Elementary Statistics: Quiz 6: The Normal Distribution[*]

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Abstract

This module is a quiz containing 10 multiple choice questions covering topics related to the normal distribution. This module is part of a set of companion resources to Collaborative Statistics (col10522) by Barbara Illowsky and Susan Dean.

Exercise 1
Given X ∼ N (300, 15), find P(280 < X < 340).

   A. 0.2000
   B. 0.7460
   C. 0.9050
   D. 0.9999

Exercise 2
Given X ∼ N(300, 15), find the 70th percentile.

   A. 0.5244
   B. 210.00
   C. 307.87
   D. 324.96

Exercise 3
Given X ∼ N(300, 15), what can be said of the median?

   A. The mode = median and the mode = the mean.
   B. It is the same as the mode.
   C. It is less than the average.
   D. It is the same as the average.

Exercise 4
Given X ∼ N(300, 15), the area to the right of x = 330...

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[*]Version 1.2: Oct 24, 2008 7:06 pm -0500
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A. is the same as the area to the right of z = 2.
B. P(X > 330) is the same as the area to the right of z = 2 AND to the left of X = 270.
C. is the same as the area to the left of x = 270.
D. is the same as the area to the left of x = 330.

Exercise 5
Given $X \sim N(300, 15)$, find the Interquartile Range (IQR).

    A. 0.50
    B. 310.12
    C. 20.24
    D. 289.99

Exercise 6
Given $X \sim N(300, 15)$, find the z-score associated with x = 290.

    A. 15/10
    B. -10
    C. 10/15
    D. -10/15

Exercise 7
For what do we use z-scores?

    A. Because of the use of technology, there is no longer any use for z-scores.
    B. to standardize scores from two or more different normal distributions so that we may compare the scores.
    C. to help us calculate uniform and exponential probabilities.
    D. to make our calculations easier because the mean = 0.

Exercise 8
Given that $X \sim N(10, 2)$, X > 20...

    A. cannot happen.
    B. can happen 1/5 of the time.
    C. is very unlikely to occur.
    D. we cannot determine its probability.

Exercise 9
Given that $X \sim N(10, 2)$ and Y follows the Exponential Distribution with a mean of 10, which of the following are correct?

    A. The median for Y is greater than the median for X.
    B. The median for Y is less than the median for X.
    C. The percentiles for X and Y are also equal.
    D. The median for X and Y are also equal.

Exercise 10
For data that is normally distributed, is it possible for the standard deviation to be larger than the mean?

    A. No.
    B. Yes.
    C. There is not enough information to determine.