**Open the TI-Nspire document *Understanding R-Squared StaRT***

The graph on page 1.3 displays a scatterplot of (x,y) ordered pairs and a moveable line (the black line). The magenta line represents the average y value for the points in the scatterplot.

1. What do the squares on page 1.3 appear to be measuring?

Position your cursor over the middle of the black line and shift it so that it overlaps the magenta line. Observe the changes in the areas of the squares.

1. What conjectures can you make about the position of the line and the total area of the squares?

Now, return to the previous page and rotate the black line so that it follows the linear trend in the data and observe the changes in the areas of the squares.

1. Did your conjectures change regarding the position of the line and the total area of the squares?

In statistics, the line of best fit for a scatterplot is formally called the **Least Squares Regression Line (LSRL)**.

1. Explain how your conjectures from the previous question support this formal name.

The graph on page 1.6 displays a scatterplot, a magenta line representing the average y value, and a green line representing the LSRL. On the right, you will find boxplots representing the variation in y-values when compared to these two lines. Move the points and observe the changes in variations.

1. What conjectures can you make about the position of the points and the variations?

Page 1.8 shows numerical calculations for the sum of the variations from the boxplots on page 1.6. Then, these values are used to calculate R-squared (option 4). Explore how the values change when you change the data points in the scatterplot. Using your exploration and the information provided on page 1.8, create a definition for **r-squared**, and explain how it is used to gauge the effectiveness of the LSRL.

1. Definition for **r-squared**:
2. How does R-squared measure the effectiveness of the LSRL.