your friend's experience does not necessarily contradict the study results.
  - d. For the study to be correct, we must now add your friend's results to those of the study and recompute the new average.
9. The average salary of all female lab technicians at a large company is \$35,000. The average salary of all male lab technicians at the company is \$41,000. If there are more male than female technicians at the lab, then the average salary of lab technicians in the company must be
- a. exactly \$38,000.
  - \* b. more than \$38,000.
  - c. less than \$38,000.
  - d. above \$41,000.
10. Which of the following is likely to have a mean that is smaller than the median?
- a. Salaries of all employees at Fortune 500 company
  - \* b. Scores of students on a very easy exam in which most score perfectly, but a few do very poorly
  - c. Survival time of individuals that are born into, and remain in, a post-industrial society
  - d. The scores of students on a very difficult exam in which most score poorly, but a few do very well
11. By inspection, determine which of the following sets of numbers has the smallest standard deviation.
- a. 7, 8, 9, 10
  - \* b. 5, 5, 5, 5
  - c. 0, 0, 10, 10
  - d. 0, 1, 2, 3
12. There are three children in a room, ages 3, 4, and 5. If a 4-year-old enters the room,
- a. the mean age will stay the same, but the variance will increase.
  - \* b. the mean age will stay the same, but the variance will decrease.
  - c. the mean age and variance will stay the same.
  - d. the mean age and variance will increase.
13. In a class of 100 students, the grades on a Zoology test are summarized in the frequency table below.

Grade	Frequency
91–100	11
81–90	31
71–80	42
61–70	16

- The median grade is in which of the following intervals?
- a. 61–70
  - \* b. 71–80
  - c. 81–90
  - d. 91–100

14. The most frequently occurring score in a data set is termed the

- (a) range.
- (b) mean.
- (c) median.
- \* (d) mode.

15. Variance is a measure of

- (a) relative position.
- (b) central tendency.
- (c) skew.
- \* (d) variability.

16. The quantity  $\sum(x - \bar{x})^2$  is referred to as

- (a) variance.
- (b) standard deviation.
- (c) mean deviation.
- \* (d) sum of squares.

17. Standard deviation is best defined as

- (a) the square of variance.
- (b) the square root of mean deviation.
- \* (c) the square root of variance.
- (d) the square of mean deviation.

18. The sample variance is defined as

- (a) the sample size ( $n$ ) times the sum of squares.
- (b)  $n - 1$  times the standard deviation.
- \* (c) the sum of squares divided by  $n - 1$ .
- (d) the square root of the standard deviation.

19. Sickle-cell disease is a painful disorder of the red blood cells that in the United States affects mostly African-Americans. To investigate whether the drug hydroxyurea can reduce the pain associated with sickle-cell disease, a study by NIH gave the drug to 150 sickle-cell sufferers and the placebo to another 150. Neither doctors nor patients were told who received the drug. The number of episodes of pain reported by each subject was recorded. This is an example of

- a. an observational study.
- \* b. an experiment.
- c. convenience sampling.
- d. multistage sampling.

20. A health club is interested in finding out which of two brands of aerobic exercise equipment provides a more vigorous workout. They purchase 10 machines of each type and, for five days between 9 a.m. and 12 p.m., they measure the average pulse rate of each person who is working out on one of these 20 machines. This is an example of

- a. an experiment.
- \* b. an observational study.
- c. a paired data experiment.
- d. a stratified experiment.

21. At a local health club, a researcher samples 75 people whose primary exercise is cardiovascular and 75 people whose primary exercise is strength training. The researcher's objective is to assess the effect of type of exercise on cholesterol. Each subject reported to a clinic to have his or her cholesterol measured. The subjects were unaware of the purpose of the study, and the technician measuring the cholesterol was not aware of the subject's type of exercise. This is

- \* a. an observational study.
- b. an experiment, but not a double blind experiment.
- c. a double blind experiment.
- d. a matched pairs experiment.

