Name_____

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

1) Determine whether the given value is a discrete or continuous variable. People are asked to state how many times in the last month they visited their family doctor. 1) _____

A) Continuous B) Discrete

2) The following table contains data from a study of two airlines which fly to Small Town, USA. If one flight is selected, find *P*(on time and Upstate Airlines). 2) _____

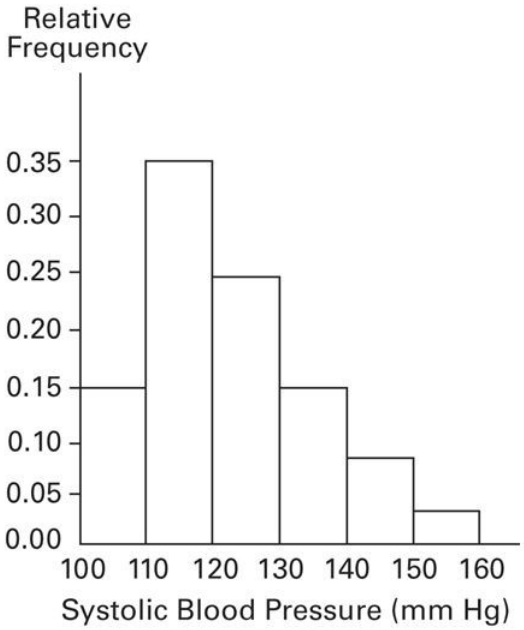
| | Number of flights which were on time | Number of flights which were late |
|---|---|---|
| **Podunk Airlines** | 33 | 6 |
| **Upstate Airlines** | 43 | 5 |

A) $\frac{43}{76}$ B) $\frac{11}{76}$

C) $\frac{43}{87}$ D) None are correct

3) A nurse measured the blood pressure of each person who visited her clinic. Following is a relative–frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40 years. The blood pressure readings were given to the nearest whole number. Approximately what percentage of the people aged 25–40 had a systolic blood pressure reading between 110 and 119 mm Hg inclusive? 3) _____

**Systolic Blood Pressure for People Aged 25–40 Years**



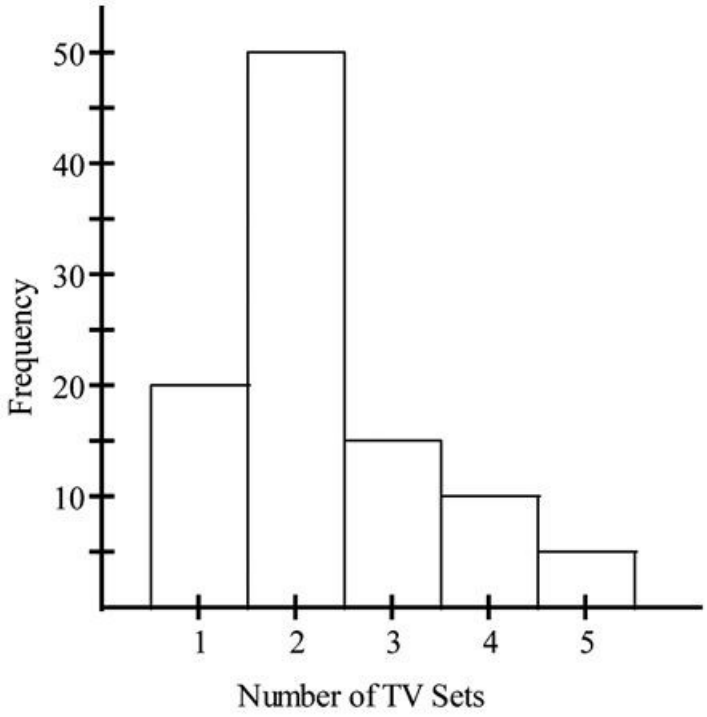

A) 30% B) 0.35% C) 3.5% D) 35%

4) A _____ is the complete collection of all measurements or data collected, whereas, a _____ is a subcollection of members selected from the complete collection. 4) _____

A) sample; census
B) population; parameter
C) sample; population
D) population; sample

