

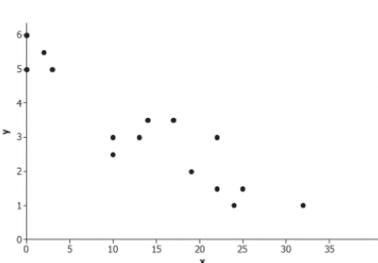
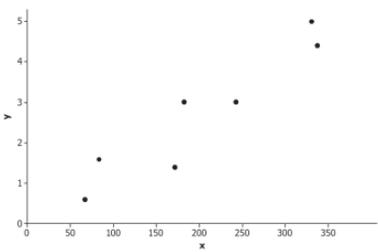
## KEY CONCEPT OVERVIEW

In this topic, students connect their study of linear functions to applications involving **bivariate data sets**. A key tool in developing this connection is a **scatter plot**. Students construct scatter plots and focus on identifying linear versus **nonlinear relationships**. Students describe **trends** in the scatter plot, including linear **association**, **clusters**, and **outliers**. Students informally (i.e., without extreme precision) draw a straight line that best represents the data in a scatter plot.

You can expect to see homework that asks your child to do the following:

- Construct and interpret a scatter plot and determine the statistical relationship (e.g., **increasing** or **decreasing**) of the data.
- Identify clusters and outliers in a scatter plot.
- Draw a straight line that fits the data in a scatter plot and use it to make predictions about the data.
- Find the equation of the line that fits the data in a scatter plot.
- Match the equation of a line with the scatter plot that best represents that line.

## SAMPLE PROBLEMS (From Lesson 7)

	Is there a relationship between the two variables used to make the scatter plot? If so, explain the relationship.	If there is a relationship, does it appear to be linear or nonlinear?	If the relationship appears to be linear, is the relationship a <b>positive linear relationship</b> or a <b>negative linear relationship</b> ?
	<i>Yes, as the value of <math>x</math> increases, the value of <math>y</math> decreases.</i>	<i>Linear</i>	<i>Negative linear relationship</i>
	<i>Yes, as the value of <math>x</math> increases, the value of <math>y</math> increases.</i>	<i>Linear</i>	<i>Positive linear relationship</i>

*(table continued on next page)*

**SAMPLE PROBLEMS** *(continued)*

	<p><i>Yes, as the value of <math>x</math> increases, the value of <math>y</math> increases.</i></p>	<p><i>Not linear</i></p>	<p><i>Does not apply.</i></p>
	<p><i>There is no statistical relationship between price and quality rating.</i></p>	<p><i>Does not apply.</i></p>	<p><i>Does not apply.</i></p>

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**TERMS**

**Association:** The relationship or trend of a set of data. For example, a data set can be said to have a positive or negative linear association.

**Bivariate data set:** A set that contains observations about two variables. For example, you can collect data on the weight of a car and on the car’s fuel efficiency.

**Cluster:** A cloud or group of points in a scatter plot.

**Decreasing relationship:** A relationship in which the  $y$ -value decreases as the  $x$ -value increases. Data points drop as we move from left to right on the graph.

**Increasing relationship:** A relationship in which the  $y$ -value increases as the  $x$ -value increases. Data points rise as we move from left to right on the graph.

**Negative linear relationship:** A decreasing relationship in which a line with a negative slope represents the data.

**No statistical relationship:** When the data do not present any pattern, they have no statistical relationship.

**Nonlinear relationship:** A relationship in which data present as a curve and not a straight line.

**Outlier:** An unusual point in a scatter plot that does not seem to fit the general pattern.

**Positive linear relationship:** An increasing relationship in which a line with a positive slope represents the data.

**Scatter plot:** A graph of the ordered pairs in a data set. (See Sample Problems.)

**Trend:** A pattern in the data. For example, heavier cars tend to equate to lower fuel efficiency.