

STA 2023 Test #2 Practice Multiple Choice

1. Items produced by a manufacturing process are supposed to weigh 90 grams. The manufacturing process, however, is such that there is variability in the items produced and they do not all weigh exactly 90 grams. The distribution of weights can be approximated by a normal distribution with mean 90 grams and a standard deviation of 1 gram. What percentage of the items will either weigh less than 87 grams or more than 93 grams?
A) 6%
B) 94%
C) 99.7%
D) 0.3%
2. What is the area under the standard normal curve corresponding to $Z < 2.85$?
A) .0022
B) .4978
C) .9978
D) .6103
3. A market research company employs a large number of typists to enter data into a computer. The time taken for new typists to learn the computer system is known to have a normal distribution with a mean of 90 minutes and a standard deviation of 18 minutes. The proportion of new typists that take more than two hours to learn the computer system is
A) 0.952.
B) 0.548.
C) 0.048.
D) 0.452.
4. The distribution of actual weights of 8.0 oz. chocolate bars produced by a certain machine is normal with a mean of 8.1 oz. and a standard deviation of 0.1 ounces. The proportion of chocolate bars weighing under 8.0 oz. is
A) 0.500.
B) 0.159.
C) 0.341.
D) 0.841.
5. The scores on a university examination are normally distributed with a mean of 62 and a standard deviation of 11. If the top 15% of students are given A's, what is the lowest mark that a student can have and still be awarded an A?
A) 51
B) 74
C) 90
D) 93

6. Let X denote the time taken for a computer link to be made between the terminal in an executive's office and the computer at a remote factory site. It is known that X has a normal distribution with a mean of 15 seconds and a standard deviation of 3 seconds. On 90% of the occasions the computer link is made in less than
- A) 19.39 seconds.
 - B) 15.95 seconds.
 - C) 11.16 seconds.
 - D) 18.84 seconds.
7. A soft-drink machine can be regulated so that it discharges an average of μ ounces per cup. If the ounces of fill are normally distributed with a standard deviation of 0.4 ounces, what value should μ be set at so that 6-ounce cups will overflow only 2% of the time?
- A) 6.82
 - B) 6.00
 - C) 5.18
 - D) 5.60
8. As part of a promotion for a new type of cracker, free trial samples are offered to shoppers in a local supermarket. The probability that a shopper will buy a packet of crackers after tasting the free sample is 0.20. Different shoppers can be regarded as independent trials. If X is the number of the next 100 shoppers that buy a packet of the crackers after tasting a free sample, then the probability that X exceeds 20 is approximately
- A) 0.2000
 - B) 0.2266
 - C) 0.5000
 - D) 0.7734
9. A random sample of size 25 is to be taken from a population which is normally distributed with mean 60 and standard deviation 10. The average \bar{x} of the observations in our sample is to be computed. The sampling distribution of \bar{x} is
- A) normal with mean 60 and standard deviation 10.
 - B) normal with mean 60 and standard deviation 2.
 - C) normal with mean 60 and standard deviation 0.4.
 - D) normal with mean 12 and standard deviation 2.
10. A famous result says that in many situations for large sample sizes the sampling distribution of the sample mean is approximately normal. This famous result is
- A) the law of large numbers.
 - B) the central limit theorem.
 - C) the multiplication rule.
 - D) the 68-95-99.7 rule.