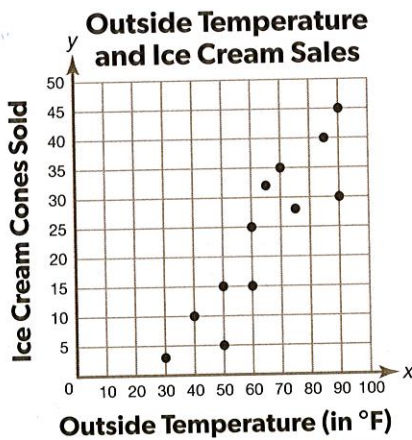


Interpreting Scatter Plots

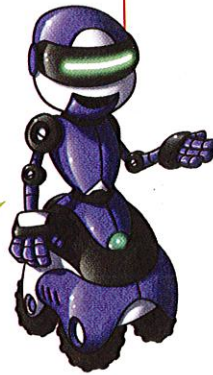
PLUG IN

Identifying Association in a Scatter Plot

You can look at how the data points are clustered in this **scatter plot** to determine if there is a relationship between outside temperature and ice cream sales.



In this scatter plot, the x -coordinate in each ordered pair represents the temperature and the y -coordinate represents ice cream sales.



I see! The data in this scatter plot shows a positive linear association because the points cluster together like a line with a positive slope.

Decide if the data points cluster in a straight line or a curve, or if they look randomly scattered. Then you can identify the **association** between the sets of data.

- **Linear association:** The data resembles a straight line. You can also describe a linear association as positive or negative, depending on the slope of the line.
- **Nonlinear association:** The data resembles a curve.
- **No association:** The data is randomly scattered.

Words to Know

scatter plot

a graph of ordered pairs that shows the relationship between two sets of data

association

the relationship between data points on a scatter plot

linear association

a relationship shown on a scatter plot in which data points resemble a straight line

nonlinear association

a relationship shown on a scatter plot in which data points resemble a curve

DISCUSS

Maja sees a scatter plot in which each point lies along a horizontal line. She says the line that the points would cluster around has zero slope, so the scatter plot shows no association. Is she correct? Explain why or why not.

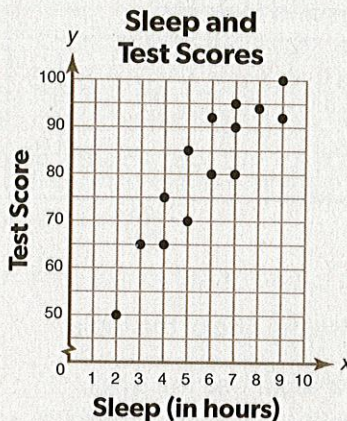
A You can look at how data points are clustered to describe an association.



What is the association, if any, between sleep and test scores?

- 1 Determine how the data points cluster.
- 2 Determine whether the association is positive or negative.
- 3 Make a statement about the association.

The association describes the relationship between the two variables graphed on a scatter plot.



The data points cluster in a _____ so there is a _____ association.

Because the data points cluster upwards from left to right, the association is _____.

This scatter plot shows a _____ association between sleep and test scores.

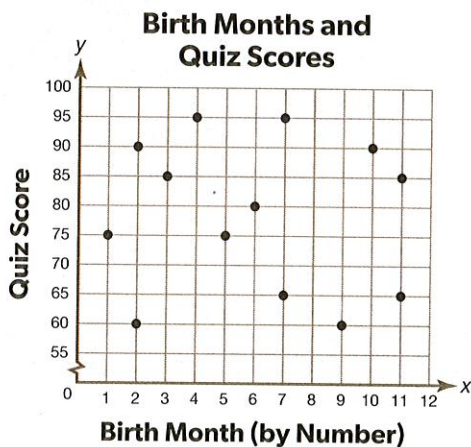


How does the description of a linear association relate to slope?

