LESSON MAKER PRO

Lines Tell Stories

Read the start and the change in a linear relationship.

GRADE 8 · 8.AF.B.9.c

8.AF.B.9.c "Graph linear relationships, interpreting the slope as the rate of change of the graph and the y-intercept as the initial value."

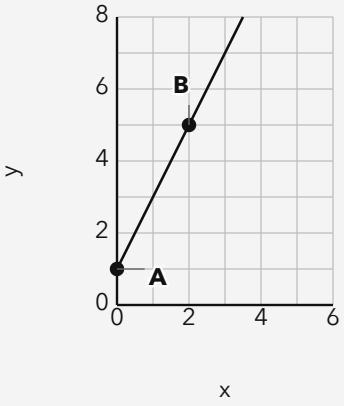
NAME _____ DATE _____

START AND CHANGE

The y-intercept is the y-value where a line crosses the y-axis. The slope is the change in y divided by the change in x, so it tells you how much y changes for each 1-unit increase in x.

WORKED EXAMPLE

Use the graph to find the slope and y-intercept.



1. Use A(0, 1) and B(2, 5).
2. Slope = (5 - 1)/(2 - 0) = 2.
3. The line crosses the y-axis at 1.

Answer: Slope: 2; y-intercept: 1.

PRACTICE 4 problems

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

ANSWER _____

2 A line passes through (0, 6) and (2, 0). Give its slope and y-intercept.

ANSWER _____

3 A line starts at y = -2 and rises 5 for each step right. Write its equation.

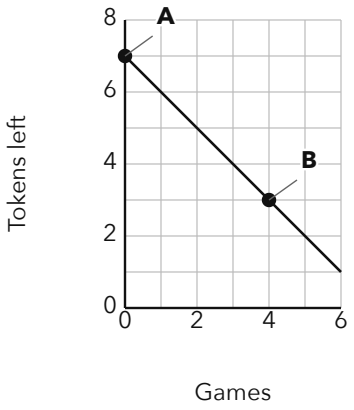
ANSWER _____

4 For y = -3x + 9, give the points to plot at x = 0 and x = 2.

ANSWER _____

APPLY IT Show your work

1 The graph shows tokens left after arcade games. How many tokens do you start with, and how many do you lose per game?



ANSWER _____

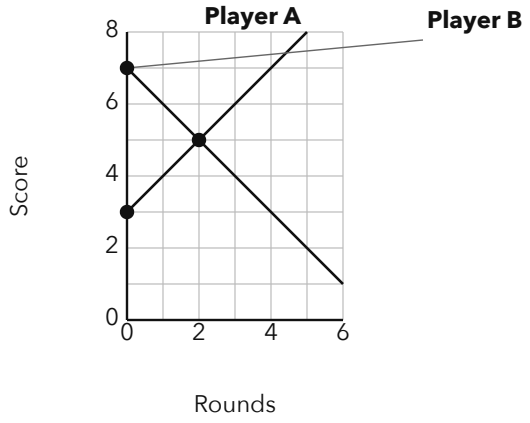
2 A movie app charges $6 to join and $4 per rental. Let x be rentals and y be total cost in dollars. Write an equation and give two points to plot.

WORK SPACE

ANSWER _____

CHALLENGE One step up

The graph shows two players' scores after x rounds. Who starts ahead? Who gains points each round? When are their scores tied? Explain using the graph.



WORK SPACE AND ANSWER

ANSWER KEY

Lines Tell Stories

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y = 4x + 3, give the slope and y-intercept.	**Slope: 4; y-intercept: 3.**
2	A line passes through (0, 6) and (2, 0). Give its slope and y-intercept.	**Slope: -3; y-intercept: 6.**
3	A line starts at y = -2 and rises 5 for each step right. Write its equation.	**y = 5x - 2**
4	For y = -3x + 9, give the points to plot at x = 0 and x = 2.	**(0, 9) and (2, 3)**

PART 2 · APPLY IT

1. **Start with 7 tokens; lose 1 token per game.** The y-intercept is 7. The slope is (3 - 7)/(4 - 0) = -1 token per game.
2. **y = 4x + 6; points (0, 6) and (1, 10).** The joining fee is the initial value, and each rental adds $4. Substitute x = 0 and x = 1 to find the points.

CHALLENGE

Player B starts ahead with 7 points, compared with Player A's 3. Player A gains 1 point per round, while Player B loses 1. Their lines meet at (2, 5), so they are tied at 5 points after 2 rounds.

Accept the slope as a signed rate of change. For the challenge, accept any explanation that identifies both starting scores, the direction of change, and the intersection.