

Spot the Pattern

Decide whether plotted data suggest a linear relationship.

GRADE 8 • TEKS 8.5.C

8.5.C “contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation;”

NAME _____

DATE _____

STRAIGHT OR NOT?

A bivariate set is linear when its plotted points lie on, or close to, one straight line. If the points make a curve or change direction, the data do not suggest a linear relationship.

WORKED EXAMPLE

Points (11, 22), (12, 24), (13, 26), and (14, 28) are plotted. Do they suggest a linear relationship?

1. The x-value increases by 1 each time.
2. The y-value increases by 2 each time.
3. The points follow one straight, rising pattern.

Answer: Yes, the data suggest a linear relationship.

PRACTICE 5 problems

- 1** Points (7, 14), (8, 16), and (9, 18) are plotted. Do they suggest a linear relationship? Explain.

ANSWER _____

- 2** Points (15, 5), (16, 10), (17, 5), and (18, 10) are plotted. Do they suggest a linear relationship? Explain.

ANSWER _____

- 3** Points (20, 30), (21, 33), (22, 36), and (23, 39) are plotted. Write linear or not linear.

ANSWER _____

- 4** Graph A has points (30, 8), (31, 11), and (32, 14). Graph B has points (40, 4), (41, 9), and (42, 7). Which graph suggests a linear relationship? Explain.

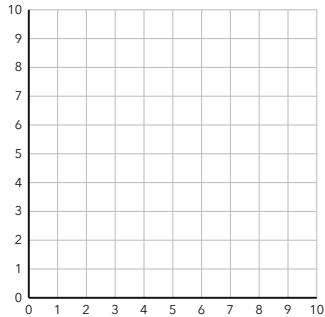
ANSWER _____

- 5** A scatter plot has points that form a smooth U-shaped curve. Does it suggest a linear relationship?

ANSWER _____

APPLY IT Show your work

- 1** Jalen graphs the number of practice drills he completes and the number of points he earns. Plot (1, 2), (2, 4), (3, 6), (4, 8), and (5, 10). Do the points suggest a linear relationship?



ANSWER _____

- 2** A music app graph shows days since release and downloads in hundreds: (6, 9), (7, 13), (8, 17), and (9, 21). Does the graph suggest a linear relationship?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Graph C has points (50, 12), (52, 16), (54, 20), and (56, 24). Graph D has points (60, 18), (62, 25), (64, 21), and (66, 28). Which graph is linear? Explain how you know.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Points (7, 14), (8, 16), and (9, 18) are plotted. Do they suggest a linear relationship? Explain.	Yes. The points follow a straight pattern because y increases by 2 when x increases by 1.
2	Points (15, 5), (16, 10), (17, 5), and (18, 10) are plotted. Do they suggest a linear relationship? Explain.	No. The points go up and down instead of following one straight pattern.
3	Points (20, 30), (21, 33), (22, 36), and (23, 39) are plotted. Write linear or not linear.	linear
4	Graph A has points (30, 8), (31, 11), and (32, 14). Graph B has points (40, 4), (41, 9), and (42, 7). Which graph suggests a linear relationship? Explain.	Graph A. Its y-values increase by 3 for each increase of 1 in x.
5	A scatter plot has points that form a smooth U-shaped curve. Does it suggest a linear relationship?	No, it suggests a nonlinear relationship.

PART 2 • APPLY IT

- Yes, the points suggest a linear relationship.** Each time drills increase by 1, points increase by 2. The plotted points lie on a straight line.
- Yes, the graph suggests a linear relationship.** For each increase of 1 day, downloads increase by 4 hundreds. The points follow a straight pattern.

CHALLENGE

Graph C is linear because y increases by 4 whenever x increases by 2. Graph D is not linear because its y-values do not change by the same amount.

Accept equivalent explanations that identify a constant rate of change or points forming a straight line. For nonlinear sets, accept statements that the points curve, change direction, or do not have a constant rate of change.