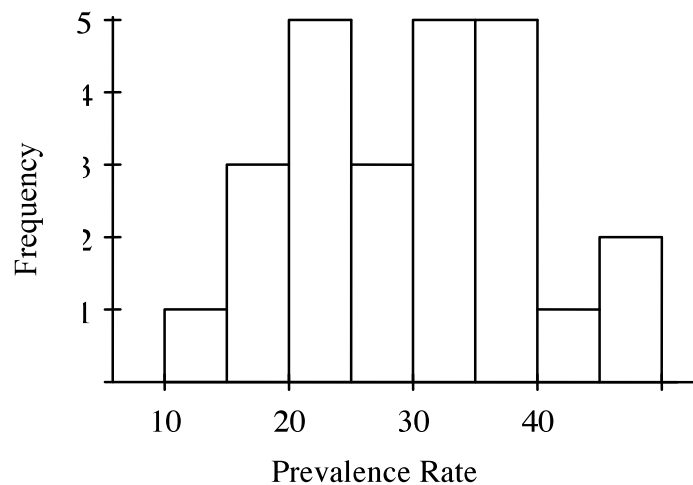
A student organization at a local college posted a poll on its Web site. After a semester, the results were tallied and it was found that 95% of the respondents were in favor of raising fees to increase funding for student organizations. This conclusion was based on data collected from 5000 votes cast on the Web site.

22. The sampling technique being used is

- a. simple random sampling.
- b. stratified random sampling.
- \* c. volunteer sampling.
- d. multistage sampling.

Use the following to answer Questions 23-24.

The following histogram represents the prevalence rates of a particular genetic marker among 25 samples in impoverished communities in 2004. In each interval, the left endpoint is included but not the right, so the class intervals are  $10 \leq \text{rate} < 15$ ,  $15 \leq \text{rate} < 20$ , etc.



23. What percentage of the communities has a prevalence rate below 15%?

- a. 1%
- \* b. 4%
- c. 12%
- d. 16%

24. The number of communities with prevalence rates over 30% is
- a. 5.
  - b. 12.
  - c. 10.
  - \* d. 13.

The following information is for Questions 25-27.

For a Physics course containing 10 students, the maximum point total for the quarter was 200. The point totals for the 10 students are given in the following stemplot.

11	6 8
12	1 4 8
13	3 7
14	2 6
15	
16	
17	9

25. This stemplot is most similar to
- \* a. a histogram with class intervals  $110 \leq \text{score} < 120$ ,  $120 \leq \text{score} < 130$ , etc.
  - b. a time plot of the data with the observations taken in increasing order.
  - c. a boxplot of the data.
  - d. reporting the five-point summary for the data, with the mean.
26. To which of the following data sets does this stemplot correspond?
- a. All integers between 116 and 179
  - b. 1, 2, 3, 4, 6, 6, 7, 8, 8, 9
  - c. 16, 18, 21, 24, 28, 33, 37, 42, 46, 79
  - \* d. 116, 118, 121, 124, 128, 133, 137, 142, 146, 179
27. The lowest score in the class as a percentage of the total possible points is
- \* a. 58%.
  - b. 75%.
  - c. 90%.
  - d. 116%.

Use the following to answer Questions 28-31.

The Insurance Institute for Highway Safety publishes data on the total damage caused by compact automobiles in a series of controlled, low-speed collisions. The following costs are for a sample of 9 cars, in hundreds of dollars.

10.0   6.0   8.0   10.0   4.0   3.5   7.5   8.0   9.0

28. What is the mean of the total damage suffered for this sample of cars?
- a. \$239
  - \* b. \$733
  - c. \$800
  - d. \$950

29. Using the correct units, what is the value of the variance?
- a. 224.85 dollars
  - b. 238.48 dollars<sup>2</sup>
  - c. 50,555.56 dollars<sup>2</sup>
  - \* d. 56,875 dollars<sup>2</sup>
30. What is the first quartile for these data?
- a. \$350
  - \* b. \$500
  - c. \$600
  - d. \$800
31. What is interquartile range for these data?
- a. \$300
  - b. \$350
  - c. \$400
  - \* d. \$450
32. To be an outlier, an observation must fall outside the range
- a. 0.50 to 14.00.
  - b. 5.00 to 9.50.
  - c. 3.50 to 10.00.
  - \* d. -1.75 to 16.25.

