LESSON MAKER PRO

# Model Meaning

*Read rates and starting values in linear models.*

**HIGH SCHOOL · HSS-ID.C.7**

**CCSS.Math.Content.HSS-ID.C.7** "Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data."

NAME _____ DATE _____

## READ THE MODEL

In y = mx + b, m is the change in y for each 1-unit increase in x. The intercept b is the value of y when x = 0.

## WORKED EXAMPLE

A service charges y = 7x + 18 dollars, where x is the number of visits.

1. The slope is 7.
2. The cost rises $7 per visit.
3. The intercept is 18.
4. The cost is $18 at 0 visits.

**Answer: Rate: $7 per visit. Starting cost: $18.**

## PRACTICE 5 problems

**1** For y = 3x + 5, state the slope and y-intercept.

**ANSWER** _____

**2** For y = -2x + 14, state what the slope tells you.

**ANSWER** _____

**3** A model has points (0, 11), (2, 17), and (4, 23). State the slope and intercept.

**ANSWER** _____

**4** For y = 1/2x + 9, interpret the slope and intercept.

**ANSWER** _____

**5** For y = 4x, interpret the intercept.

**ANSWER** _____

## APPLY IT Show your work

**1** A phone battery model is B = -8t + 96, where B is battery percent and t is hours since charging. Interpret the slope and intercept.

WORK SPACE

**ANSWER** _____

**2** A student saves money using S = 15w + 40, where S is dollars saved after w weeks. Interpret the slope and intercept.

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

A concert club's total cost C is $31 for 2 tickets and $51 for 6 tickets. Write a linear model C = mx + b, then interpret m and b.

WORK SPACE AND ANSWER

# Model Meaning



## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | For y = 3x + 5, state the slope and y-intercept. | **Slope: 3. y-intercept: 5.** |
| 2 | For y = -2x + 14, state what the slope tells you. | **y decreases 2 units for each 1-unit increase in x.** |
| 3 | A model has points (0, 11), (2, 17), and (4, 23). State the slope and intercept. | **Slope: 3. Intercept: 11.** |
| 4 | For y = 1/2x + 9, interpret the slope and intercept. | **y rises 1/2 unit per 1 unit of x. At x = 0, y = 9.** |
| 5 | For y = 4x, interpret the intercept. | **The intercept is 0, so y is 0 when x is 0.** |

## PART 2 · APPLY IT

1. **The battery drops 8 percentage points per hour. It was 96% at t = 0.** Read -8 as the hourly change and 96 as the battery percentage at zero hours.
2. **The student saves $15 each week. The student started with $40.** The coefficient of w is the weekly savings rate, and the constant is the amount at week 0.

## CHALLENGE

**C = 5x + 21. The cost rises $5 per ticket, and $21 is the cost at 0 tickets.**

Accept equivalent wording that correctly identifies the rate of change and value at x = 0. For the challenge, accept C = 5x + 21 only if both values are interpreted in context.