

Trend Line Detectives

Use scatterplots to sketch a line that shows the trend.

GRADE 8 • 8.PS.3.f

8.PS.3.f "Sketch the line of best fit for data represented in a scatterplot."

NAME _____

DATE _____

FIND THE MIDDLE TREND

A line of best fit follows the overall direction of the points. Draw it through the middle of the data, with about the same number of points above and below the line. The line does not need to pass through every point.

WORKED EXAMPLE

A scatterplot has points (6,43), (7,47), and (8,51). Sketch a line of best fit and write its equation.

1. The y-values rise 4 when the x-values rise 1, so the slope is 4.
2. Use (6,43): $43 = 4(6) + b$.
3. Solve: $43 = 24 + b$, so $b = 19$.
4. Draw $y = 4x + 19$ through the middle of the points.

Answer: $y = 4x + 19$

PRACTICE 6 problems

- 1** Plot (9,12), (10,13), (11,14), and (12,15). Sketch a line of best fit and write its equation.

ANSWER _____

- 2** Plot (9,18), (10,16), (11,14), and (12,12). Sketch a line of best fit and write its equation.

ANSWER _____

- 3** Plot (10,14), (11,18), (12,20), and (13,20). Sketch a line of best fit and write its equation.

ANSWER _____

- 4** Plot (9,23), (10,22), (11,21), and (12,20). Sketch a line of best fit and write its equation.

ANSWER _____

- 5** Plot (10,25), (11,27), and (12,29). Sketch a line of best fit and write its equation.

ANSWER _____

- 6** Plot (9,27), (10,29), (11,31), (12,33), and (13,35). Sketch a line of best fit and write its equation.

ANSWER _____

APPLY IT Show your work

- 1** At a gaming club, x is the number of strategy sessions a player attends and y is the number of points the player earns in a match. The data are $(9,24)$, $(10,24)$, $(11,27)$, $(12,28)$, and $(13,32)$. Sketch a line of best fit. Write its equation, then use it to predict the points for a player who attends 15 sessions.

WORK SPACE

ANSWER _____

- 2** An esports club tracks x , the number of practice sessions attended, and y , the points earned in a weekly tournament. The data are $(9,28)$, $(10,30)$, $(11,32)$, $(12,34)$, and $(13,36)$. Sketch a line of best fit. Write its equation, then predict the points for 16 practice sessions.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A scatterplot has points $(9,21)$, $(10,25)$, $(11,26)$, $(12,27)$, and $(13,31)$. Two students sketch these lines: Line A, $y = 2x + 4$, and Line B, $y = x + 14$. Which line is the better line of best fit? Explain using the positions of the points.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Plot (9,12), (10,13), (11,14), and (12,15). Sketch a line of best fit and write its equation.	$y = x + 3$
2	Plot (9,18), (10,16), (11,14), and (12,12). Sketch a line of best fit and write its equation.	$y = -2x + 36$
3	Plot (10,14), (11,18), (12,20), and (13,20). Sketch a line of best fit and write its equation.	$y = 2x - 5$
4	Plot (9,23), (10,22), (11,21), and (12,20). Sketch a line of best fit and write its equation.	$y = -x + 32$
5	Plot (10,25), (11,27), and (12,29). Sketch a line of best fit and write its equation.	$y = 2x + 5$
6	Plot (9,27), (10,29), (11,31), (12,33), and (13,35). Sketch a line of best fit and write its equation.	$y = 2x + 9$

PART 2 • APPLY IT

1. **A line of best fit is $y = 2x + 5$. At 15 sessions, the prediction is 35 points.** The points are balanced around $y = 2x + 5$. Substitute $x = 15$ to get $y = 35$.
2. **$y = 2x + 10$. At 16 sessions, the prediction is 42 points.** Each additional session adds 2 points, and the line is $y = 2x + 10$. Substitute $x = 16$ to get $y = 42$.

CHALLENGE

Line A is the better line of best fit. Every point is on Line A or within 1 unit of it, with points above and below the line. Line B is much too low for the point (13,31), which is 4 units above Line B.

Accept a hand-sketched line that follows the stated equation and is drawn through the center of the plotted data. For items with slightly scattered points, accept an equivalent reasonable line with a similar slope and balanced points above and below.