**CCM8 Interpreting Linear Models**

When interpreting linear models you can use the slope of the equation to describe the **\_\_\_\_\_\_\_\_\_\_\_\_\_** in the variables and the y-intercept to describe the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** of the linear model.

The linear equation can also be used to make predictions for data values that have not been previously collected or measured.

Example 1: This data is from a survey that asked students how long they spent on math homework every night and their grade in math class. The equation was previously found as the equation of the line that models this data set.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Student | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Time in Minutes | 20 | 30 | 0 | 40 | 25 | 15 | 10 | 45 | 30 | 25 |
| Math Grade | 87 | 90 | 60 | 91 | 87 | 85 | 80 | 94 | 95 | 93 |

* What do the slope and y-intercept represent in this context?
* According to this model, if a student spends 35 minutes a night on their math homework, what is their math grade?
* According to this model, if a student has an 81 as their math grade, how long do they spend each night on math homework?

Example 2: Data was collected from a local group that meets once a month to clean up trash at a local park. They recorded the amount of time that it took to clean up the park and the number of volunteers that they had working that day. The equation was previously found as the equation of a line that models this data.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of workers | 10 | 8 | 7 | 12 | 5 | 8 | 6 | 9 |
| Time | 4 | 2.1 | 2 | 1.6 | 2.6 | 2 | 2.4 | 1.9 |

* What do the slope and y-intercept represent in this context?
* According to this model, if 11 workers were to volunteer, how long will it take to clean up the park?
* According to this model, if it took 1.75 hours to clean the park, how many workers volunteered that day?

**Independent Practice**

1. Data from the first 10 games for a baseball team are provided in the table. The equation was previously found as an equation of a line that models this data.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Game | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Hits | 10 | 8 | 15 | 18 | 12 | 9 | 7 | 9 | 14 | 15 |
| Runs | 4 | 3 | 7 | 6 | 5 | 4 | 1 | 2 | 8 | 6 |

* What do the slope and y-intercept represent in this context?
* According to this model, if the team has 13 hits in a game, how many runs would they have scored?
* According to this model, if the team scored 9 runs, how many hits did the team have in that game?



1. Data from the first 10 games for a basketball team are provided in the table. The equation was previously found as an equation of a line that models this data.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Game | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Turnovers | 10 | 15 | 8 | 12 | 14 | 10 | 11 | 13 | 9 | 20 |
| Points | 60 | 48 | 60 | 55 | 56 | 59 | 61 | 54 | 63 | 40 |

* What do the slope and y-intercept represent in this context?
* According to this model, if the team has 16 turnovers, how many points did they score in that game?
* According to this model, if the team scores 58 points, how many turnovers did the team have in that game?

