

Z-scores

Z-score- Indicates how many standard deviations a data value is above or below the mean. The process of finding the z-scores is called standardizing or normalizing.

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

The data from the Ch. 8 Geometry test scores are as follows: 89, 97, 90, 98, 60, 77, 77, 100

What is the z-score for an 89?

Step One: Find the mean.

$$\mu = \underline{\hspace{2cm}}$$

Step Two: Find the standard deviation.

$$\sigma = \underline{\hspace{2cm}}$$

Step Three: Find the z-score

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

$$z = \underline{\hspace{2cm}}$$

What is the z-score for a 60?

What is the z-score for a 100?

$$z = \underline{\hspace{2cm}}$$

$$z = \underline{\hspace{2cm}}$$

Amy took the ACT and got a score of 27 with a mean of 21 and a standard deviation of 5.3. Stephanie took the SAT and got a score of 660 with a mean of 515 and a standard deviation of 116. Which student scored higher?

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data
← mean

← standard deviation

The data from the Ch. 8 Geometry test scores are as follows: 89, 97, 90, 98, 60, 77, 77, 100

What is the z-score for an 89?

Step One: Find the mean.

$$\mu = \underline{80}$$

Step Two: Find the standard deviation. * Notice this is in the calculator! Labeled σx

$$\sigma = \underline{12.80}$$

Step Three: Find the z-score

$$z = \frac{x - \mu}{\sigma} \quad \frac{89 - 80}{12.80}$$

$$z = \underline{0.23}$$

What is the z-score for a 60?

$$\frac{60 - 80}{12.80}$$

$$z = \underline{-2.02}$$

What is the z-score for a 100?

$$\frac{100 - 80}{12.80}$$

$$z = \underline{1.09}$$

Amy took the ACT and got a score of 27 with a mean of 21 and a standard deviation of 5.3. Stephanie took the SAT and got a score of 660 with a mean of 515 and a standard deviation of 116. Which student scored higher?

Amy's z-score

$$\frac{27 - 21}{5.3} = 1.13$$

Stephanie's z-score

$$\frac{660 - 515}{116} = 1.25$$

Stephanie scored higher!