LESSON MAKER PRO

Trend Trackers

Find patterns, rates, and predictions in paired data.

GRADE 8 · MA.8.DP.1

MA.8.DP.1 "Represent and investigate numerical bivariate data."

NAME _____ DATE _____

READ THE PATTERN

Bivariate data pairs two numerical values, such as time and distance. Look for whether y tends to rise, fall, or show no pattern as x increases. For a linear pattern, find the rate of change by dividing the change in y by the change in x.

WORKED EXAMPLE

Two points on a line are (41, 101) and (45, 109). Find the equation of the line.

1. The change in y is 109 - 101 = 8, and the change in x is 45 - 41 = 4.
2. The slope is 8/4 = 2.
3. Use 101 = 2(41) + b, so b = 19.

Answer: y = 2x + 19

PRACTICE 6 problems

1 The data points are (1, 6), (3, 14), and (5, 22). Describe the association and find the rate of change.

ANSWER _____

2 A table has x-values 0, 3, and 6 and y-values 17, 26, and 35. If the pattern continues, what y-value matches x = 9?

ANSWER _____

3 The points (6, 29), (9, 38), and (11, 44) lie on a line. Write the equation of the line.

ANSWER _____

4 The data points are (1, 30), (4, 25), (7, 20), and (10, 15). Describe the association.

ANSWER _____

5 Most of these points follow the same linear pattern: (1, 9), (3, 15), (5, 21), and (7, 45). Which point is an outlier?

ANSWER _____

6 A line of fit for a data set is y = 4x + 1. Predict y when x = 9.

ANSWER _____

APPLY IT Show your work

1 Jordan records minutes spent practicing jump shots and the number of successful shots in a short test. The pairs are (5, 9), (10, 15), and (15, 21). Describe the association. Then use the pattern to predict the number of successful shots after 20 minutes of practice.

WORK SPACE

ANSWER _____

2 A tablet starts at 96% battery. During a video stream, the paired data are (0, 96), (10, 86), (20, 76), and (30, 66), where x is minutes and y is battery percentage. Find the rate of change and predict the battery percentage after 40 minutes.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two game apps award tokens based on completed quests. App A has data points (0, 4), (3, 10), and (6, 16). App B has data points (0, 10), (3, 13), and (6, 16). Write an equation for each app, then determine how many quests give the same number of tokens.

WORK SPACE AND ANSWER

ANSWER KEY

Trend Trackers

GRADE 8 · MA.8.DP.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The data points are (1, 6), (3, 14), and (5, 22). Describe the association and find the rate of change.	**Positive linear association; rate of change = 4.**
2	A table has x-values 0, 3, and 6 and y-values 17, 26, and 35. If the pattern continues, what y-value matches x = 9?	**44**
3	The points (6, 29), (9, 38), and (11, 44) lie on a line. Write the equation of the line.	**y = 3x + 11**
4	The data points are (1, 30), (4, 25), (7, 20), and (10, 15). Describe the association.	**Negative linear association**
5	Most of these points follow the same linear pattern: (1, 9), (3, 15), (5, 21), and (7, 45). Which point is an outlier?	**(7, 45)**
6	A line of fit for a data set is y = 4x + 1. Predict y when x = 9.	**37**

PART 2 · APPLY IT

1. **Positive linear association; 27 successful shots.** The number of successful shots rises by 6 when practice time rises by 5 minutes. The linear rule is y = 6/5x + 3, so y = 27 when x = 20.
2. **Rate of change = -1 percentage point per minute; 56%.** The battery percentage drops 10 points every 10 minutes, so the rate is -1 point per minute. Extending the pattern to 40 minutes gives 56%.

CHALLENGE

App A: y = 2x + 4. App B: y = x + 10. They give the same number of tokens at 6 quests, when y = 16.

Accept equivalent wording for positive or negative linear association. For rates, accept units that correctly describe the change in y for each one-unit change in x.