5) The histogram below represents the number of television sets per household for a sample of U.S. households. What is the sample size? 5) _____

**Number of Television Sets Per U.S. Household**




A) 5 households
B) 50 households
C) 100 households
D) 90 households

6) Identify the cumulative frequency distribution that corresponds to the given frequency distribution. 6) _____

| Speed | Number of Cars |
|---|---|
| 0-29 | 4 |
| 30-59 | 16 |
| 60-89 | 60 |
| 90-119 | 20 |

A)

| Speed | Cumulative Frequency |
|---|---|
| Less than 30 | 0.04 |
| Less than 60 | 0.20 |
| Less than 90 | 0.80 |
| Less than 120 | 1.00 |

B)

| Speed | Cumulative Frequency |
|---|---|
| Less than 30 | 100 |
| Less than 60 | 80 |
| Less than 90 | 82 |
| Less than 120 | 4 |

C)

| Speed | Cumulative Frequency |
|---|---|
| Less than 30 | 4 |
| Less than 60 | 20 |
| Less than 90 | 80 |
| Less than 120 | 100 |

D)

| Speed | Cumulative Frequency |
|---|---|
| 0-29 | 4 |
| 30-59 | 20 |
| 60-89 | 80 |
| 90-119 | 100 |

7) A student earned grades of B, B, A, C, and D. Those courses had these corresponding numbers of credit hours: 4, 5, 1, 5, 4. The grading system assigns quality points to letter grades as follows: A = 4, B = 3, C = 2, D = 1, and F = 0. Compute the grade point average (GPA) and round the result to two decimal places. 7) _____

A) 3.46 B) 9.00 C) 2.37 D) 1.37

8) The following frequency distribution analyzes the scores on a math test. Find the class boundaries of scores interval 90–99. 8) _____

| Scores | Number of students |
|---|---|
| 50–59 | 2 |
| 60–69 | 4 |
| 70–79 | 6 |
| 80–89 | 15 |
| 90–99 | 5 |

A) 90.5, 99.5 B) 89.5, 99.5 C) 89.5, 100.5 D) 89.5, 100.5

9) The prices (in dollars) of 12 electric smooth top ranges are listed below. Find the range for the given sample data. 9) _____

| | | | | | |
|---|---|---|---|---|---|
| 865 | 1010 | 655 | 565 | 1465 | 1110 |
| 710 | 765 | 820 | 1310 | 555 | 1065 |

A) $920 B) $900 C) $930 D) $910

10) For women aged 18–24, systolic blood pressures are normally distributed with a mean of 114.8 mm Hg and a standard deviation of 13.1 mm Hg. If 23 women aged 18–24 are randomly selected, find the probability that their mean systolic blood pressure is between 119 and 122 mm Hg. 10) _____

A) 0.9341 B) 0.0577 C) 0.3343 D) 0.0833

11) Determine whether the given procedure results in a binomial distribution. If not, state the reason why. 11) _____

Spinning a roulette wheel 7 times, keeping track of the winning numbers.

A) Not binomial: the trials are not independent.
B) Not binomial: there are more than two outcomes for each trial.
C) Not binomial: there are too many trials.
D) The procedure results in a binomial distribution.

12) Evaluate the expression ${}_8P_4$. 12) _____

A) 70 B) 2 C) 4 D) 1680

13) A study of the amount of time it takes a mechanic to rebuild the transmission for a 2010 Chevrolet Colorado shows that the mean is 8.4 hours and the standard deviation is 1.8 hours. If 40 mechanics are randomly selected, find the probability that their mean rebuild time is less than 8.9 hours. 13) _____

A) 0.9756 B) 0.9589 C) 0.4276 D) 0.9608

14) A tax auditor selects every 1000th income tax return that is received. Identify which of these types of sampling is used. 14) _____

A) Systematic
B) Convenience
C) Stratified
D) Simple Random
E) Cluster

15) Determine which of the four levels of measurement is most appropriate. Students' grades, A, B, or C, on a test. 15) _____