If  $X_1 = 9$ ,  $X_2 = 8$ ,  $X_3 = 13$ ,  $X_4 = 6$ , and  $X_5 = 9$ , evaluate the following.

33.  $\sum X_i$   
 \*a. 45                      b. 54                      c. 43.5                      d. 59
34.  $\sum (X_i - \bar{X})$   
 \*a. 0                      b. 45                      c. 100                      d. 450
35.  $\sum (X_i - \bar{X})^2$   
 \*a. 26                      b. 0                      c. 62                      d. 260
36.  $\sum (X_i)^2$   
 \*a. 2025                      b. 20                      c. 25                      d. 2520

The following probability table gives the results of a survey in which infants in the survey area are classified as having been immunized against some childhood disease ( $I$ ), not immunized ( $\bar{I}$ ), whether the child's family has been classified as being below the poverty level ( $P$ ), or not below the poverty level ( $\bar{P}$ ). Use this table to answer next 4 questions (37-40).

	$P$	$\bar{P}$
$I$	0.05	0.55
$\bar{I}$	0.15	0.25

37. What is the probability that an infant has not been immunized?

- \*(a) .40
- (b) .15
- (c) .25
- (d) .20

38. What is the probability that an infant has been immunized and is from a family classified as being below the poverty level?

- (a) .60
- (b) .25
- \*(c) .05
- (d) .15

39. What is the probability that an infant has been immunized given the family has been classified as being below the poverty level?

- (a) .6875
- (b) .60
- (c) .0833
- \*(d) .25

40. What is the probability that an infant has been immunized?

- (a) .20
- (b) .80
- \*(c) .60
- (d) .40

41. Find the probability of drawing a jack or a heart from a well shuffled deck of 52 cards.

- a.  $1/13$
- b.  $1/4$
- c.  $1/52$
- d.  $*16/52$

Let X and Y denote two genetic characteristics and suppose that the probability is  $1/2$  that an individual chosen at random will exhibit X,  $3/4$  that he or she will exhibit Y. Assume that these events occur independently.

42. What is the probability that an individual chosen at random will exhibit: both characteristics.

- e.  $1/2$
- f.  $3/4$
- g.  $*3/8$
- h.  $8/4$

43. What is the probability that an individual chosen at random will exhibit: neither characteristics.

- a.  $1/2$
- b.  $1/4$
- \*c.  $1/8$
- d.  $8/1$

44. I toss a penny and observe whether it lands heads up or tails up. Suppose the penny is fair, that is, the probability of heads is  $\frac{1}{2}$  and the probability of tails is  $\frac{1}{2}$ . This means that
- a. every occurrence of a head must be balanced by a tail in one of the next two or three tosses.
  - \* b. if I flip the coin many, many times, the proportion of heads will be approximately  $\frac{1}{2}$ , and this proportion will tend to get closer and closer to  $\frac{1}{2}$  as the number of tosses increases.
  - c. regardless of the number of flips, half will be heads and half will be tails.
  - d. All of the above

Use the following information for Questions 45-48.

For homework in a statistics course, you are asked to flip a coin 100 times and to keep track of the number of heads. In the first 50 flips, you get 20 heads. Assume the coin is fair, that is, the probability of heads is  $\frac{1}{2}$  and the probability of tails is  $\frac{1}{2}$ .

45. To say that the coin is “fair” means that, when I toss it, each of the outcomes H and T have a probability  $\frac{1}{2}$  of occurring. This means that
- a. in the next four tosses of the coin, exactly two of the outcomes will be H.
  - b. in the next four tosses of the coin, the outcomes will alternate HTHT or THTH.
  - c. in the next four tosses of the coin, they can’t all be the same outcome.
  - \* d. None of the above
46. The probability that heads occurs is
- a. the precise degree of randomness present in the phenomenon.
  - \* b. the proportion of times this event will occur in a very long series of repetitions.
  - c. either 0 or 1, depending on whether or not the phenomenon can actually occur.
  - d. any number, as long as it is a value between 0 and 1.
47. There are only two outcomes when the coin is tossed: {H, T}. This collection of all possible outcomes is called
- a. a census.
  - b. the probability.
  - \* c. the sample space.
  - d. the distribution.
48. In the next 50 flips, which of the following must happen?
- a. More than half of the flips will be heads to balance out the low number of heads in the first 50 flips. However, the order in which these heads will occur is unpredictable.
  - b. More than 20 of the flips will be heads because the proportion of heads after 100 flips must be closer to  $\frac{1}{2}$  than the proportion after 50 flips.
  - c. The number of heads will be very close to 30 in the next 50 flips because the proportion must be close to  $\frac{1}{2}$  after 100 flips.
  - \* d. None of the above
49. A researcher is trying to determine the proportion of a certain species of fish in a local lake. After sampling 40 fish, she found 32 of them were the species of interest. She estimates the probability that the next fish is of the species of interest to be
- a. 0.32.
  - b. 0.50.
  - \* c. 0.80.
  - d. 1.25.



