LESSON MAKER PRO

Graph Clues

Connect a line's graph to its equation

GRADE 8 · 8A.AF.J

8A.AF.J "Functions can be represented graphically and key features of the graphs, including zeros, intercepts, and, when relevant, rate of change and maximum/minimum values..."

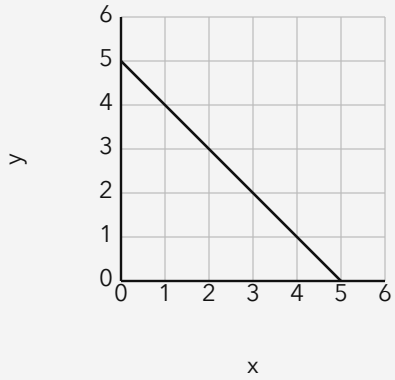
NAME _____ DATE _____

READ THE LINE

A line's y-intercept is where it crosses the y-axis. In y = mx + b, b is the y-intercept and m is the slope. The zero is the x-value where y = 0.

WORKED EXAMPLE

Use the graph to write the line's equation and find its zero.



1. Read the intercepts: (0, 5) and (5, 0).
2. Slope = (0 - 5)/(5 - 0) = -1.
3. Use the slope and y-intercept: y = -x + 5.

Answer: y = -x + 5; zero: x = 5

PRACTICE 4 problems

1 For y = 3x + 6, find the y-intercept as a point.

ANSWER _____

2 For y = 2x - 8, find the zero and its point on the graph.

ANSWER _____

3 For y = -4x + 12, find the slope. Does the line rise or fall as x increases?

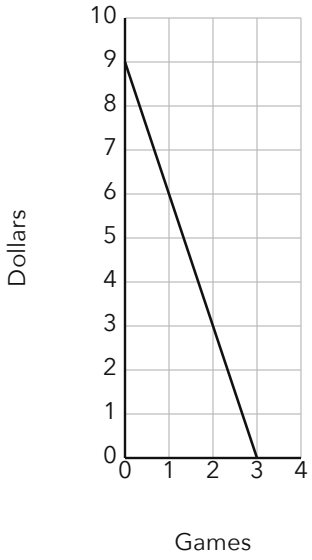
ANSWER _____

4 For y = x/2 - 3, find both intercepts as points.

ANSWER _____

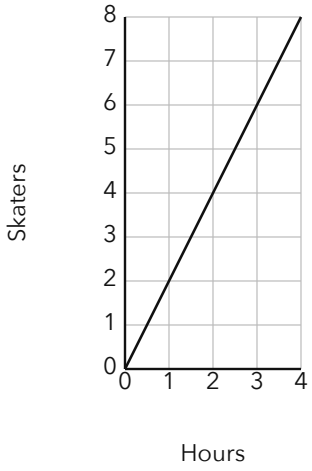
APPLY IT Show your work

1 An arcade card starts with $9. The graph shows its balance, y dollars, after x games. Write an equation. What does the x-intercept mean?



ANSWER _____

2 The graph shows the total number of skaters who entered a skate park, y, after x hours. Write an equation and interpret its slope.



ANSWER _____

CHALLENGE One step up

A line crosses the axes at (0, 10) and (2, 0). Write its equation and find y when x = 3. Explain how the intercepts help.

WORK SPACE AND ANSWER

ANSWER KEY

Graph Clues

GRADE 8 · 8A.AF.J

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y = 3x + 6, find the y-intercept as a point.	**(0, 6)**
2	For y = 2x - 8, find the zero and its point on the graph.	**Zero: x = 4; point: (4, 0)**
3	For y = -4x + 12, find the slope. Does the line rise or fall as x increases?	**Slope: -4; the line falls.**
4	For y = x/2 - 3, find both intercepts as points.	**x-intercept: (6, 0); y-intercept: (0, -3)**

PART 2 · APPLY IT

1. **y = 9 - 3x; after 3 games, the balance is $0.** The graph starts at $9 and drops $3 per game. Its x-intercept is (3, 0).
2. **y = 2x; the total increases by 2 skaters per hour.** The line passes through (0, 0) and (4, 8), so its slope is 8/4 = 2.

CHALLENGE

From (0, 10) to (2, 0), y drops 10 in 2 x-units, so the slope is -5. The equation is y = -5x + 10, and y = -5 when x = 3.

Accept equivalent equations and explanations. For an x-intercept, accept either the point or its x-value when the prompt does not specify a form.