LESSON MAKER PRO

Lines in Action

Move between graphs, rules, tables, and situations.

GRADE 8 · PA.A.2.1

PA.A.2.1 "Represent linear functions with tables, verbal descriptions, symbols, and graphs; translate from one representation to another."

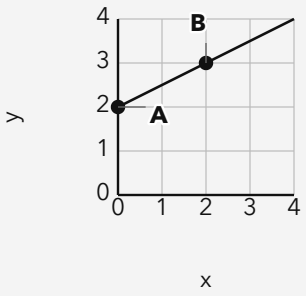
NAME _____ DATE _____

THE BIG IDEA

A linear function changes by the same amount for each step in x. Write its rule as y = mx + b, where b is the value at x = 0 and m is the change in y divided by the change in x.

WORKED EXAMPLE

Write an equation for the graphed line.



1. At x = 0, y = 2, so b = 2.
2. From A to B, the rise is 1 and the run is 2.
3. So m = 1/2. Substitute m and b into y = mx + b.

Answer: y = 1/2x + 2

PRACTICE 4 problems

1 A line crosses the y-axis at 4 and rises 5 for each step right. Write its equation.

ANSWER _____

2 For y = -3x + 8, find y when x = 4.

ANSWER _____

3 The points (0, -6), (2, 0), and (4, 6) lie on a line. Write its equation.

ANSWER _____

4 For y = -4x + 9, find y when x = 3.

ANSWER _____

APPLY IT Show your work

1 A club orders custom stickers. The table shows the total cost for different numbers of sheets. Write a cost equation, then find the cost of 7 sheets.

STICKER ORDER

Sheets (x)	Cost in dollars (y)
0	6
2	14
4	22

ANSWER _____

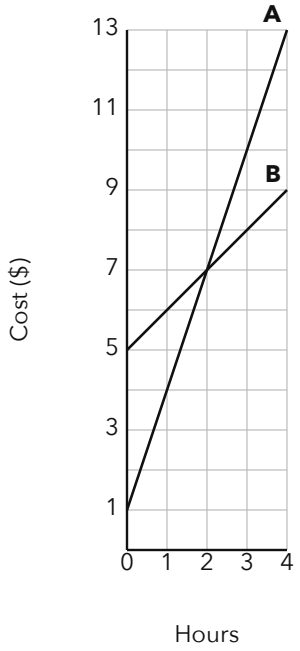
2 You have $45 on a transit card. Each ride costs $3. Write an equation for the balance y after x rides, then find the balance after 8 rides.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Lines A and B show the cost of two game rentals. When do they cost the same? Which costs less after 3 hours? Explain using the graph.



WORK SPACE AND ANSWER

ANSWER KEY

Lines in Action

GRADE 8 · PA.A.2.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A line crosses the y-axis at 4 and rises 5 for each step right. Write its equation.	**y = 5x + 4**
2	For y = -3x + 8, find y when x = 4.	**-4**
3	The points (0, -6), (2, 0), and (4, 6) lie on a line. Write its equation.	**y = 3x - 6**
4	For y = -4x + 9, find y when x = 3.	**-3**

PART 2 · APPLY IT

1. **y = 4x + 6; 7 sheets cost $34.** Cost rises $8 for 2 sheets, so the rate is $4 per sheet. The cost at 0 sheets is $6; 4(7) + 6 = 34.
2. **y = 45 - 3x; the balance after 8 rides is $21.** Subtract $3 for each ride from the starting balance of $45. Then 45 - 3(8) = 21.

CHALLENGE

They cost the same after 2 hours, when both cost $7. B costs less after 3 hours: $8 compared with A's $10.

Accept equivalent equations with terms in a different order. For the challenge, accept a comparison of the two lines at 3 hours instead of both dollar amounts.