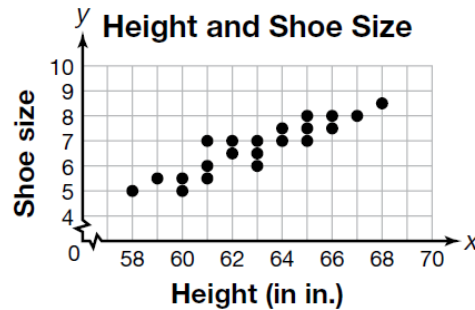
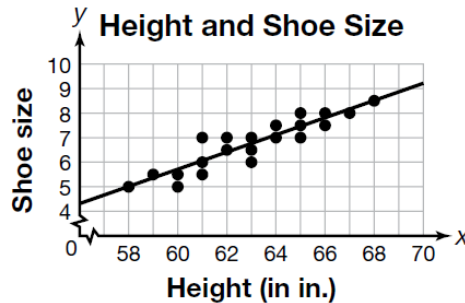


Scatter Plots

UNDERSTAND When you study the relationship between two variables—such as the heights and shoe sizes of a group of students—you are working with **bivariate data**. Bivariate data can be written as a set of (x, y) ordered pairs and graphed on a coordinate plane. This kind of graph is called a **scatter plot**. A scatter plot can help you interpret bivariate data. The scatter plot below shows a set of ordered pairs in which the x -values represent heights and the y -values represent shoe sizes.



Look at the shape formed by the plotted points. The shape resembles a straight line. This suggests a linear relationship between the variables. You can draw a line to fit, or model, the data. The line you draw represents a linear function. If the line is a good fit, you can use the graph and the equation of the line to interpret and make predictions about the data.



The line appears to be a good fit. The data points slant up from left to right, indicating a positive linear relationship. The line has a positive slope and is close to most data points.

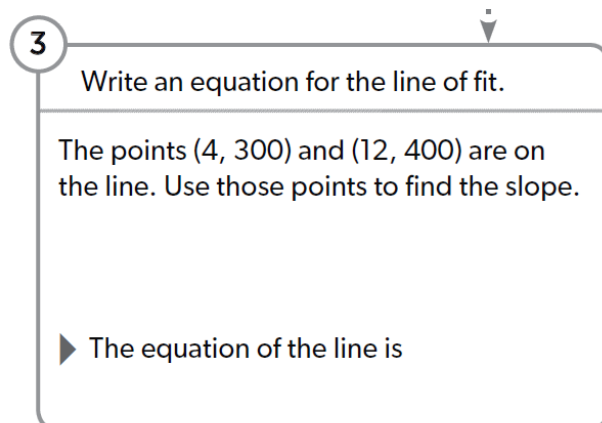
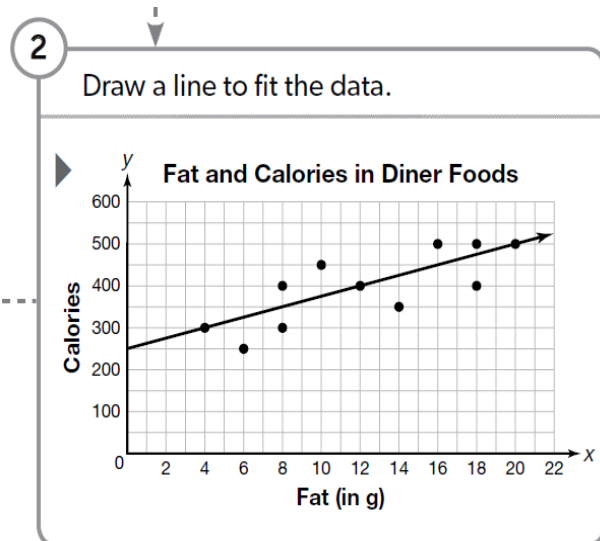
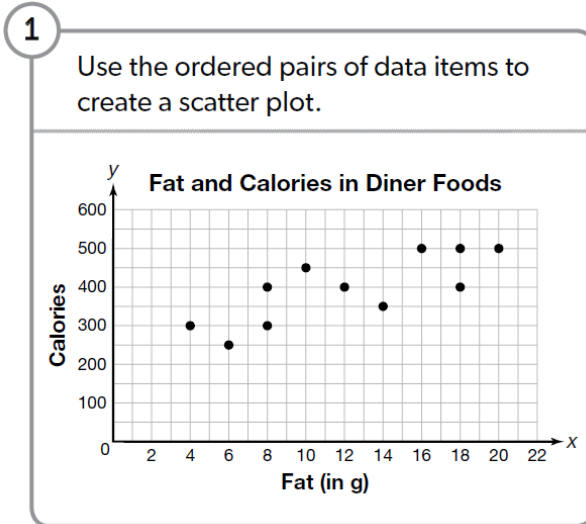
1. What is the equation of the line that fits this data?

2. Using that equation find what shoe size you would expect someone to have if she was six feet tall.

EXAMPLE For a health project, Dylan recorded the number of grams of fat and the number of calories in lunch entrees sold at his favorite diner.

Fat (in grams)	4	6	8	8	10	12	14	16	18	18	20
Calories	300	250	300	400	450	400	350	500	400	500	500

Create a scatter plot for the data. Draw a line to fit the data. Find the equation of the line.



DISCUSS

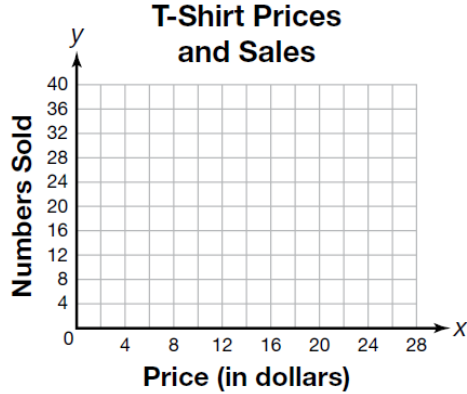
Explain what the slope of the line tells you in this context. Do the data show a positive linear relationship or a negative linear relationship?

- Using your equation, estimate how many calories an entrée would have if it had 30 grams of fat.
- Using technology, find the line of BEST fit.
- Find the correlation coefficient.

The table below shows T-shirt sales data for a store one weekend.

Price, x (in dollars)	4	8	8	12	12	16	20	20	24	24
Number Sold, y	32	26	30	22	26	20	12	20	14	10

6. Create a scatter plot for the data. Then draw a line of fit for the data.



7. Find the slope of the line of fit. What does it represent in the context of this problem?

8. Write the equation for the line of fit.

9. Using your equation, predict how many \$18 t-shirts the store could sell in a weekend.

10. **CONCLUDE** The scatter plot below shows data for the number of ice cream cones sold and the number of bee stings treated at a lake resort. Based on the data, can you conclude that eating ice cream causes bee stings? If not, what can you conclude?