50. When I flip a coin, the outcome can be either heads or tails; it is uncertain. However, in a large number of flips, the distribution of heads and tails is very regular. We say that flipping a coin is
- \* a. random.
  - b. predictable.
  - c. deterministic.
  - d. None of the above

Use the following information for Questions 51-53.

Event A has probability 0.4. Event B has probability 0.5.

51. If A and B are disjoint, then the probability that both events occur is

- \* a. 0.0.
- b. 0.1.
- c. 0.2.
- d. 0.9.

52. If A and B are disjoint, then the probability of A or B is

- a. 0.0.
- b. 0.1.
- c. 0.2.
- \* d. 0.9.

53. A third event, C, has probability 0.6. Which of the following must be true?

- a. A, B, and C are disjoint.
- \* b. C must have some elements in common with at least one of A or B.
- c. The probability that C does not occur is 0.9.
- d. All of the above

54. An assignment of probability must obey which of the following?

- a. The probability of any event must be a number between 0 and 1, inclusive.
- b. The sum of all the probabilities of all outcomes in the sample space must be exactly 1.
- c. It must obey the addition rule for disjoint events.
- \* d. All of the above

55. I flip a coin twice and count the number of heads. Which of the following is a valid assignment of probabilities for the number of heads observed in two flips?

a.

Number of heads	0	1	2
Probability	1/3	1/3	1/3

b.

Number of heads	0	1	2
Probability	1/4	1/4	1/4

\* c.

Number of heads	0	1	2
Probability	1/4	1/2	1/4

- d. All of the above

Use the following to answer questions 56-59.

All human blood can be typed as one of O, A, B, or AB. The distribution of the types varies a bit with race. Choose an African-American at random. Here are the approximate probabilities that the person you choose will have blood type O, B, or AB.

Blood Type	O	A	B	AB
Probability	0.50	?	0.20	0.05

56. The probability that the person chosen has blood type A is
- a. 0.04.
  - \* b. 0.25.
  - c. 0.27.
  - d. impossible to determine from the information given.
57. The probability that the person chosen has a blood type other than O is
- a. 0.25.
  - \* b. 0.50.
  - c. 0.75.
  - d. 1.00.
58. Some people consider having type AB blood to be an undesirable outcome since it may be hard to find matching donors. The risk of having type AB is then
- \* a. 0.05.
  - b. 0.95.
  - c. 1.05.
  - d. 20.0.
59. Considering having type AB blood to be an undesirable outcome, the odds of having type AB blood are
- a. 0.050.
  - \* b. 0.053.
  - c. 0.950.
  - d. 19.0.
60. The density curve for a continuous random variable  $X$  has which of the following properties?
- a. The probability of any event is the area under the density curve and above the values of  $X$  that make up the event.
  - b. The total area under the density curve for  $X$  must be exactly 1.
  - c. The probability of any event of the form  $X = \text{constant}$  is 0.
  - \* d. All of the above

### GENERAL RULES OF PROBABILITY

Use the following to answer Questions 61-62.

According to the Center for Disease Control and Prevention (CDC), up to 20% of Americans contract the influenza virus each year, and approximately 3% of all births in the United States result in birth defects each year. Consider two babies being born independently of one another.

61. The probability that both babies have birth defects is  
 \* a. 0.0009.  
 b. 0.0400.  
 c. 0.0606.  
 d. 0.2000.
62. The probability that neither baby catches the flu in a given year is  
 a. 0.024.  
 b. 0.040.  
 c. 0.230.  
 \* d. 0.640.

