

Assume answers with decimals are rounded. ANSWER (e) IS ALWAYS "None of (a), (b), (c), (d) is correct." Answer all questions. Use 882E Scantron. Do not write on this sheet - return it & your scratch paper with your Scantron.

- 1.) Which of the following statements is correct? (b) The standard deviation is a measure of dispersion.
- 2.) Which of the following types of graphs would NOT be appropriate for quantitative data?  
(d) Pareto
- 3.) Given the data 23, 45, 50, 70, 92, 80, 50, 31, the third quartile is (d) 75
- 4.) Given the data 23, 70, 32, 88, 50, 31, the **median** is (b) 41
- 5.) Find the median for the following frequency distribution: (d) 4.5

x	2	3	4	5
f	5	10	15	30

- 6.) Let  $x$  be normal with  $\sigma = 12$ . We want to find a 96% confidence interval for  $\mu$ , with the maximum error of the estimate 5, or less. Find the minimum sample size,  $n$ , needed to achieve this. (d) 25
- 7.) A sample has mean 5.2 and standard deviation 1.5. If 4 is multiplied by each number in the sample, the new set of data has (c) mean 20.8, S.D. 6.0
- 8.) Find a value of  $k$ , so that by Chebyshev's Theorem, at least 88% of the data must be within  $k$  standard deviations of the mean. (a)  $k = 2.887$
- 9.) Given the data (1, 2), (2, 9), (3, 11), (5, 10) the line of best fit is  
(b)  $y = 1.714x + 3.286$
- 10.) Given the data (1, 2), (2, 9), (3, 11), (5, 10)  $SS(xy)$  is (d) 15
- 11.) Given the data (1, 2), (2, 9), (3, 11), (5, 10) the correlation coefficient is  
(d) positive, but less than 1
- 12.) 25% of the trees in a forest are diseased. 70% of the trees are over 10 ft. 90% are diseased OR over 10 feet. What percent of the trees are diseased AND over 10 ft? (a) 5%
- 13.) 60% of our parts come from supplier A, 40% from supplier B. 3% of A parts are defective, and 5% of B parts are defective. The overall rate of defectives is (a) 3.8%
- 14.) 60% of our parts come from supplier A, 40% from supplier B. 3% of A parts are defective, and 5% of B parts are defective. The probability a defective part is from supplier B is (b) 10/19

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- 15.) Find the standard deviation for the following probability distribution: (b) 1.4457

x	1	3	4	5
p	0.3	0.4	0.1	0.2

- 16.) For the binomial distribution with  $n = 46$  and  $p = 1/4$ , which values of  $x$ , the number of successes, lie between  $\mu - 2\sigma$  and  $\mu + 2\sigma$ ? (b) 6 through 17, only
- 17.) For the binomial distribution with  $n = 46$  and  $p = 1/4$ , find the probability of 11 successes. (a) 0.13479
- 18.) For the binomial distribution with  $n = 46$  and  $p = 1/4$ , find the probability of 10 to 20 successes, inclusive. (b) 0.74502
- 19.) A machine produces gaskets whose thickness is normally distributed with mean 2.50 mm, and standard deviation 0.04 mm. Find the probability that the thickness of a randomly chosen gasket exceeds 2.515 mm. (b) 0.35383
- 20.) A machine produces gaskets whose thickness is normally distributed with mean 2.50 mm, and standard deviation 0.04 mm. Find the probability that the mean thickness of a sample of size 10 exceeds 2.515 mm. (c) 0.11784
- 21.) A machine bakes loaves whose size is normally distributed with standard deviation 0.015 oz. A sample of size 25 has a mean size of 16.2 oz. Find the 90% confidence interval for the mean size of all loaves. (e) 16.195 oz to 16.205 oz
- 22.)  $C(11, 6)$  is (d) 462
- 23.) An urn contains 6 red marbles, 5 white and 7 blue. One at a time is drawn, without replacement. Find the probability of a red marble on the third draw, after one white and one blue. (a)  $3/8$
- 24.) Given the data 23, 45, 50, 70, 92, 80, 50, 31, the **depth** of the third quartile is (c) 6.5
- 25.) A machine produces gaskets which are to be between 2.46 mm and 2.54 mm in thickness. Assume the thickness of the gaskets is normally distributed with mean 2.50 mm. What should the standard deviation be so that only 1% of the gaskets fail to be the specified thickness? (a) 0.01553 mm
- 26.) A machine produces bolts whose length is normally distributed. A sample of size 10 has a mean length of 9.00 cm, and sample standard deviation of 0.05 cm. Find the 90% confidence interval for the mean length of all bolts. (a) 8.971 cm to 9.029 cm