LESSON MAKER PRO

# Line Clues

*Find the rate and starting value.*

**GRADE 8 · MA.8.AR.3.5**

**MA.8.AR.3.5** "Given a real-world context, determine and interpret the slope and y-intercept of a two-variable linear equation from a written description, a table, a graph or an equation in slope-intercept form."

NAME _____ DATE _____

## READ THE LINE

In y = mx + b, m is the slope, or how much y changes when x increases by 1. The y-intercept, b, is the y-value when x = 0, so it is the starting value.

## WORKED EXAMPLE

Find the slope and y-intercept of y = 4x - 3.

1. Compare the equation to y = mx + b.
2. m = 4.
3. b = -3.

**Answer: Slope: 4; y-intercept: -3**

## PRACTICE 5 problems

**1** For y = 2x + 5, find m and b.

**ANSWER** _____

**2** A table has (0, 8), (2, 12), and (6, 20). Find the slope and y-intercept.

**ANSWER** _____

**3** A graph's line passes through (0, 10) and (2, 6). Find the slope and y-intercept.

**ANSWER** _____

**4** A game score starts at 11 points and loses 1 point each round. Write m and b.

**ANSWER** _____

**5** For y = -5/2x + 7, find m and b.

**ANSWER** _____

## APPLY IT Show your work

**1** A phone battery is at 86% and drops 7% each hour. Let y be the battery percent after x hours. Write an equation, then identify and interpret m and b.

WORK SPACE

**ANSWER** _____

**2** A music app charges $8 to join and $6 each month. Let y be the total cost after x months. Write an equation, then identify and interpret m and b.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

**CHALLENGE**

Two video editing apps have costs y = 6x + 2 and y = 5x + 9, where x is months. Which app has the higher starting cost? Which cost increases faster? Explain with slopes and y-intercepts.

_____

_____

**ANSWER KEY**

# Line Clues

**GRADE 8 · MA.8.AR.3.5**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | For y = 2x + 5, find m and b. | **m = 2, b = 5** |
| 2 | A table has (0, 8), (2, 12), and (6, 20). Find the slope and y-intercept. | **m = 2, b = 8** |
| 3 | A graph's line passes through (0, 10) and (2, 6). Find the slope and y-intercept. | **m = -2, b = 10** |
| 4 | A game score starts at 11 points and loses 1 point each round. Write m and b. | **m = -1, b = 11** |
| 5 | For y = -5/2x + 7, find m and b. | **m = -5/2, b = 7** |

## PART 2 · APPLY IT

1. **y = -7x + 86; m = -7 means the battery drops 7% each hour. b = 86 means the battery starts at 86%.** The battery changes by -7 each hour and has a starting value of 86.
2. **y = 6x + 8; m = 6 means the cost rises $6 each month. b = 8 means the joining fee is $8.** The monthly rate is 6, and the starting fee is 8.

## CHALLENGE

**The app with y = 5x + 9 has the higher starting cost because 9 is greater than 2. The app with y = 6x + 2 increases faster because 6 is greater than 5.**

Accept slope and y-intercept in either order when clearly labeled. Accept equivalent wording for rate of change and starting value.