

Math Virtual Learning

AP stats / Normal Curve Calculations Review

April 30, 2020



Lesson: April 30, 2020

Objective/Learning Target:

Students will review the use of z-scores and the standard normal distribution table (z-table).

Review #1

Suppose that the scatterplot of $\log X$ and $\log Y$ shows a strong positive correlation close to 1. Which of the following is true?

1. The variables X and Y will also have a correlation close to 1
2. A scatterplot of the variables X and Y will show a strong nonlinear pattern
3. The residual plot of the variables X and Y will show a random pattern

Review #2

When there are multiple gaps and clusters, which of the following is the best choice to give an overall picture of a distribution?

- a. Mean and Standard Deviation
- b. Median and IQR
- c. Boxplot with its five number summary
- d. Stemplot of histogram
- e. None of the above

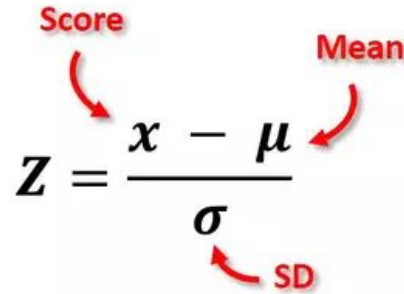
Answers

#1 - Only number 2 is true. If the transformed variables display a strong linear transformation, then the untransformed variables will not display a strong linear pattern. Instead they will show a strong curved pattern

#2 - Stemplots and histograms are able to communicate where the gaps are at, while the other calculations and plots listed tend to overlook these properties.

Standardized scores

Recall that we can standardize any distribution by using the formula:

$$Z = \frac{x - \mu}{\sigma}$$


The diagram shows the formula $Z = \frac{x - \mu}{\sigma}$ with three red labels and arrows: 'Score' with an arrow pointing to x , 'Mean' with an arrow pointing to μ , and 'SD' (Standard Deviation) with an arrow pointing to σ .

This works for both normal and non-normal distributions. However, when normal, we can convert these scores into percentiles.

Using z-scores and z-tables

We have been using standardized scores for a while. We calculate them all the time when conducting inference. However, it is still a good idea to review them. Please watch the video below and follow along with the questions.

[Normal Curve Calculations](#)

Extra Practice!

Here is a copy of some practice cards. The answers will be printed on the back. They are meant to be cut out and shuffled. Then pick one, any one, and solve it. Find the answer on the back of one of the other problems and solve it. Continue until you have solved all the problems. If done right you should not have to repeat any problems to find all the answers.

[Normal Probability Cards](#)