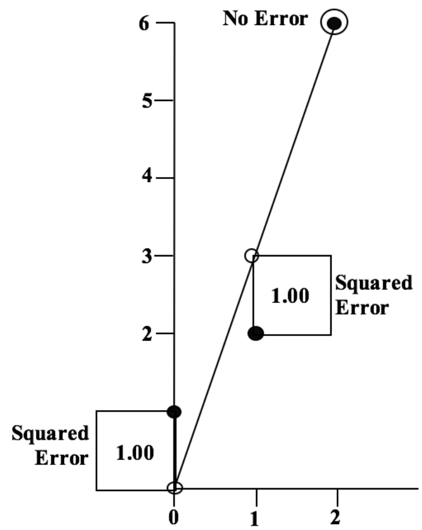
Regression:

For Regression, the two components of SST are Sum of Squares Error (SSE) and Sum of Squares Regression (SSR). We use the data to calulate one component, SSE, and to calculate the total, SST. Then, we calculate the other component, SSR from SST and SSE:

In this very simple example, there are only 3 data points in our sample. These are illustrated by the 3 black dots. The 3 data points have *x, y* values of (2,6), (1,2), and (0,1). The Regression line is defined by formula $y = 3x$.

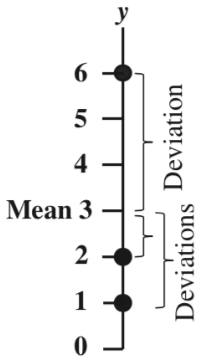


There is no error for the point at the top 2, 6. It is on the Regression line of $y = 3x$.

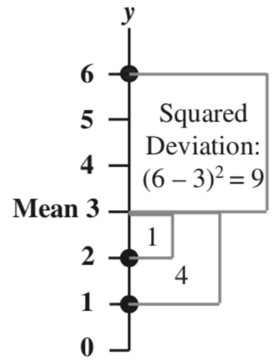
The black dots of the other two points, (1,2) and (0,1) are each one unit away from the Regression line. So, their error is 1 and their squared error is also 1.

And the Sum of these Squared Errors, SSE, is 0 + 1 + 1, which equals 2.

Now, let's look at Sum of Squares Total, SST.



Mean $\bar{y} = 3$		
y	Deviation $y - \bar{y}$	Squared Deviation $(y - \bar{y})^2$
1	$1 - 3 = -2$	4
2	$2 - 3 = -1$	1
6	$6 - 3 = 3$	9
Sum of Squared Deviations $\Sigma(y - \bar{y})^2$		14



SST, is the sum of the squared deviations of the data values of the Variable y to the Mean of *y*.

As shown as black dots in the vertical graph on the left, our 3 data points had y values of 1, 2, and 6.

They are also shown in the first column of the table in the middle.

1 + 2 + 6 = 9, divided by 3 gives us a Mean value of 3 for the y Variable, as stated in the top row of the table.

The middle column of the table calculates the 3 deviations from this Mean, -2, -1 and 3.

And the right column of the table shows the squared deviations, 4, 1, and 9. This is also illustrated in the diagram to the right of the table.

The sum of the Squared deviations is 4 + 1+ 9 = 14. This is SST, the Sum of Squares Total. Given SST and SSE, we can calculate SSR, the Sum of Squares Regression.

$$SSR = SST - SSE = 14 - 2 = 12$$