LESSON MAKER PRO

Scatter Plot Detectives

Plot data, spot patterns, and explain what they mean.

GRADE 8 · 8.SP.A.1

CCSS.Math.Content.8.SP.A.1 "Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association..."

NAME _____ DATE _____

READ THE PATTERN

A scatter plot shows pairs of measurements as points. Points that rise from left to right show a positive association, points that fall show a negative association, a straight overall pattern is linear, and a curved pattern is nonlinear. Separate groups are clusters, and a point far from the overall pattern is an outlier.

WORKED EXAMPLE

Plot the points (31,41), (32,43), (33,45), and (34,47). Describe the association.

1. Plot each ordered pair, with the first number on the horizontal axis and the second number on the vertical axis.
2. Look from left to right. The points rise and follow a straight pattern.
3. The data have a positive linear association.

Answer: Positive linear association.

PRACTICE 6 problems

1 The points are (0,2), (2,4), (4,6), and (6,8). What type of association does the scatter plot show?

ANSWER _____

2 The points are (1,18), (3,15), (5,12), and (7,9). What type of association does the scatter plot show?

ANSWER _____

3 The points are (0,0), (2,3), (4,8), and (6,15). What type of association does the scatter plot show?

ANSWER _____

4 The points are (16,26), (17,28), (18,26), (28,38), and (29,39). What pattern is most noticeable?

ANSWER _____

5 The points are (2,20), (4,18), (6,16), (8,14), and (10,37). Identify the outlier and describe the pattern of the other points.

ANSWER _____

6 Plot the points (0,10), (2,14), (4,18), and (6,22). Then describe the association.

ANSWER _____

APPLY IT Show your work

1 A dancer records weekly rehearsal time in minutes and the number of new dance moves learned: (12,2), (24,4), (36,6), (48,8), and (60,10). Make a scatter plot with rehearsal time on the x-axis. Describe the pattern and explain what it means.

WORK SPACE

ANSWER _____

2 A student records hours spent playing a game before bed and hours of sleep: (1,9), (2,8), (3,7), (4,6), and (5,9). Make a scatter plot with game time on the x-axis. Identify the outlier, then use the overall trend to predict the hours of sleep for 6 hours of game time.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Data Set A has points (1,3), (2,5), (3,7), (4,9), and (5,11). Data Set B has points (1,3), (2,5), (3,9), (4,15), and (5,23). Which data set is better modeled by a line? Explain your reasoning.

_____

_____

ANSWER KEY

Scatter Plot Detectives

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The points are (0,2), (2,4), (4,6), and (6,8). What type of association does the scatter plot show?	**Positive linear association.**
2	The points are (1,18), (3,15), (5,12), and (7,9). What type of association does the scatter plot show?	**Negative linear association.**
3	The points are (0,0), (2,3), (4,8), and (6,15). What type of association does the scatter plot show?	**Positive nonlinear association.**
4	The points are (16,26), (17,28), (18,26), (28,38), and (29,39). What pattern is most noticeable?	**Two clusters, one with x-values from 16 to 18 and one with x-values from 28 to 29.**
5	The points are (2,20), (4,18), (6,16), (8,14), and (10,37). Identify the outlier and describe the pattern of the other points.	**The outlier is (10,37). The other points show a negative linear association.**
6	Plot the points (0,10), (2,14), (4,18), and (6,22). Then describe the association.	**Positive linear association.**

PART 2 · APPLY IT

1. **The plot shows a positive linear association. As rehearsal time increases, the number of new dance moves learned increases.** The points rise in a straight pattern from left to right. Every additional 12 minutes of rehearsal is associated with 2 more dance moves learned.
2. **The outlier is (5,9). The overall pattern is a negative linear association, so the prediction is about 4 hours of sleep.** Ignoring the outlier, the points decrease by 1 hour of sleep for each additional hour of game time. Extending that trend to 6 hours gives 4 hours of sleep.

CHALLENGE

Data Set A is better modeled by a line because y increases by 2 each time x increases by 1. Data Set B is nonlinear because its increases in y are not constant.

Accept equivalent descriptions such as upward or downward linear trend for positive or negative linear association. For plotted items, accept accurate point placement and a reasonable sketch of the stated overall pattern.