Use the following to answer Questions 63-65.

A six-sided die is to be rolled three times. Assume the rolls are independent and that the die is fair.

63. The probability that all three rolls result in an even number is  
 a. 1.0.  
 b. 0.75.  
 c. 0.25.  
 \* d. 0.125.
64. The probability that at least one of the rolls is an even number is  
 a. 0.125.  
 b. 0.333.  
 c. 0.750.  
 \* d. 0.875.
65. The events  $A$  = exactly two of the rolls are even and  $B$  = exactly two of the rolls are odd are  
 \* a. disjoint.  
 b. conditional.  
 c. independent.  
 d. Nne of the above
66. Binomial distribution is encountered in nature when an event can occur in:  
 a. one of only two mutually exclusive way.  
 b. Independently  
 c. Conditionally  
 d. \*All of the above
67. Following are the assumptions for Binomial Distribution:  
 a. A discrete outcome  
 b. Process or experiment has 2 possible outcomes: success and failure  
 c. Replications of process are independent  
 d. \*All of the above
68. The three parameters of the Binomial Distribution are:  
 a.  $n$   
 b.  $x$   
 c.  $p$   
 d. \*All of the above

69. Medication for allergies is effective in reducing symptoms in 80% of patients. If medication is given to 10 patients, what is the probability it is effective in 7?
- a. \*0.2013
  - b. 2.013
  - c. 1.302
  - d. 0.132

Assuming that sex determination in human babies follows a binomial distribution:

70. Find the probability density function for 2 females in a family of 5.
- a. 0.03125
  - b. 0.15625
  - c. \*0.3125
  - d. 1.0000
71. Find the probability density function for 3 females in a family of 5.
- a. 0.03125
  - b. 0.15625
  - c. \*0.3125
  - d. 1.0000

72. *Normal Distribution* has the following characteristics:

- a. Bell-Shaped & Symmetrical
- b. Mean, Median, Mode Are Equal
- c. Random Variable Has Infinite Range
- \*d. All of the above

73. Normal Distribution differs by:

- a. mean
- b. standard deviation
- c. variance
- d. \*a&b

Body mass index (BMI) for men age 60 is normally distributed with a mean of 29 and standard deviation of 6?

74. What is the probability that a male has BMI less than 35?
- a. 1.0000
  - b. \*0.8413
  - c. 0.3148
  - d. None of the above
75. What is the probability that a male has BMI less than 30?
- a. \*0.5675
  - b. 0.1700
  - c. 0.5765
  - d. 0.0567

Aptitude test score is normally distribute with a mean of 100 and standard deviation of 10.

76. What is the probability that a randomly selected score is below 90?

- a. -1.000
- b. 0.0001
- c. \*0.1587
- d. 0.7815

77. A normal density curve has which of the following properties?

- a. It is symmetric.
- b. It has a peak centered above its mean.
- c. The spread of the curve is proportional to the standard deviation.
- \* d. All of the above

78. Scores on a university exam are normally distributed with a mean of 68 and a standard deviation of 9. Using the 68-95-99.7 rule, what percentage of students score above 77?

- a. 2.5%
- b. 5%
- \* c. 16%
- d. 32%

79. The time to complete a standardized exam is approximately normal with a mean of 70 minutes and a standard deviation of 10 minutes. Using the 68-95-99.7 rule, if students are given 90 minutes to complete the exam, what percentage of students will not finish?

- a. 32%
- b. 5%
- \*c. 2.5%
- d. 0.0015%

80. Using the standard normal distribution tables, what is the area under the standard normal curve corresponding to  $Z < 1.15$ ?

- a. 0.1357
- b. 0.8643
- \* c. 0.8749
- d. 0.9332

81. Using the standard normal distribution tables, the area under the standard normal curve corresponding to  $Z > -2.62$  is

- a. 0.0044.
- b. 0.0047.
- c. 0.9953.
- \* d. 0.9956.

82. Using the standard normal distribution tables, the area under the standard normal curve corresponding to  $-0.5 < Z < 1.2$  is

- a. 0.3085.
- b. 0.8849.
- \* c. 0.5764.
- d. 0.2815.

