LESSON MAKER PRO

Lines That Predict

Find a rule, then use it.

GRADE 8 · PA.A.2

PA.A.2 "Identify and justify linear functions using mathematical models and situations; solve problems involving linear functions and interpret results in the original context. Represent linear functions with tables, verbal descriptions, symbols..."

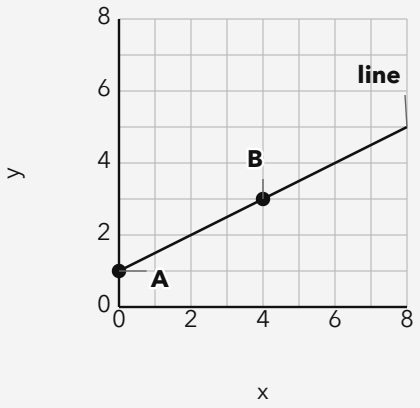
NAME _____ DATE _____

SLOPE AND STARTING VALUE

On a straight-line graph, slope is the change in y divided by the change in x. In y = mx + b, m is the slope and b is the y-value when x = 0. Substitute an x-value to make a prediction.

WORKED EXAMPLE

Use the graphed line to write an equation. Then find y when x = 6.



1. Slope = (3 - 1)/(4 - 0) = 1/2.
2. The line crosses the y-axis at 1, so y = (1/2)x + 1.
3. When x = 6, y = (1/2)(6) + 1 = 4.

Answer: y = (1/2)x + 1; y = 4

PRACTICE 4 problems

1 A line passes through (0, 4) and (2, 10). Write its equation.

ANSWER _____

2 A table lists (x, y): (0, 7), (1, 5), (2, 3). Write the equation.

ANSWER _____

3 For y = -3x + 8, find y when x = 5.

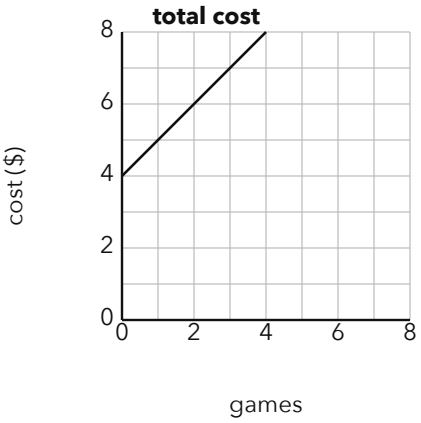
ANSWER _____

4 A line has slope 5 and passes through (1, 8). Write its equation.

ANSWER _____

APPLY IT Show your work

1 An arcade pass has a one-time fee and a cost per game. Use the graph to find the fee and the total cost for 3 games.



ANSWER _____

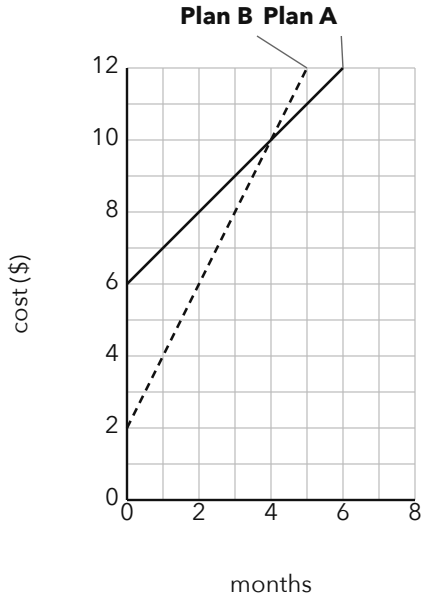
2 Skate rental costs $14 plus $3 per hour. Write an equation for the total cost y after x hours. Find the cost for 4 hours.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two music plans are graphed. After how many months do they cost the same? Which plan costs less after that?



WORK SPACE AND ANSWER

ANSWER KEY

Lines That Predict

GRADE 8 · PA.A.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A line passes through (0, 4) and (2, 10). Write its equation.	**y = 3x + 4**
2	A table lists (x, y): (0, 7), (1, 5), (2, 3). Write the equation.	**y = -2x + 7**
3	For y = -3x + 8, find y when x = 5.	**y = -7**
4	A line has slope 5 and passes through (1, 8). Write its equation.	**y = 5x + 3**

PART 2 · APPLY IT

1. **$4 fee; $7 for 3 games** The y-intercept gives the $4 fee. The cost rises $1 per game, so 4 + 3 = 7.
2. **y = 3x + 14; $26 for 4 hours** The hourly rate is 3 and the starting cost is 14. Substitute x = 4 to get y = 3(4) + 14 = 26.

CHALLENGE

They cost the same after 4 months. Plan A costs less after 4 months.

Accept equivalent equations. In the challenge, the lines meet at (4, 10); after 4 months, Plan A has the lower rate.