A) Ordinal B) Nominal C) Interval D) Ratio

16) Flip a coin twice. Create the sample space of possible outcomes. 16) _____

A) {HH, HT, TT} B) {HH, HT, TH, TT}
C) {HT, TH} D) {HH, TT, HT, HT}

17) In a certain class of students, there are 11 boys from Wilmette, 7 girls from Wilmette, 5 boys from Winnetka, 4 girls from Winnetka, 4 boys from Glencoe, and 4 girls from Glencoe. If the teacher calls upon a student to answer a question, what is the probability that the student will be a boy? 17) _____

A) 0.71 B) 0.314 C) 0.571 D) 0.429

18) Determine whether the given value is a statistic or a parameter. Thirty percent of all dog owners poop scoop after their dog. 18) _____

A) Parameter B) Statistic

19) Mars, Inc. claims that 20% of its M&M plain candies are orange. A sample of 100 such candies is randomly selected. Find the mean and standard deviation for the number of orange candies in such groups of 100. 19) _____

A) $\mu = .020$, $\sigma = .20$ B) $\mu = 20$, $\sigma = .20$ C) $\mu = 20$, $\sigma = 4.0$ D) $\mu = .20$, $\sigma = 4.0$

20) Find the standard deviation, $\sigma$, for the binomial distribution which has the stated values of $n$ and $p$. Round your answer to the nearest hundredth. 20) _____

$n = 503$; $p = 0.7$

A) $\sigma = 7.87$ B) $\sigma = 10.28$ C) $\sigma = 14.40$ D) $\sigma = 13.55$

21) If a person is randomly selected, find the probability that his or her birthday is not in May. Ignore leap years. 21) _____

A) $\frac{31}{365}$ B) $\frac{11}{12}$ C) $\frac{31}{334}$ D) $\frac{334}{365}$

22) Based on a recent poll, there is a 50–50 chance that a randomly selected adult has pierced ears. Express the indicated degree of likelihood as a probability value between 0 and 1. 22) _____

A) 3/4 or 0.75 B) 1/2 or 0.5 C) 1/50 or 0.02 D) 1/4 or 0.25

23) The lengths of human pregnancies are normally distributed with a mean of 268 days and a standard deviation of 15 days. What is the probability that a pregnancy last at least 300 days? 23) _____

A) 0.0166 B) 0.4834 C) 0.9834 D) 0.0179

24) Human body temperatures have a mean of 98.20° F and a standard deviation of 0.62° F. Sally's temperature can be described by $z = -1.5$. What is her temperature? Round your answer to the nearest hundredth. 24) _____

A) 99.13° F B) 95.79° F C) 97.27° F D) 96.70° F

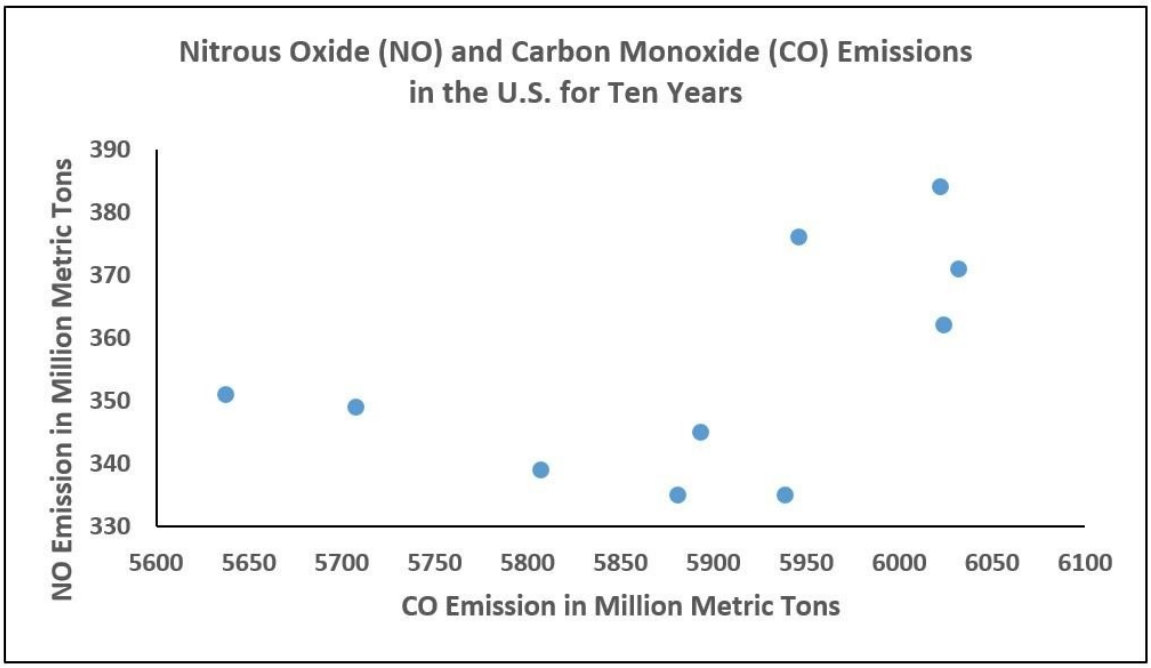
25) If your score on your next statistics test is converted to a $z$ score, which of these $z$ scores would you prefer? 25) _____

