Note: For all questions, answer "E) NOTA" means none of the above answers is correct.

1. Find the arithmetic mean of the following set of data:

34, 23, 28, 89, 19, 52, 33, 70, 96, 92

A) 53.6 B) 43 C) 53 D) 54 E) NOTA

2. Dr. Sleet's Statistics class took their midterm exam last week. Their scores were normally distributed with a mean of 72 and a standard deviation of 6. A student was randomly selected. Find the probability that the student scored greater than 88, given that the student scored greater than 78. Round your answer to four decimal places.

A) .0038 B) .0045 C) .0241 D) .1587 E) NOTA

3. Given the following information about the random variables A and B:

$$\mu_A = 65,\ \sigma_A = 5,\ \mu_B = 92,\ \sigma_B = 12$$

Find the mean T and standard deviation L of the random variable $A - B$. Express your answer as an ordered pair (T, L).

A) (27, 17) B) (27, 13) C) (-27, 17) D) (-27, 13) E) NOTA

4. In November, Rick Scott will be running for Governor of Florida. He asks his campaign manager to break down the state by ethnicity to determine his chances of winning. The state breakdown is: 60% White, 18% Hispanic, 17% African American and 5% Asian. The voters for Rick Scott by ethnicity are: 65% White, 40% Hispanic, 25% African American and 30% Asian. From these results, what percentage of Florida voters should Rick Scott expect to get?

A) 40% B) 48.05% C) 51.95% D) 60% E) NOTA

5. Of the following statistical measures: (mean, median, standard deviation, correlation. Coefficient of determination, interquartile range), how many of them are resistant measures?

A) One B) Two C) Three D) Four E) NOTA

6. Mr. May wants to know the students' opinions about when to schedule pep rallies at Smith High. He breaks down the student body into grade levels (9-12) and then randomly selects 75 students from each grade level. Which of the following best describes the type of sampling Mr. May performed?

A) simple random sample B) systematic sample C) multi-stage sample

D) stratified sample E) NOTA

7. Given the following data: $\bar{x} = 71,\ \sigma_x = 5,\ \bar{y} = 92,\ \sigma_y = 7,\ r = .82$. Find the equation of the least squares regression line in slope-intercept form.

A) $y = \frac{287}{250}x + \frac{2623}{250}$ *B)* $y = \frac{287}{250}x - \frac{4327}{125}$ *C)* $y = \frac{41}{70}x + \frac{3529}{70}$ *D)* $y = \frac{41}{70}x + \frac{599}{35}$ *E) NOTA*

8. Suppose that 3% of batteries made by a company are defective. From a random sample of 600 batteries, the probability that at least 12 batteries are defective, when rounded to four decimal places, is equal to P. Find the sum of the digits of $\lfloor 10000P \rfloor$ when expressed in base 10. Recall that $\lfloor x \rfloor$ denotes the greatest integer less than or equal to x.

A) 24 B) 25 C) 26 D) 27 E) NOTA

9. Find the standard deviation of the following distribution to two decimal places.

Grade	1	2	3	4	5	6	7
Probability	.14	.16	.12	.20	.13	.11	.14

A) 3.84 B) 2.98 C) 2.16 D) 1.96 E) NOTA

10. Let Z denote the set whose members are the first smallest eight positive prime integers. Let A = the smallest element in Z, B = the median of the set Z, and C = the largest element in Z. Find the discriminant of $Ax^2 + Bx + C = 0$.

A) 233 B) -32 C) -71 D) 104 E) NOTA

Use the following information to answer Questions 11 and 12.

The following are the science classes for the senior class at Smith Academy: 32 students take Biology, 39 students take Chemistry and 40 students take Physics. Eighteen students take Biology only, 12 take Chemistry only and 10 take Physics only. Three students take all three classes. Every student takes at least one science class.

11. How many students are in the senior class at Smith Academy?

A) 77 B) 74 C) 71 D) 68 E) NOTA

12. What is the probability that a randomly selected student (that's a senior) studies Biology, given that the student does not study Chemistry?

A) $\frac{5}{7}$ *B)* $\frac{17}{35}$ *C)* $\frac{25}{44}$ *D)* $\frac{17}{44}$ *E) NOTA*

13. A box contains a shipment of 100 *Pokemon Y* game cartridges. It is known that exactly 36% of the cartridges are defective and the rest are fully functional. Twenty-five cartridges are drawn from this box without replacement. Let the random variable X equal the number of *Pokemon Y* cartridges that are defective. Calculate the standard deviation of X, to three decimal places.

A) 1.375 B) 1.819 C) 2.256 D) 2.089 E) NOTA

14. The results of an Algebra test are normally distributed. Suppose that 6.55% of the scores are less than 63 and 7.92% of the scores are greater than 91. Round the z-scores needed to solve the problem to two decimal places. Find the mean of the distribution, rounded to two decimal places.

A) 77.00 B) 77.01 C) 77.47 D) 77.48 E) NOTA

15. From a standard deck of 52 cards (no jokers), you are dealt a five-card hand. Find the probability that you get a flush.

