LESSON MAKER PRO

Slope From Data

Find rate of change and y-intercept from points and tables.

GRADE 8 · TEKS 8.4.C

8.4.C "use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems."

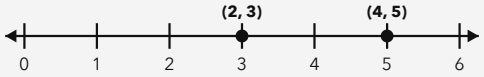
NAME _____ DATE _____

READ THE PATTERN

From two points, find the rate of change with m = (change in y)/(change in x). Use a point and y = mx + b to find the y-intercept b, then write the equation.

WORKED EXAMPLE

Use the two points shown to find the slope, y-intercept, and equation.



1. m = (5 - 3)/(4 - 2) = 2/2 = 1.
2. Use (2, 3): 3 = 1(2) + b.
3. b = 1, so y = x + 1.

Answer: m = 1, b = 1, y = x + 1

PRACTICE 4 problems

1 A line passes through (6, 7) and (8, 11). Find its slope.

ANSWER _____

2 A line has slope -3 and passes through (0, 9). Find its y-intercept.

ANSWER _____

3 A line passes through (1, -2) and (4, 7). Find m and b.

ANSWER _____

_____

4 A line passes through (-2, 10) and (2, 2). Write its equation.

ANSWER _____

_____

APPLY IT Show your work

1 A playlist grows by the same number of songs each week. Use the table to find the rate, y-intercept, and equation, where x is weeks and y is songs.

PLAYLIST SONGS

x, weeks	y, songs
0	12
2	18
4	24

ANSWER _____

2 A gaming lounge charges a linear fee. Three hours cost $14, and seven hours cost $26. Find the hourly rate, starting fee, and equation for cost y after x hours.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The points shown are on a line. Find the equation, then explain how you found the y-intercept.

WORK SPACE AND ANSWER

ANSWER KEY

Slope From Data

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A line passes through (6, 7) and (8, 11). Find its slope.	**2**
2	A line has slope -3 and passes through (0, 9). Find its y-intercept.	**9**
3	A line passes through (1, -2) and (4, 7). Find m and b.	**m = 3, b = -5**
4	A line passes through (-2, 10) and (2, 2). Write its equation.	**y = -2x + 6**

PART 2 · APPLY IT

1. **Rate: 3 songs per week; y-intercept: 12 songs; y = 3x + 12** The songs increase 6 when weeks increase 2, so the rate is 3. At 0 weeks there are 12 songs.
2. **Hourly rate: $3; starting fee: $5; y = 3x + 5** The rate is (26 - 14)/(7 - 3) = 3 dollars per hour. Substitute (3, 14) into y = 3x + b to get b = 5.

CHALLENGE

y = -2x + 6. The slope is (2 - 14)/(2 - (-4)) = -12/6 = -2. Using (2, 2), 2 = -2(2) + b, so b = 6.

Accept equivalent slope forms and equations with terms in a different order. For word problems, accept correct units with the rate and y-intercept.