Density Curves – the total area under a curve is equal to 1. We have already looked at some density curves.

Symmetric Skewed left Skewed right Uniform

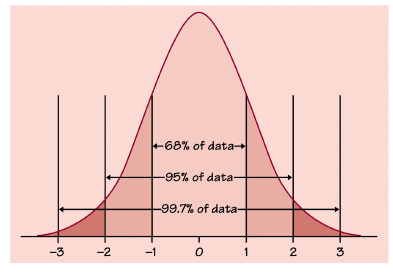
Normal Curves – density curves that are symmetric, single-peak, and bell shaped (also known as normal distributions)

Examples of normal distributions:

1. Scores on tests taken by many people (SAT, ACT)
2. Repeated, careful measurements of the same quanitity (diameter of a baseball)
3. Characteristics of biological populations (yield of corn, length of animal pregnancy)

Normal Distributions have the following properties:

1. Described by giving the mean and standard deviation
2. Mean is the center – located at the center of the symmetrical curve
3. Standard deviation determines the shape of the curve – distance from mean to change in curvature of points



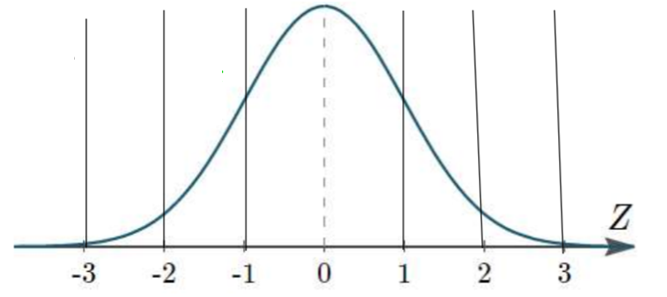
Empirical Rule (68-95-99 Rule)

68% fall within 1 SD

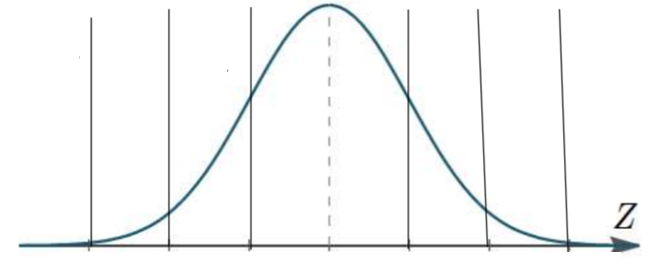
95% fall within 2SD

99.7% fall within 3SD

Further Breakdown:

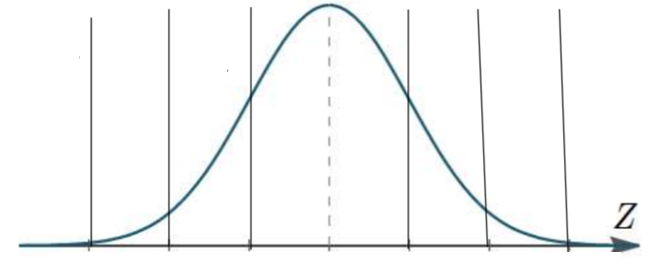


Example 1: Each portion of the SAT is designed to be approximately normal and have a mean of 500 and a standard deviation of 100



* 1. What percent of the students will score above 700?
  2. What percent of the students will score below 400?
  3. What percent of the students will score between 600 and 800?

Example 2: Two hundred students at State University took a Biology test. The scores were distributed normally with a mean of 70 and a standard deviation of 5.



1. What percentage of the scores are between 65 and 75?
2. What percentage of the scores are between 60 and 70?
3. What percentage of the scores are between 60 and 85?
4. What percentage of the scores are less than 55?
5. What percentage of the scores are greater than 80?
6. Approximately how many Biology students scored between 60 and 70? Less than 55?