Other Forms of a Line

Standard form finds both intercepts fast. Point-slope form is a shortcut from a slope and a point. Rewrite either into y = mx + b to read m and b.

Name _____ Date _____

Words we use

say the math word, then the plain English

WORD	PLAIN ENGLISH	WHAT YOU DO
Standard form	Ax + By = C: the x and y terms on one side, a plain number on the other.	Use it to find both intercepts fast: x = 0, then y = 0.
Point-slope form	$y - y_1 = m(x - x_1)$: a shortcut when you know the slope and one point.	Distribute, then get y alone.
Slope-intercept form	y = mx + b: the workhorse. Shows m and b.	Rewrite the others into this one to read m and b and graph.
Rewrite	Get y alone: add the opposite of the x term to both sides, multiply by the reciprocal of the number on y.	Unit 1 solving, with y as the letter.
Intercepts	y-intercept: x = 0. x-intercept: y = 0.	Two points, enough to draw the line.

Part A Intercepts from standard form

Put x = 0, then y = 0. Write both intercepts as points.

EQUATION	Y-INTERCEPT	X-INTERCEPT
3x + 2y = 12		
x + 5y = 10		
4x – y = 8		

Part B Rewrite into y = mx + b

1. 3x + 2y = 12

2. x + 5y = 10

3. 4x – y = 8

Part C Point-slope form

1. Rewrite $y - 4 = 2(x - 1)$.

2. Rewrite $y + 2 = -3(x - 2)$.

3. Write the point-slope form for slope $1/2$ through $(4, 3)$, then rewrite it.

Part D In your own words, and the exit ticket

1. Why do we rewrite into $y = mx + b$?

2. Intercepts of $5x + 2y = 10$, and the rewrite:

3. Rewrite $y - 1 = 4(x + 2)$:

Answer key

Part A. (0, 6), (4, 0). (0, 2), (10, 0). (0, –8), (2, 0).

Part B. 1. $y = -3/2\,x + 6$. 2. $y = -1/5\,x + 2$. 3. $y = 4x - 8$.

Part C. 1. $y = 2x + 2$. 2. $y = -3x + 4$. 3. $y - 3 = 1/2\,(x - 4)$, so $y = 1/2\,x + 1$.

Part D. 1. It shows m and b, the two numbers with the two jobs. 2. (0, 5), (2, 0); $y = -5/2\,x + 5$. 3. $y = 4x + 9$.