2.5 Part 2

Empirical Rule
68%-95%-99.7%

If a data set has a bell shaped distribution then...

- ✓ About 68% of all values fall within 1 standard deviation of the mean
- ✓ About 95% of all values fall within 2 standard deviations of the mean
- ✓ About 99.7% of all values fall within 3 standard deviations of the mean

The Empirical Rule

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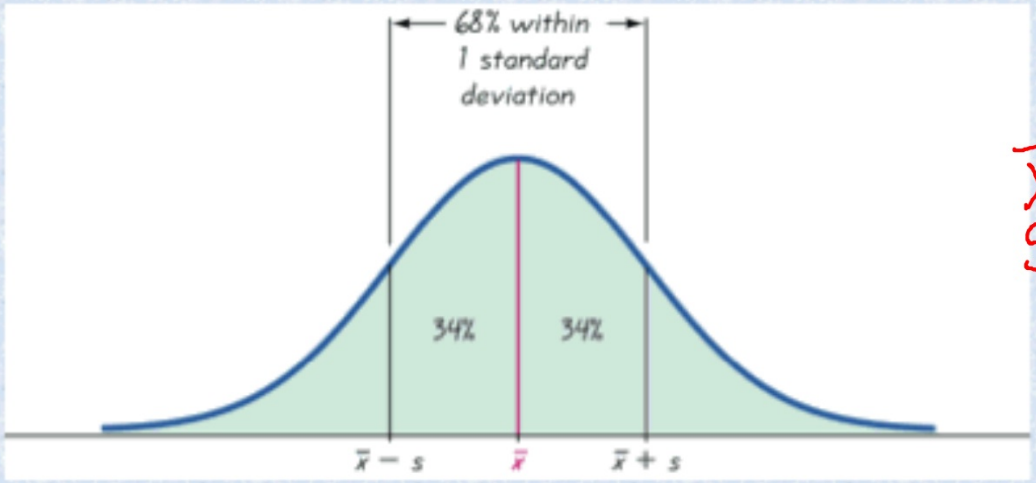
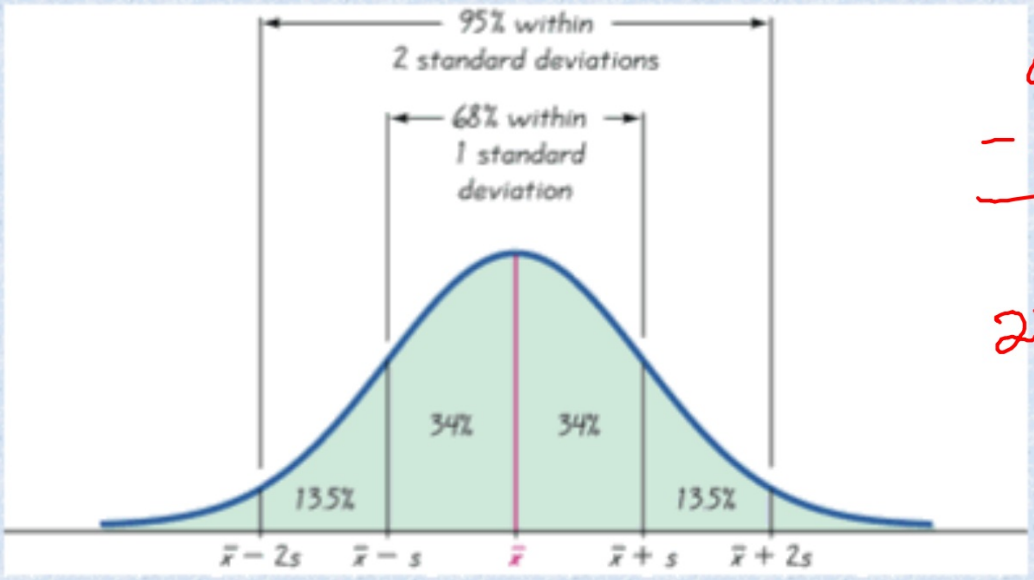


$\bar{x}$: mean
s : st. dev.

