LESSON MAKER PRO

Linear Graph Detectives

Find slopes, intercepts, and meanings in linear functions.

GRADE 8 · 8.FGR.5.9

8.FGR.5.9 "Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations."

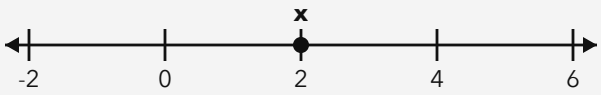
NAME _____ DATE _____

READ THE PATTERN

A linear function has a constant rate of change. In y=mx+b, m is the slope, or rate of change, and b is the y-intercept, where the line crosses the y-axis. Use the slope and y-intercept to describe what a graph means in a situation.

WORKED EXAMPLE

The number line marks the input x. For y=5x+7, find the output y.



1. The marked input is x=2.
2. Substitute: y=5(2)+7.
3. Multiply and add: y=10+7=17.

Answer: y=17

PRACTICE 6 problems

1 For y=-3x+8, state the slope and the y-intercept.

ANSWER _____

2 For y=-x+6, find y when x=4.

ANSWER _____

3 Rewrite y+4=-2(x-1) in slope-intercept form.

ANSWER _____

4 A line passes through (1, 4) and (3, 10). Write its equation in slope-intercept form.

ANSWER _____

5 For the function y=9, state the slope and the y-intercept.

ANSWER _____

_____

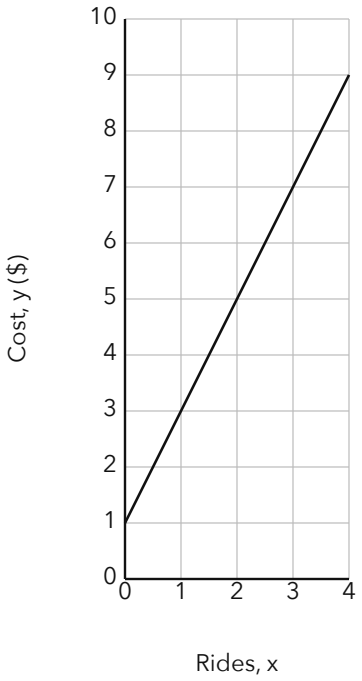
6 Compare y=-4x+1 and y=-4x+6. Are the lines parallel, perpendicular, or neither? Explain using the slopes.

ANSWER _____

_____

APPLY IT Show your work

1 The graph shows the total cost y, in dollars, for x rides on a bike-share app. What is the starting fee? What is the cost per ride?



ANSWER _____

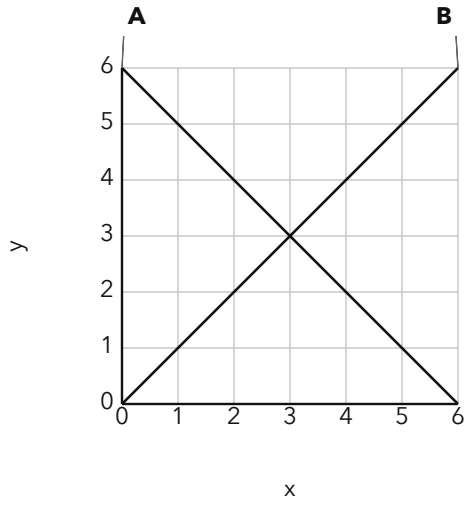
2 Maya is saving for concert tickets. Her savings are modeled by y=6x+11, where x is the number of weeks and y is the total dollars saved. How much does she already have? How much does she save each week? How much will she have after 5 weeks?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The grid shows two linear functions, A and B. Write an equation for each function. Then find their intersection and explain what the intersection tells you about the two functions.



WORK SPACE AND ANSWER

ANSWER KEY # Linear Graph Detectives

GRADE 8 · 8.FGR.5.9

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y=-3x+8, state the slope and the y-intercept.	**Slope: -3; y-intercept: (0, 8)**
2	For y=-x+6, find y when x=4.	**2**
3	Rewrite y+4=-2(x-1) in slope-intercept form.	**y=-2x-2**
4	A line passes through (1, 4) and (3, 10). Write its equation in slope-intercept form.	**y=3x+1**
5	For the function y=9, state the slope and the y-intercept.	**Slope: 0; y-intercept: (0, 9)**
6	Compare y=-4x+1 and y=-4x+6. Are the lines parallel, perpendicular, or neither? Explain using the slopes.	**Parallel. Both lines have slope -4.**

PART 2 · APPLY IT

1. **Starting fee: $1; cost per ride: $2** Read the y-intercept for the starting fee. Read the slope, the rise in cost for each increase of 1 ride, for the cost per ride.
2. **She already has $11. She saves $6 each week. After 5 weeks, she will have $41.** The y-intercept, 11, is the starting amount, and the slope, 6, is the weekly savings rate. Substitute x=5: y=6(5)+11=41.

CHALLENGE

Function A: y=-x+6. Function B: y=x. The intersection is (3, 3). At x=3, both functions have the same output, 3.

Accept equivalent slope-intercept equations and y-intercepts written as coordinate pairs or values. For the challenge explanation, accept any clear statement that both functions have equal output at x=3.