A) 2.00 B) 0 C) −2.00 D) −1.00

26) Identify which type of sampling is used. To avoid working late, a quality control analyst simply inspects the first 100 items produced in a day. 26) _____

A) Convenience
B) Stratified
C) Cluster
D) Systematic
E) Simple Random

27) The scatterplot below displays the amount of nitrous oxide (NO) explained by the amount of carbon monoxide (CO) emissions in million metric tons over a ten year period in the United States. Select the choice that best describes any relationship between the variables. 27) _____




A) There is a positive linear association between NO and CO.
B) Overall, there is no noticeable relationship between NO and CO.
C) There is a negative linear association between NO and CO.
D) NO can be explained by CO.

28) The table below shows the soft drinks preferences of people in three age groups. 28) _____

| | Cola | Root beer | Lemon–lime |
|---|---|---|---|
| **Under 21 years of age** | 40 | 25 | 20 |
| **Between 21 and 40** | 35 | 20 | 30 |
| **Over 40 years of age** | 20 | 30 | 35 |

If one of the 255 subjects is randomly selected, find the probability (in fractional form) that the person is over 40 and drinks cola.

A) $\frac{4}{51}$ B) $\frac{4}{19}$

C) $\frac{4}{17}$ D) None are correct.

29) Express the indicated degree of likelihood as a probability value. "Your mother could not have died two years before you were born." 29) _____

A) 1 B) 0.5 C) 0 D) 0.25

30) Find the standard deviation for the given sample data. Round your answer to one more decimal place than the original data. 30) _____

18 18 18 9 15 5 10 5 15

A) 5.4 B) 5.8 C) 1.6 D) 5.1

31) Determine whether the given description corresponds to an experiment or an observational study. A stock analyst selects a stock from a group of twenty for investment by choosing the stock with the greatest earnings per share reported for the last quarter. 31) _____

A) Observational study B) Experiment

32) Swinging Sammy Skor's batting prowess was simulated to get an estimate of the probability that Sammy will get a hit. Let 1 = HIT and 0 = OUT. The output from the simulation was as follows. 32) _____

1 0 0 0 1 0 0 1 0 0 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0 0 1 1 1 1 0 0 0 0 0 1 1 1 1

Estimate the probability that he gets a hit.

A) 0.286 B) 0.476 C) 0.301 D) 0.452

33) On a multiple choice test with 17 questions, each question has four possible answers, one of which is correct. For students who guess at all answers, find the mean for the number of correct answers. 33) _____

A) 12.8 questions B) 4.3 questions C) 5.7 questions D) 8.5 questions

34) Find the variance for the given sample data. Round your answer to one more decimal place than the original data. 34) _____

7 7 2 5 1

A) 7.8 B) 6.2 C) 11.8 D) 7.7

35) Determine whether the given value is from a discrete or continuous data set. The time it takes a computer to complete a task. 35) _____

A) Continuous B) Discrete