ONLY TRUE FOR BELL SHAPED DISTRIBUTIONS



95
−68
27%

27 ÷ 2
13.5%

100
−99.7
0.3%

99.7
−95.0
4.7÷2
2.35

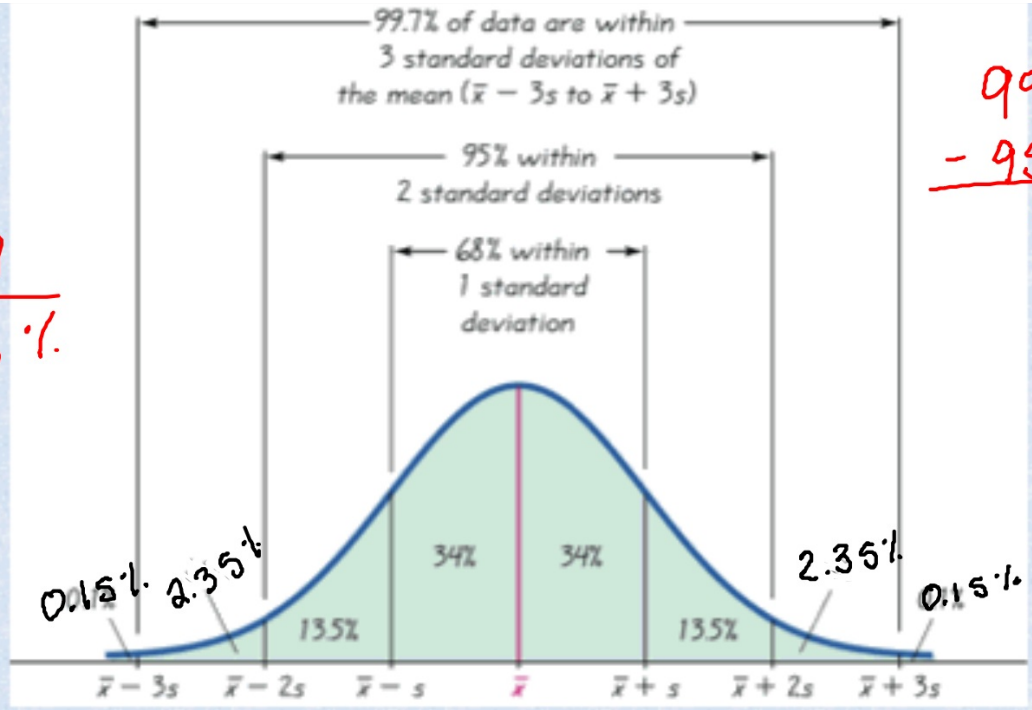


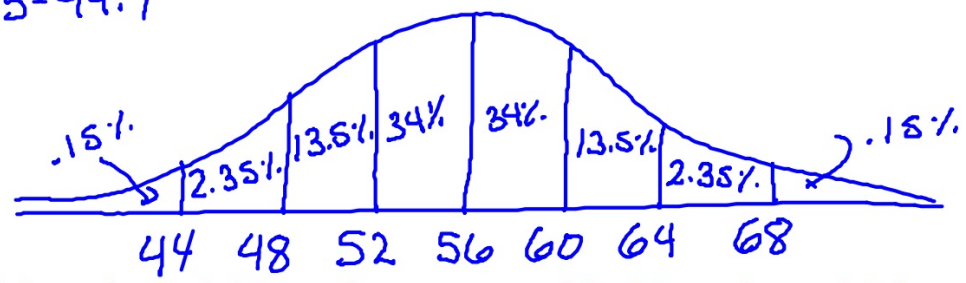
FIGURE 2-13

The mean speed of vehicles along a stretch of highway is 56 mph with a standard deviation of 4 mph. About what percent of the vehicles will be between a speed of

$\bar{x} = 56$

$s = 4$

68-95-99.7



a) 44 mph and 68 mph

99.7%

b) 48 mph and 64 mph

95%

c) 44 mph and 60 mph

83.85%

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25

The mean height of women in the U.S. is 64 inches with a standard deviation of 2.75 inches. Estimate the percent of the women whose heights are between:

a) 58.5 inches and 69.5 inches

b) 61.25 inches and 72.25 inches

c) 55.75 inches and 66.75 inches

d) more than 55.75 inches

The mean height of women in the U.S. is 64 inches with a standard deviation of 2.75 inches. Estimate the percent of the women whose heights are between:

a) 58.5 inches and 69.5 inches

95%

b) 61.25 inches and 72.25 inches

83.85%

c) 55.75 inches and 66.75 inches

83.85%

d) more than 55.75 inches

100 − .15 = 99.85%