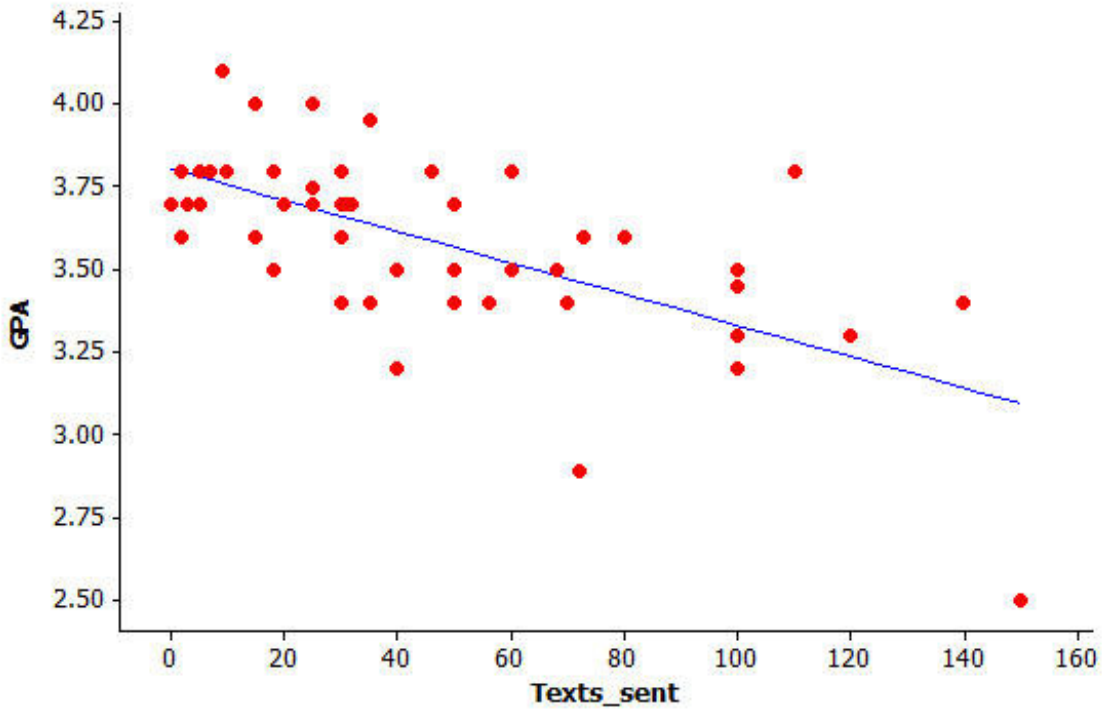
S-ID.7 Texting and Grades II

Alignments to Content Standards: S-ID.C.7

Task

Medhavi suspects that there is a relationship between the number of text messages high school students send and their academic achievement. To explore this, she asks a random sample of 52 students at her school how many text messages they sent yesterday and what their grade point average (GPA) was during the most recent marking period. Her data are summarized in the scatter plot below. The line of best fit is also shown.



The equation of the line of best fit is $\widehat{GPA} = 3.8 - 0.005(\text{Texts sent})$. Interpret the quantities -0.005 and 3.8 in the context of these data.

IM Commentary

The purpose of this task is to assess ability to interpret the slope and intercept of the line of best fit in context. There are two common errors that students make when interpreting the slope. Students may not make it clear that the slope is the *predicted* change (not necessarily an actual change) in GPA associated with an increase of 1 in number of text messages sent. They also often do not clearly communicate that the slope describes *change*

You might want to point out that it is not always reasonable to interpret the intercept as the predicted y value when x = 0, as this often involves extrapolation far beyond the range of the x values in the data set. In this example, however, it is appropriate because there are observations with x = 0 in the data set.

You can also point out that the interpretation of the slope and intercept represents a generalization from the sample of 52 students to the population of all students at the school. This is appropriate because the sample was a random sample of students from the school.

Although this task is short and looks simple, some of the points brought out in this task are subtle. It might be a good strategy to engage in a whole class discussion of the correct interpretations.

Edit this solution

Solution

Interpretation of the slope: For students at this school, the predicted GPA decreases by 0.005 for each additional text messaage sent OR GPA desreases by 0.005, on average, for each additional text message sent.

Interpretation of intercept: The model predicts that students at this school who send no text messages have, on average, a GPA of 3.8.