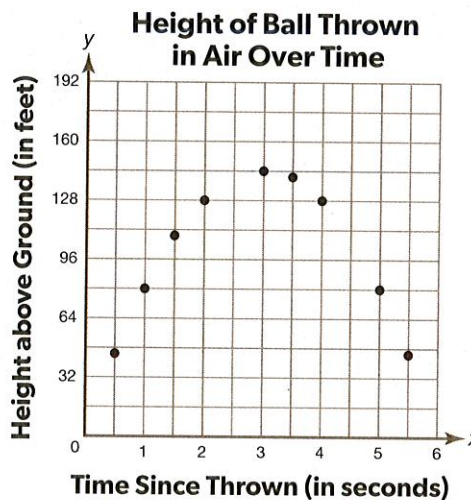
PRACTICE

Write "linear association," "nonlinear association," or "no association" for each scatter plot.

1



2

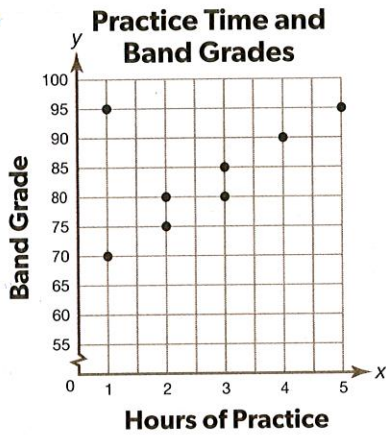


PRACTICE

Describe any association shown. Identify any outliers. Then explain, in general, what the scatter plot shows.

REMEMBER
Do not consider the outlier when determining an association.

1

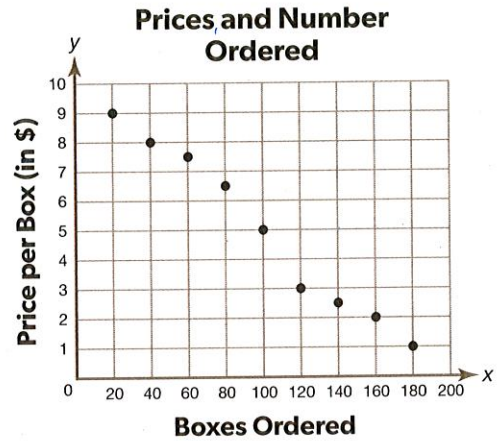


There is a _____ association.

outlier(s): _____

In general, the longer students' practice times, _____

2

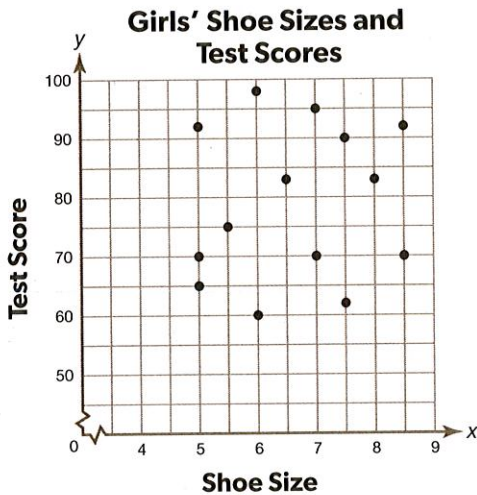


There is a _____ association.

outlier(s): _____

In general, the more boxes ordered, the _____

3

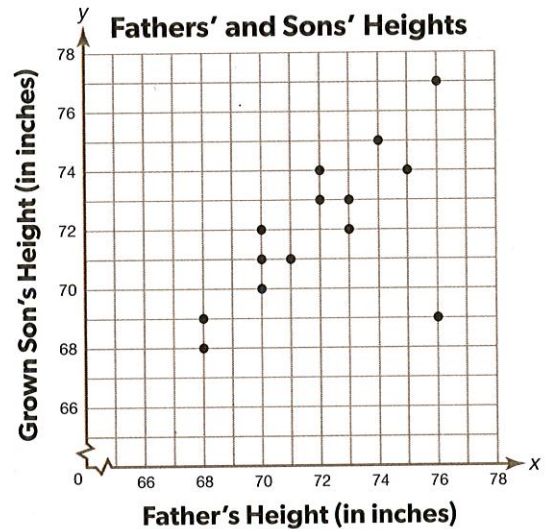


There is _____ association.

