

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 $y = \frac{1}{2}x + 9$, 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

CHALLENGE

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 .

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

- 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.
- 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.