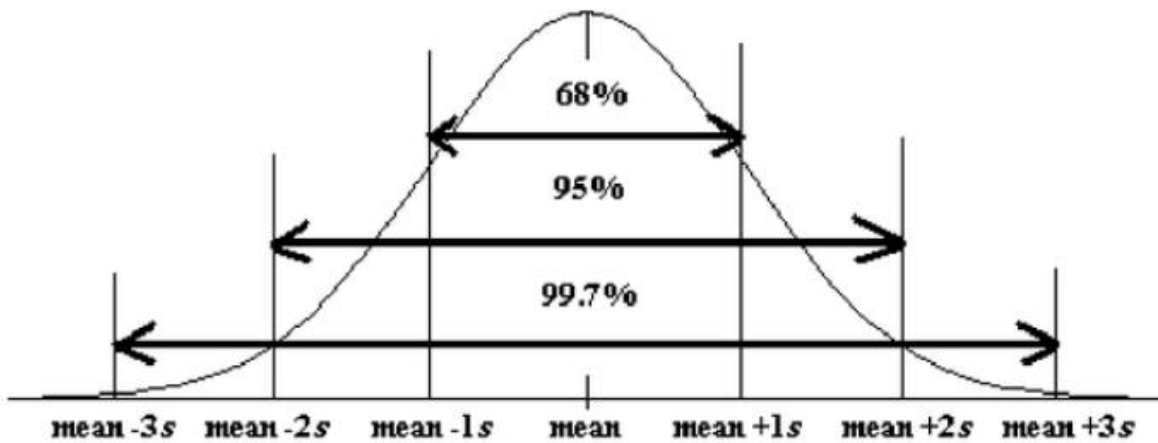


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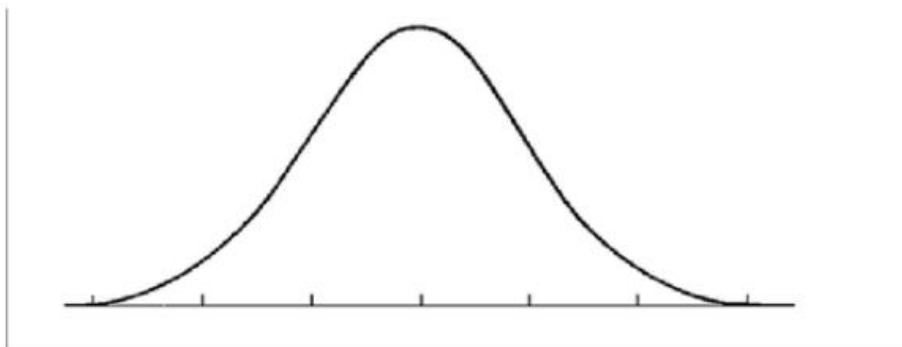
I- Empirical Rule

The Empirical Rule For Normal Distributions (a.k.a. the 68-95-99.7 Rule)



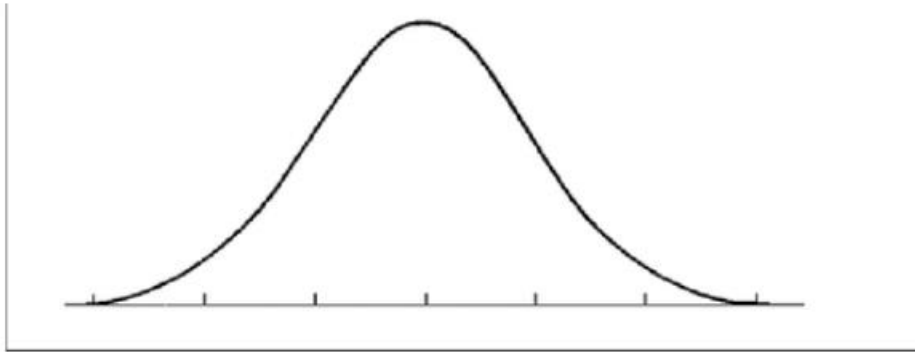
We use the Empirical Rule to analyze data when original values are unknown.

Example 1: Suppose the scores on a test are normally distributed, that the mean score is 80 and the standard deviation is 7. Draw a normal curve to represent this scenario.



- What percent scored less than 87?
- What percent scored less than 73?
- What percent scored more than 94?
- 2.5% scored less than what value?

Example 2: Given the times required for a group of students to complete the physical fitness obstacle course result in a normal curve, and that the mean time 21 minutes and the standard deviation is 4.



- a. What percent took longer than 29 minutes?
- b. What percent took less than 29 minutes?
- c. What percent took between 13 and 29 minutes?
- d. What percent took between 13 and 25 minutes?
- e. What percent took longer than 17 minutes?

II – Applications

Exercises

1. A set of data with a normal distribution has a mean of 50 and standard deviation of 10.
 - a. 68% of the data is between what two numbers?
 - b. 95% of the data is between what two numbers?

2. A set of data with a normal distribution has a mean of 35 and standard deviation of 5.
 - a. 68% of the data is between what two numbers?
 - b. 95% of the data is between what two numbers?
 - c. About what percent of the population (data) is above 40?