



Math Virtual Learning

Probability and Statistics

April 27, 2020



Probability and Statistics

Lesson: April 27, 2020

Objective/Learning Target:

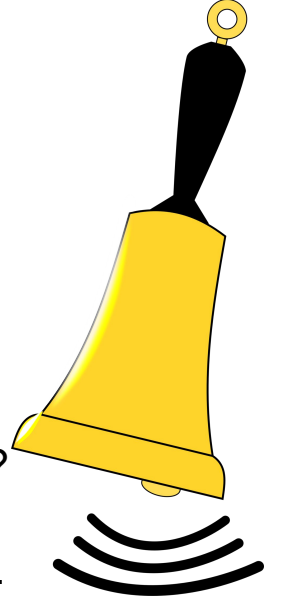
Students will be able to calculate a Z-Score and Percentile above, below, and between given data points or find the data point from a given Percentile.

Let's Get Started!

Use the [Z Score to Percentage](#) Conversion Chart to answer the following questions

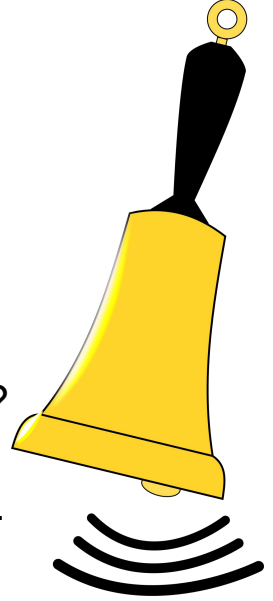
Three students take equivalent stress tests. Which is the highest relative score?

- A. A score of 144 on a test with a mean of 128 and a standard deviation of 34.
- B. A score of 90 on a test with a mean of 86 and a standard deviation of 18.
- C. A score of 18 on a test with a mean of 15 and a standard deviation of 5.



Let's Get Started!

Use the [Z Score to Percentage](#) Conversion Chart to answer the following questions



Three students take equivalent stress tests. Which is the highest relative score?

A. A score of 144 on a test with a mean of 128 and a standard deviation of 34.

$$\text{Z-Score} = .47$$

$$\text{Percentile (from Chart)} = .6808 = 68.08\%$$

B. A score of 90 on a test with a mean of 86 and a standard deviation of 18.

$$\text{Z-Score} = .22$$

$$\text{Percentile (from Chart)} = .5871 = 58.71\%$$

C. A score of 18 on a test with a mean of 15 and a standard deviation of 5.

$$\text{Z-Score} = .60$$

$$\text{Percentile (from Chart)} = .7257 = 72.57\%$$

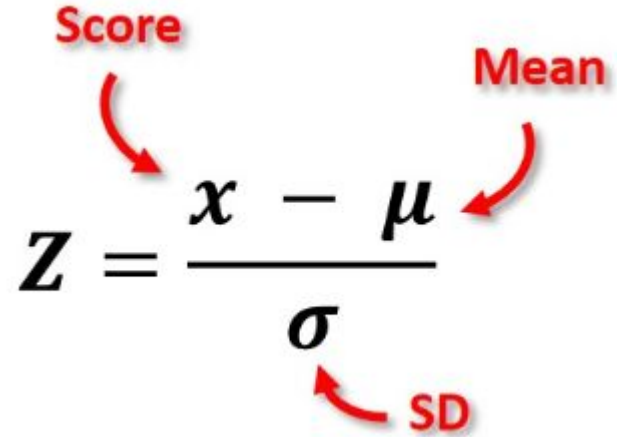
Final Answer: Student C has the highest relative score at 72.57%

Practice makes perfect...

Today you are going to practice what we have learned over the past 3 days.

Feel free to look back at the lessons from last week if you need a refresher.

You will need the items at the right to complete the practice questions ----->

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


The diagram shows the Z-score formula with three red labels and arrows pointing to the variables: 'Score' points to x , 'Mean' points to μ , and 'SD' (Standard Deviation) points to σ .

[Z-Score to Percent Chart](#)

Click on the link below to open the practice questions:

[Z-Score and Percentile Practice](#)

Practice **ANSWERS**

1)

- a) 2
- b) -1
- c) 1.5
- d) -3

2)

- a) 31.92%
- b) 98.75%

3)

- a) 59.10% below, so 40.9% above
- b) 1.92% below, so 98.08 above

4)

- a) 1.17 = 87.90% mean = 50%, area BETWEEN mean and 1,17 = 37.90%
- b) - 1.37 = 8.53% mean = 50%, area BETWEEN mean and - 1.37 = 41.47%

5) 8.08%

6) 93.7%

7) Pat = 76 = 30.85%
Chris = 94 = 95.99%
BETWEEN is 65.14%

8)

- a) 28 = 12.10%, 38 = 69.15%, so between is 57.05%
- b) 41 = 84.13%, 44 = 93.32%, so between is 9.19%
- c) 37.31
- d) 42.71

9)

- a) 604
- b) Find the Z-Scores: - 1.28 to 1.28

10)

- a) .52
- b) .25
- c) - 0.67