**Vocabulary:** **Real-Time Histogram**



**Vocabulary**

* Absolute value – the distance of a number from zero.
	+ The symbol for absolute value is a pair of straight vertical brackets:
		- |*x*| is “the absolute value of *x*.”
	+ The absolute value of a number is always positive:
		- |-5| = 5.
		- |3| = 3.
* Error – the difference between an estimated, measured, or observed value and the true value.
	+ For example, if the true value is 2.00 seconds and the estimated value is 2.15 seconds, the error is 0.15 seconds.
	+ Error is a number showing how much higher or lower a value is from the actual value.
	+ Error can be calculated using the following formula:

error = observed value – actual value

* Histogram – a graph that shows how many data points are in each category.
	+ On a histogram, the *x*-axis is divided into equal categories.
	+ The *y*-axis shows how many values are in each category.
* Mean – the sum of a set of numbers divided by the number of items in the set.
	+ The mean of a set of numbers is also known as the set’s *average*.
	+ The symbol for the mean is *μ*.
	+ For example, the mean of 4, 4, 5, 7, and 10 is .
* Normal distribution – a data distribution that has a “bell” shape when graphed as a histogram.



**Normal distribution**

* + Many kinds of data will tend to have a normal distribution. For example:
		- Weight of adult men
		- Height of adult women
		- Distance that 10-year-old boys can throw a football
* Percent error – the difference between an estimated value and the true value, expressed as a percentage.
	+ To calculate percent error, divide the error by the true value and multiply by 100.
	+ For example, if the true value is 2.00 seconds and the estimated value is 2.15 seconds, the percent error is:



* Pulse – the regular expansion of an artery caused by the movement of blood.
	+ “Pulse” can also refer to the number of times an artery expands in 1 minute.
	+ The pulse can be observed by placing fingers on the side of the neck, the inside of the wrist, or the inside of the bicep.
* Range – the difference between the greatest and least value in a data set.
	+ For example, the range of the data set 4, 4, 5, 7, 10 is 10 – 4 = 6.
* Standard deviation – a statistic that describes how widely the points of a data set are distributed.
	+ The symbol for standard deviation is *σ*.
	+ If data points are very close, the standard deviation will be low.
	+ If data points are spread out, the standard deviation will be high.
	+ If the data set has a normal distribution, then about 68% of the data will be within one standard deviation of the mean (*μ* ± *σ*).