LESSON MAKER PRO

Where Lines Cross

Find intercepts from standard-form equations.

HIGH SCHOOL · MT.CORE.ALG.LIN.4.e

MT.CORE.ALG.LIN.4.e "Understand that linear equations can be represented in multiple forms and the specific features of each form by: Understanding the relationship between standard form and the x- and y-intercepts."

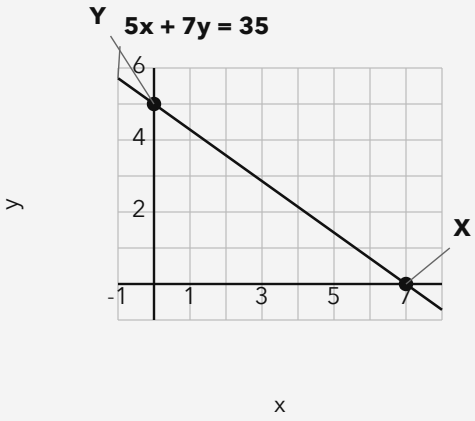
NAME _____ DATE _____

INTERCEPTS FROM AN EQUATION

In Ax + By = C, an x-intercept is where y = 0. A y-intercept is where x = 0. Substitute zero for one variable, then solve for the other.

WORKED EXAMPLE

Find the intercepts of $5x + 7y = 35$.



1. Set y = 0: 5x = 35, so x = 7.
2. Set x = 0: 7y = 35, so y = 5.

Answer: x-intercept: (7, 0); y-intercept: (0, 5)

PRACTICE 4 problems

1 Find both intercepts of 4x + 9y = 36.

ANSWER _____

2 Find both intercepts of 6x + 11y = 66.

ANSWER _____

3 Find both intercepts of 8x - 9y = 72.

ANSWER _____

4 A line crosses the axes at (10, 0) and (0, 9). Write an equation in standard form with integer coefficients.

ANSWER _____

APPLY IT Show your work

1 At a festival, game passes cost $8 and snack vouchers cost $4. You spend exactly $48. Let x be passes and y be vouchers. Write an equation and explain both intercepts.

WORK SPACE

ANSWER _____

2 You have exactly 90 minutes to film clips. Each short takes 15 minutes, and each tutorial takes 30 minutes. Let x be shorts and y be tutorials. Write an equation and explain both intercepts.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A line has equation Ax + By = 48. Its intercepts are (8, 0) and (0, -6). Find A and B, then write the equation.

WORK SPACE AND ANSWER

ANSWER KEY

Where Lines Cross

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find both intercepts of 4x + 9y = 36.	**x-intercept: (9, 0); y-intercept: (0, 4)**
2	Find both intercepts of 6x + 11y = 66.	**x-intercept: (11, 0); y-intercept: (0, 6)**
3	Find both intercepts of 8x - 9y = 72.	**x-intercept: (9, 0); y-intercept: (0, -8)**
4	A line crosses the axes at (10, 0) and (0, 9). Write an equation in standard form with integer coefficients.	**9x + 10y = 90**

PART 2 · APPLY IT

1. **8x + 4y = 48. The intercepts are (6, 0), meaning 6 passes and no vouchers, and (0, 12), meaning no passes and 12 vouchers.** Set y = 0 to get x = 6. Set x = 0 to get y = 12.
2. **15x + 30y = 90. The intercepts are (6, 0), meaning 6 shorts and no tutorials, and (0, 3), meaning no shorts and 3 tutorials.** Set y = 0 to get x = 6. Set x = 0 to get y = 3.

CHALLENGE

A = 6 and B = -8; the equation is 6x - 8y = 48.

For the standard-form equation, accept equivalent equations with integer coefficients. Intercepts must be written as ordered pairs.