TOPIC: INTERPRETING STANDARD DEVIATION
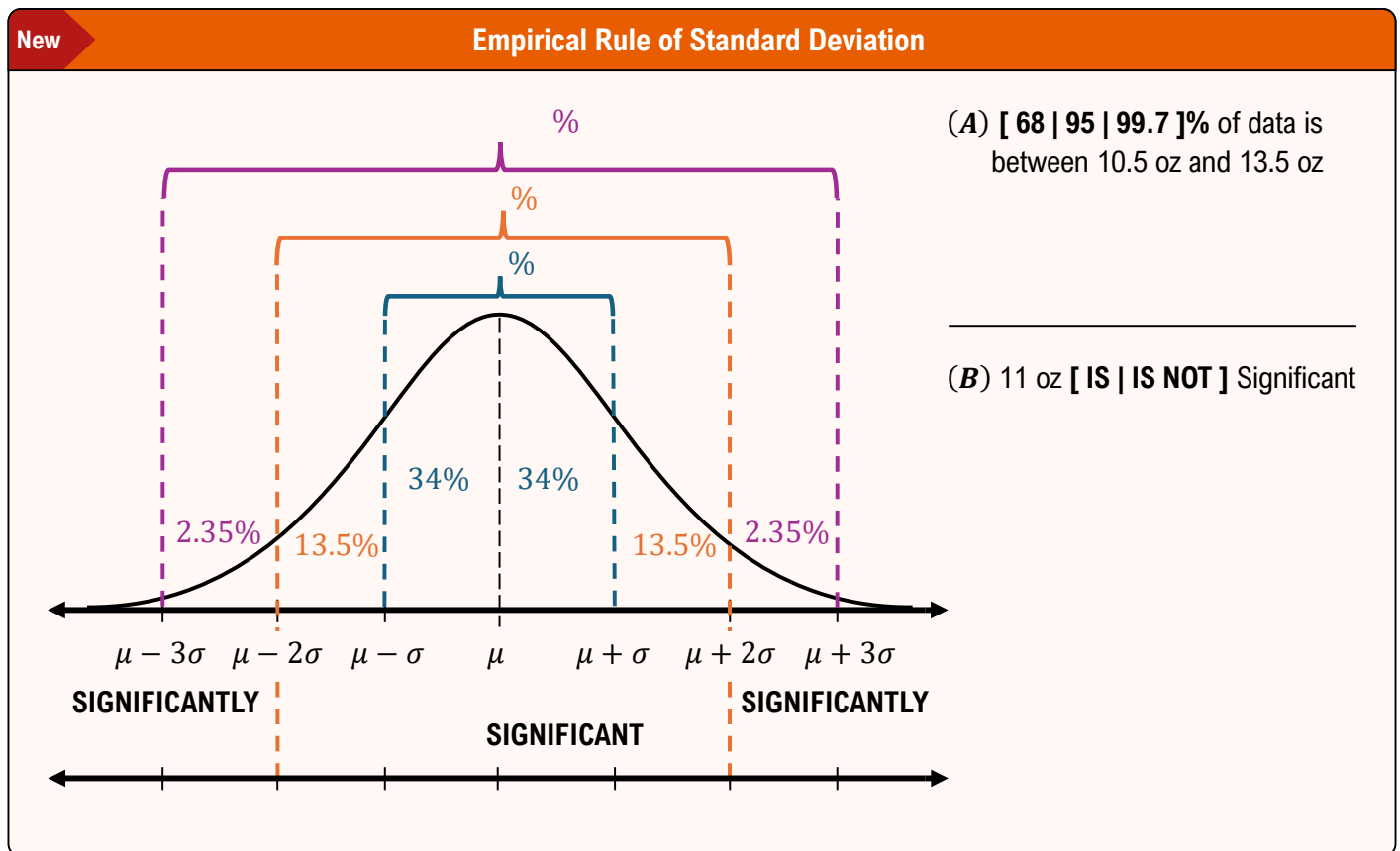
Empirical Rule of Standard Deviation

◆ **Empirical Rule of Standard Deviation** estimates _____ of data in interval for bell curves with std. dev.

▶ The **range rule of thumb** helps us to identify the range of values which are _____.

EXAMPLE	The mean weight of milk bottles at a company is 12 oz and the standard deviation is 0.5 oz. Use the empirical rule of standard deviation to answer the questions below.

New — Empirical Rule of Standard Deviation

%

%

%

(A) **[68 | 95 | 99.7]%** of data is between 10.5 oz and 13.5 oz

_____

(B) 11 oz **[IS | IS NOT]** Significant

34% | 34%

2.35% | 13.5% | 13.5% | 2.35%

$\mu - 3\sigma$ $\mu - 2\sigma$ $\mu - \sigma$ μ $\mu + \sigma$ $\mu + 2\sigma$ $\mu + 3\sigma$

SIGNIFICANTLY   **SIGNIFICANTLY**

SIGNIFICANT

PRACTICE

A sample of 500 random adult books in a library has an average of 312 pages with a standard deviation of 26 pages. Find the percentage of books in the sample with less than 338 pages using the Empirical Rule of Standard Deviation.

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A sample of 500 random adult books in a library has an average of 312 pages with a standard deviation of 26 pages. According to the Empirical Rule of Standard Deviation, find the central range of page lengths containing 95% of the books in the sample.

The average birth weight at a hospital is 6.5 lbs with a standard deviation of 1.4lbs. What is the lowest weight which would be considered significantly high?

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EXAMPLE

A sample of 250 wait times at a restaurant have a mean of 8 minutes with a standard deviation of 2 minutes 30 seconds. Use the Empirical Rule of Standard Deviation to answer the following questions.

(A) What percentage of wait times is between 3 minutes and 10 minutes 30 seconds?

_____

(B) What percentage of wait times is greater than 30 seconds?

_____

(C) The people with the highest 2.5% of wait times get a coupon to the restaurant. What is the minimum wait time to get the coupon?

EXAMPLE

After picking 200 songs at random, a student determines that songs typically range from 2.3 minutes to 4.7 minutes. Use the range rule of thumb to estimate the standard deviation of song length.