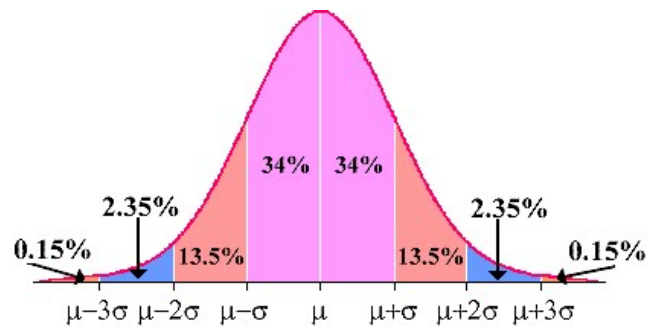


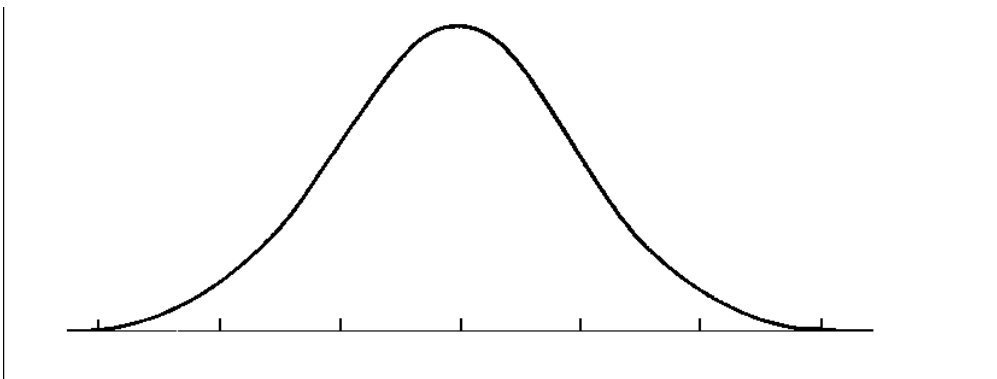
AP Readiness
Normal Calculations

THE EMPIRICAL RULE [68-95-99.7% Rule]

500 freshmen took an algebra test. The scores were distributed normally with a mean of 75 and a standard deviation of 7. Label the mean and three standard deviations from the mean



Draw a Picture



- What percentage of scores are between scores 61 and 82?
- What percentage of scores are between scores 75 and 82?
- What percentage of scores are between scores 61 and 89?
- What percentage of scores is less than a score of 61?
- What percentage of scores is greater than a score of 96?
- Approximately how many algebra students scored between 61 and 89?
- Approximately how many algebra students scored between 68 and 82?
- Approximately how many algebra students scored between 61 and 75?
- Approximately how many algebra students scored between 89 and 96?
- Approximately how many algebra students scored higher than 89?

AP Readiness

Normal Calculations

1. Use a [Z-Table](#) to Answer
2. Use a TI Calculator to Answer
3. Check with a Normal Calculator like [David Lane's Normal Calculator](#)

TI COMMANDS

normalcdf(lower, upper, mean, standard deviation)

Invnorm (%ile, mean, standard deviation)

Suppose that the IQ scores of students at a certain college follow a normal distribution with mean 115 and standard deviation 12.

- a. Draw a sketch of this distribution. Be sure to label the horizontal axis.
- b. Shade in the area corresponding to the proportion of students with an IQ below 100. Based on this shaded region, make an educated guess as to this proportion.
- c. Use the normal model to determine the proportion of students with an IQ score below 100.
- d. Find the proportion of these undergraduates having IQs greater than 130.
- e. Find the proportion of these undergraduates having IQs between 110 and 130.
- f. With his IQ of 75, what would the percentile of Forrest Gump's IQ be?
- g. Determine how high one's IQ must be in order to be in the top 1% of all IQs at this college.
- h. What IQ represents the lowest 10%?