Determining the Intercepts of Linear Functions

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Essential Questions

1. How can the equation of a line in standard form or point-slope form be converted into slope-intercept form?
2. What are some ways in which the x- or y-intercept of a line can be found?

WORDS TO KNOW

linear function — a function that can be written in the form $y = mx + b$, in which m is the slope, b is the y-intercept, and the graph is a straight line

point-slope form — the form $y - y_1 = m(x - x_1)$, where m is the slope, and (x_1, y_1) is a point on the line

slope — the measure of the rate of change of one variable with respect to another variable; $\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x} = \frac{\text{rise}}{\text{run}}$; the slope in the equation $y = mx + b$ is m

slope-intercept form — the form $y = mx + b$, where m is the slope and b is the y-intercept

standard form — the form $ax + by = c$, where a, b, and c are integers, and a is positive

***x*-intercept** — the point at which the line intersects the x-axis at $(x, 0)$

***y*-intercept** — the point at which the line intersects the y-axis at $(0, y)$

Recommended Resources

- Khan Academy. "Multiple Examples of Constructing Linear Equations in Slope-Intercept Form."

  http://www.walch.com/rr/04050

  This video gives multiple examples of constructing linear equations in slope-intercept form. It shows how to write the slope-intercept form of a linear equation given the slope and *y*-intercept of a line, the slope and a point on a line, two points on a line, and the graph of a line. It ends by relating the slope-intercept form of a linear equation to function notation.

- Texas Instruments. "Finding the *x*-Intercepts of a Function Using the TI-83 Family, TI-84 Plus Family, and TI-Nspire Handheld in TI-84 Plus Mode."

  http://www.walch.com/rr/04051

  The article gives step-by-step instructions on how to find the *x*-intercept of a linear equation by using the TI-83/84 graphing calculator. It includes the specific example of finding the *x*-intercept of the line $y = 2x - 7$. It also gives screenshots so that users can follow along on their own calculators.