$A)\ \frac{33}{66640}$ $B)\ \frac{33}{16660}$ $C)\ \frac{1}{649740}$ $D)\ \frac{6}{4165}$ $E)\ NOTA$

16. Given the following statistical measures: Mean, Median, Standard Deviation, Variance, Range, Interquartile Range. How many of these measures are always positive?

A) One B) Two C) Three D) Four E) NOTA

17. In a histogram of 1000 scores, the mean is 80 and the median is 96. The distribution of the histogram is:

A) symmetric B) skewed to the right C) skewed to the left

D) uniform E) NOTA

18. Mrs. Andrade's Algebra 2 class took a test on conic sections last week. The mean score of the test was a 68 with a standard deviation of 12. Mrs. Andrade transformed the scores using linear transformations so that the mean was 75 with a standard deviation of 8. John scored an 80 on the test. Find the value of John's transformed score.

A) 83 B) 85 C) 87 D) 89 E) NOTA

19. Sugar content is being measured in cups of yogurt. A random sample of 25 yogurt cups is chosen. The mean sugar content is 18.2 grams with a standard deviation of 1.55 grams. Based on this sample, calculate the 95% confidence interval for the mean content, in grams, of sugar for all cups of yogurt. Round the numbers in your confidence interval to two decimal places.

A) (17.59, 18.80) B) (17.59, 18.81) C) (17.56, 18.84) D) (17.56, 18.85) E) NOTA

20. Suppose that 2% of students at Smith High have a disease. All the students at Smith High are tested. Ninety-three percent of students who have the disease test positive, while 3% of those students who do not have the disease test positive. Given that a student tests positive, find the probability that they have the disease.

A) $\frac{49}{80}$ *B)* $\frac{31}{80}$ *C)* $\frac{3}{5}$ *D)* $\frac{2}{5}$ *E) NOTA*

21. Given the following: $P(A) = \frac{3}{8},\ P(B) = \frac{40}{73},\ P(A \mid B) = \frac{1533}{4000}$. Find $P(B' \mid A')$.

A) $\frac{73}{200}$ *B)* $\frac{4934}{9125}$ *C)* $\frac{127}{200}$ *D)* $\frac{4191}{9125}$ *E) NOTA*

22. Given the following information: $y = \frac{3}{5}x + 75, \bar{x} = 85, \bar{y} = 126, s_x = 12, s_y = 20$, find the value of the coefficient of determination.

A) .1296 B) .16 C) .36 D) 1 E) NOTA

23. Suppose that 85% of honors students participate in clubs afterschool. One-hundred twenty-five honors students are randomly selected. Find the standard deviation for the number of honors students who participate in clubs. Round your answer to two decimal places.

A) 3.21 B) 3.99 C) 10.31 D) 15.94 E) NOTA

24. The following is information about the SAT Math scores of Florida high school students based on a simple random sample of 750 students. The hypotheses are $H_0:\ \mu = 500,\ H_a: \mu > 500$. Assume that the population standard deviation is $\sigma = 75$. The test rejects H_0 at the 5% level of significance. Assume that the standardized score needed is rounded to two decimal places. Calculate the power of the test against the alternative $\mu = 505$. Round your answer to four decimal places.

A) .5697 B) .5698 C) .5736 D) .5737 E) NOTA

25. An experiment is to be conducted to compare three new types of dog food with normal dog food. The purpose of the experiment is to compare weight gain of dogs fed each type of dog food. The scientists mix dog food diets using each type of dog food at each of two calcium levels, 5% calcium and 10% calcium. They feed each diet to 20 dogs and record their weight gain after 30 days. Find the number of treatments in this experiment.

A) 3 B) 4 C) 6 D) 8 E) NOTA

26. Find the standard deviation of the following data set:

65, 70, 2, 11, 79, 37, 51, 49, 91, 45

A) $\frac{32\sqrt{7}}{3}$ B) $\frac{16\sqrt{70}}{5}$ C) $\frac{28221}{1000}$ D) $\frac{705533683}{25000000}$ E) *NOTA*

27. An automobile plant wants a report of the mean cars produced for the day accurate to within ± 50 with 95% confidence. How large a sample of cars must be measured to comply with this request, given that the standard deviation of all cars produced per day is 300? Round the standardized score needed for the problem to two decimal places.

A) 11 B) 12 C) 138 D) 139 E) NOTA

28. In the following table, what value for n results in a table showing perfect independence?

n	30
18	112.5

A) 4.8 B) 53.5 C) 67.5 D) 100.5 E) NOTA

29. Bill loves picking M+M's out of Mr. Sleet's candy jar. One day, there are 10 blue, 6 green and 8 red M+M's in the jar. Bill chooses a random M+M, one at a time, with replacement, until a blue M+M is chosen. Find the mean and standard deviation for this situation. Round the mean to one decimal place and standard deviation to two decimal places. Answers are in the form (mean, standard deviation).

A) (2.4, 3.36) B) (2.4, 2.42)

C) (2.4, 1.83) D) (1.2, 3.36) E) NOTA

30. At the greatest Florida university, FSU, there are 17,562 men and 19,368 women. If 12% of the men and 16% of the women are education majors, what is the expected number of education majors in a random sample of 250 students from FSU? Round your answer to the nearest number of students.

A) 35 B) 36 C) 41 D) 70 E) NOTA