outlier(s): _____

In general, _____

4



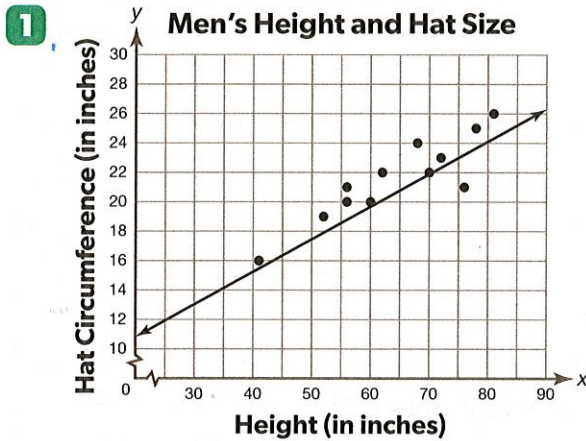
There is a _____ association.

outlier(s): _____

In general, _____

PRACTICE

Evaluate the fit of the trend line.

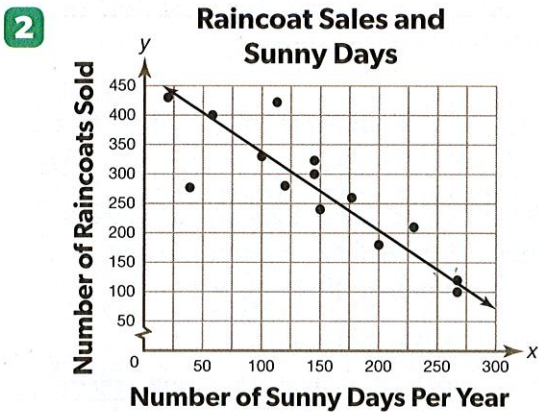


Are there about the same number of points above the line as below it? _____

Are the points above the line about the same distances from the line as the ones below it?

Is this trend line a good fit for the data?

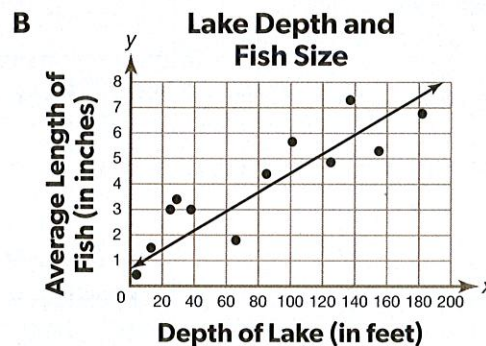
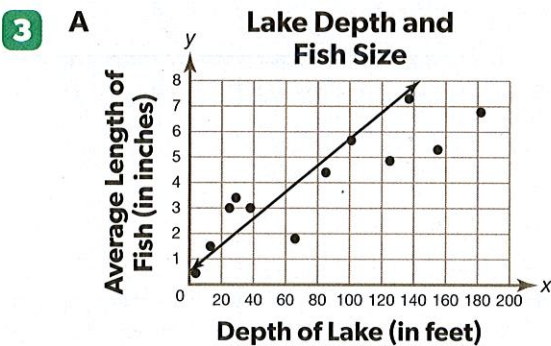
REMEMBER
Don't consider outliers when evaluating the fit of a trend line.



Are there about the same number of points above the line as below it? _____

Are the points above the line about the same distances from the line as the ones below it?

Is this trend line a good fit for the data?



HINT
The answers for all three of the blanks below should be the same.

Graph _____ has about the same number of points above and below the trend line.

In graph _____, the data points above the line are about the same distances from the line as the ones below it.

The trend line in graph _____ is a better fit.