LESSON MAKER PRO

Lines Tell Stories

Read slopes and starting values.

GRADE 8 · MT.8.F.3

MT.8.F.3 "Interpret the equation y = mx + b as defining a linear function whose graph is a straight line with slope m passing through the point (0, b)."

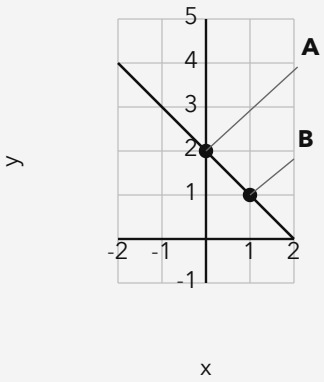
NAME _____ DATE _____

THE BIG IDEA

In y = mx + b, m is the slope. The line crosses the y-axis at (0, b). A positive slope rises from left to right, and a negative slope falls.

WORKED EXAMPLE

Use the graphed line to find m and b. Write its equation.



1. At x = 0, y = 2, so b = 2.
2. From A to B, x rises 1 while y falls 1, so m = -1.
3. Put m and b into y = mx + b.

Answer: y = -x + 2

PRACTICE 4 problems

1 For y = 3x + 4, find the slope and y-intercept.

ANSWER _____

2 For y = -2x - 3, does the line rise or fall from left to right? Give its y-intercept.

ANSWER _____

3 The line y = 1/2 x - 4 passes through (0, -4). Give another point on the line.

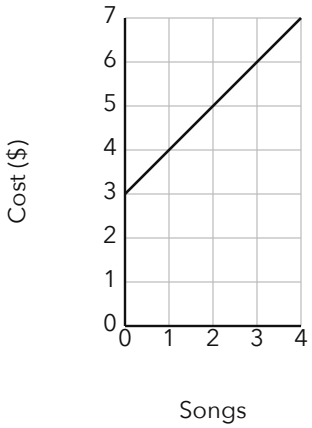
ANSWER _____

4 A line has slope 4 and passes through (0, -5). Write its equation.

ANSWER _____

APPLY IT Show your work

1 The graph shows the total cost y, in dollars, for x song downloads. Write the equation. What does the y-intercept mean?



ANSWER _____

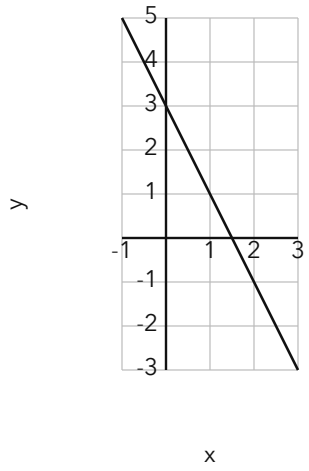
2 A skate rink charges $5 to enter and $2 per game. Let x be the number of games and y be the total cost in dollars. Write the equation. What do its slope and y-intercept mean?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student says the graphed line is y = 2x + 3. What is the student's error? Write the correct equation.



WORK SPACE AND ANSWER

ANSWER KEY

Lines Tell Stories

GRADE 8 · MT.8.F.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y = 3x + 4, find the slope and y-intercept.	**Slope: 3; y-intercept: (0, 4)**
2	For y = -2x - 3, does the line rise or fall from left to right? Give its y-intercept.	**Falls; y-intercept: (0, -3)**
3	The line y = 1/2 x - 4 passes through (0, -4). Give another point on the line.	**(2, -3)**
4	A line has slope 4 and passes through (0, -5). Write its equation.	**y = 4x - 5**

PART 2 · APPLY IT

1. **y = x + 3; the cost starts at $3 before any songs are downloaded.** The line crosses the y-axis at 3 and rises $1 for each additional song.
2. **y = 2x + 5; the slope means $2 per game, and the y-intercept means a $5 entry fee.** The entry fee is the cost at zero games. Add $2 for each game.

CHALLENGE

The student used a positive slope, but the line falls 2 units for each 1 unit to the right. The correct equation is y = -2x + 3.

Accept any valid point other than (0, -4) for practice problem 3. For intercepts, accept either the point (0, b) or the value b when the meaning is clear.