LESSON MAKER PRO

Find the Function

Build linear rules from graphs, tables, pairs, and real situations.

HIGH SCHOOL · ATM.F.32

ATM.F.32 "Construct linear functions, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table)."

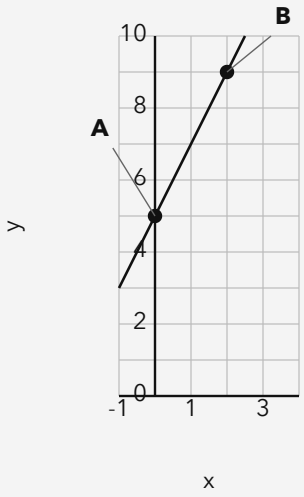
NAME _____ DATE _____

FROM CLUES TO EQUATIONS

A linear function can be written as y = mx + b. Find the slope m by dividing the change in y by the change in x. Then use a point to find b, the value of y when x = 0.

WORKED EXAMPLE

Write an equation for the graphed line.

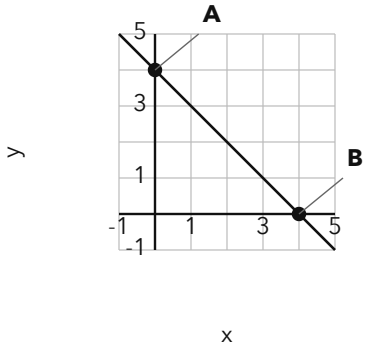


1. Read two points: (0, 5) and (2, 9).
2. Find the slope: m = (9 - 5)/(2 - 0) = 2.
3. At x = 0, y = 5, so b = 5.

Answer: y = 2x + 5

PRACTICE 6 problems

1 Write an equation for the graphed line.



ANSWER _____

2 Write a linear function that fits the table.

INPUT AND OUTPUT

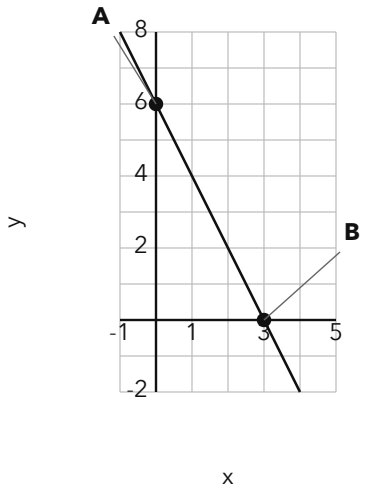
x	y
-3	-8
1	4
5	16

ANSWER _____

3 Write a linear function through (-2, 7) and (4, -5).

ANSWER _____

4 Write an equation for the graphed line.



ANSWER _____

5 Write a linear function that fits the table.

INPUT AND OUTPUT

x	y
-4	10
0	8
4	6

ANSWER _____

6 A linear function has a y-intercept of -4. Its output rises by 3 whenever its input rises by 2. Write the function.

ANSWER _____

APPLY IT Show your work

1 An arcade charges $18 to enter and $5 for each game you play. Write a function for the total cost y, in dollars, of playing x games.

WORK SPACE

ANSWER _____

2 Your prepaid transit card has $48 on it. Each train ride costs $3. Write a function for the balance y, in dollars, after x rides. State the possible whole-number values of x.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The table shows a linear function. Write its equation, find x when y = -14, and explain how the table supports your slope.

INPUT AND OUTPUT

x	y
-3	16
1	4
5	-8

WORK SPACE AND ANSWER

ANSWER KEY

Find the Function

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write an equation for the graphed line.	**y = -x + 4**
2	Write a linear function that fits the table.	**y = 3x + 1**
3	Write a linear function through (-2, 7) and (4, -5).	**y = -2x + 3**
4	Write an equation for the graphed line.	**y = -2x + 6**
5	Write a linear function that fits the table.	**y = -1/2x + 8**
6	A linear function has a y-intercept of -4. Its output rises by 3 whenever its input rises by 2. Write the function.	**y = 3/2x - 4**

PART 2 · APPLY IT

1. **y = 5x + 18** The total starts at $18 and increases by $5 per game.
2. **y = 48 - 3x; x can be any whole number from 0 through 16.** Start with $48 and subtract $3 per ride. The card can pay for at most 16 rides.

CHALLENGE

y = -3x + 7, and x = 7 when y = -14. From x = -3 to x = 1, y falls by 12 while x rises by 4, so the slope is -3.

Accept equivalent equations, such as f(x) notation. In the challenge, any pair of table rows gives the same slope.