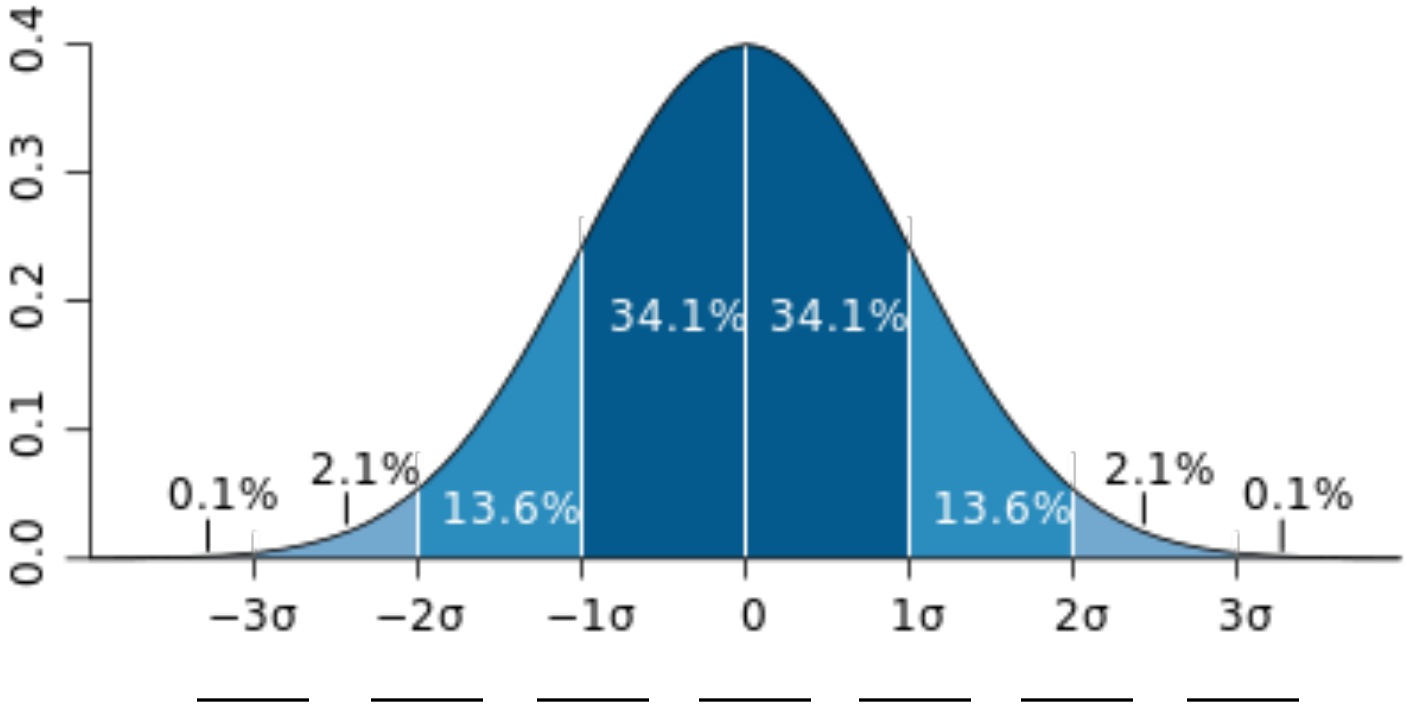
Name _____ Date _____ Period _____

Uncovering the Story Data Tells



https://en.wikipedia.org/wiki/Standard_deviation#/media/File:Standard_deviation_diagram.svg

The figure above shows a normal distribution. This is also referred to as the "Normal Curve" or Gaussian distribution. This only applies to continuous (measured) data and not to discrete (counted) data. There are many types of data, which follow the normal distribution in the natural and social sciences. Learning to tell the story of your data involves analyzing the standard deviation and standard error of the data you have collected.

Variable Measured (x) _____

x	$(x-\bar{x})$	$(x-\bar{x})^2$

Average or Mean of Data

$\bar{x} =$ _____ $=$

Sum of (trials minus mean) squared

$\sum(x-\bar{x})^2 =$ _____

_____
column total

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

s = sample standard deviation
$\sum$ = sum of …
$\bar{x}$ = mean or average of trials
n = number of measurement trials

$$s = \sqrt{\qquad\qquad} = \sqrt{\qquad\qquad} =$$

$$SE_{\bar{x}} = \frac{s}{\sqrt{n}}$$

$SE_{\bar{x}}$ = standard error

$$SE_{\bar{x}} = \frac{\qquad}{\sqrt{\qquad}} = \qquad\qquad =$$

Tell the Story

About 68% of the _____ (variable name) falls between the values of _____ (mean + 1σ) and _____ (mean - 1σ).
About 95% of the _____ (variable name) falls between the values of _____ (mean + 2σ) and _____ (mean - 2σ).
It is highly unlikely to find a value for the _____ (variable name) above _____ (mean + 3σ) or below _____ (mean - 3σ).
The mean of the _____ (variable name) could be off by as much as plus or minus _____ (standard error (SE)), based on the sample size collected.
The standard error of our group who collected five samples is _____ (SE (group)).
Compared to the standard error of the classes data combined which is _____ (SE (class)).
Explain why: _____

_____