Use the following to answer Questions 83-84.

Birth weights at a local hospital have a normal distribution with a mean of 110 ounces and a standard deviation of 15 ounces.

83. The proportion of infants with birth weights above 125 ounces is

- a. 0.500.
- \* b. 0.159.
- c. 0.341.
- d. 0.841.

84. The proportion of infants with birth weights between 125 ounces and 140 ounces is

- a. 0.819.
- b. 0.636.
- c. 0.477.
- \* d. 0.136.

85. The time to complete a standardized exam is approximately normal with a mean of 70 minutes and a standard deviation of 10 minutes. How much time should be given to complete the exam so 80% of the students will complete the exam in the time given?

- a. 84 minutes
- \* b. 78.4 minutes
- c. 92.8 minutes
- d. 79.8 minutes

86. Sale of eggs that are contaminated with salmonella can cause food poisoning among consumers. A large egg producer takes a SRS of 200 eggs from all the eggs shipped in one day. The laboratory reports that 11 of these eggs had salmonella contamination. Unknown to the producer, 0.2% (two-tenths of one percent) of all eggs shipped had salmonella. In this situation

- \* a. 0.2% is a parameter and 11 is a statistic.
- b. 11 is a parameter and 0.2% is a statistic.
- c. both 0.2% and 11 are statistics.
- d. both 0.2 % and 11 are parameters.

87. The law of large numbers states that as the number of observations drawn at random from a population—with finite mean  $m$  and variance  $\sigma$ —increases, the mean,  $\bar{x}$ , of the observed values

- a. tends to get larger.
- b. tends to get smaller.
- \* c. tends to get closer to the population mean  $m$ .
- d. All of the above

88. The fact that the sample mean doesn't tend to over or under estimate the population mean makes the sample mean

- a. consistent.
- \* b. unbiased.
- c. efficient.
- d. a statistic.

89. I flip a coin ten times and record the proportion of heads I obtain. I then repeat this process of flipping the coin ten times and recording the proportion of heads obtained many, many times. When done, I make a histogram of my results. This histogram represents

- a. the bias, if any, which is present.

- b. the true population parameter.
- c. simple random sampling.
- \* d. the sampling distribution of the proportion of heads in ten flips of the coin.

90. The variability of a statistic is described by

- \* a. the spread of its sampling distribution.
- b. the amount of bias present.
- c. the vagueness in the wording of the question used to collect the sample data.
- d. the stability of the population it describes.

Use the following to answer Questions 91-94.

The average age of trees in a large local park is 60 years with a standard deviation of 2.2 years. A simple random sample of 400 trees is selected, and the sample mean age  $\bar{x}$  of these trees is computed.

91. We know the random variable  $\bar{x}$  has an approximately normal distribution because of

- a. the law of large numbers.
- \* b. the central limit theorem.
- c. the 68-95-99.7 rule.
- d. the fact that probability is the long-run proportion of times an event occurs.

92. The probability that the average age  $\bar{x}$  of the 400 trees is more than 60.1 years is

- a. 0.0001.
- \* b. 0.1814.
- c. 0.4801.
- d. 0.8186.

93. A parameter here is

- a. the average of 60 years.
- b. the standard deviation of 2.2 years.
- c. Neither a nor b
- \* d. Both a and b

94. A statistic here is

- a. the average of 60 years.
- b. the standard deviation of 2.2 years.
- \* c. the mean  $\bar{x}$  calculated from the 400 trees.
- d. None of the above

Up to 20% of Americans contract influenza each year. A sample of 400 randomly selected Americans is chosen and the number with influenza is recorded. Let  $X$  represent the number with influenza in the sample.

95. If  $X = 75$  individuals are found to have influenza, then the sample proportion is

- a. 0.0075.
- \* b. 0.1875.
- c. 0.2000.
- d. 0.8125.

96. The fact that as the sample size increases, the distribution of the sample proportion becomes more Normal is due to the

- \* a. central limit theorem.
- b. unbiasedness of the sample proportion.
- c. fact that  $n$  is in the denominator of the sample proportion.

d. law of large numbers.