

Lesson 8 General Form of the Equation

Sometimes equations of lines are not given to us in a form that is easy to graph. For example, the general form: $Ax + By + C = 0$ ← general form

$Ax + By = C$ ← standard form

General Form of the Equation of a Linear Relation

always positive, not negative

$Ax + By + C = 0$, where A is a whole number, and B and C are integers.

Example 1 – Rewriting an Equation in General Form

Write each equation in general form.

$$Ax + By + C = 0$$

A, B, C coefficients
 x, y variables

a) $y = -\frac{2}{3}x + 4$ ← slope-intercept form

$3y = -2x + 12$
 $2x + 3y - 12 = 0$

multiply to get rid of fraction
make A positive, one side zero

slope-point form b) $y - 1 = \frac{3}{5}(x + 2)$

$$5y - 5 = 3(x + 2)$$

$$5y - 5 = 3x + 6$$

$$0 = 3x - 5y + 11$$

$$\text{or } 3x - 5y + 11 = 0$$

Multiply both sides by 5

Move everything to the right to make left 0 and keep A positive

more examples

c) $y - 2 = \frac{2}{3}(x - 3)$

$$3y - 6 = 2x - 6$$

$$0 = 2x - 3y$$

or $2x - 3y = 0$



Example 2 – Graphing a Line in General Form

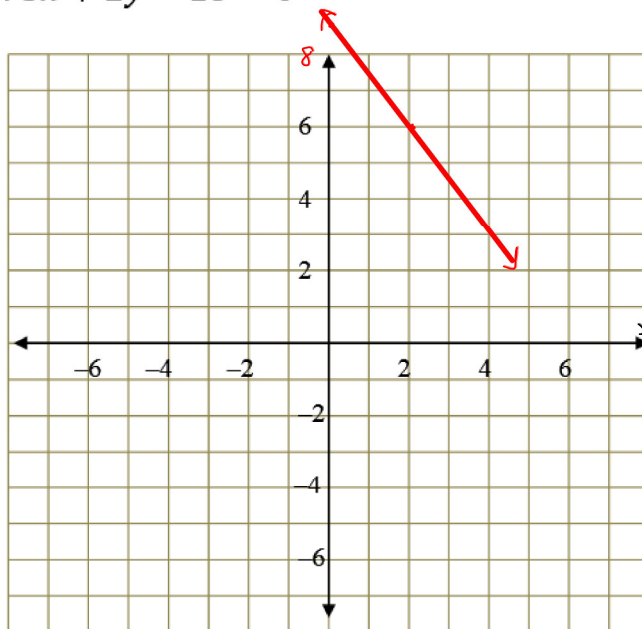
Graph the line whose equation is: $3x + 2y - 18 = 0$

change to slope-intercept form, $y = mx + b$

$$3x + 2y - 18 = 0$$
$$2y = -3x + 18$$
$$y = -\frac{3}{2}x + 9$$

\uparrow $m = -\frac{3}{2}$ \uparrow y-int

down 3,
right 2



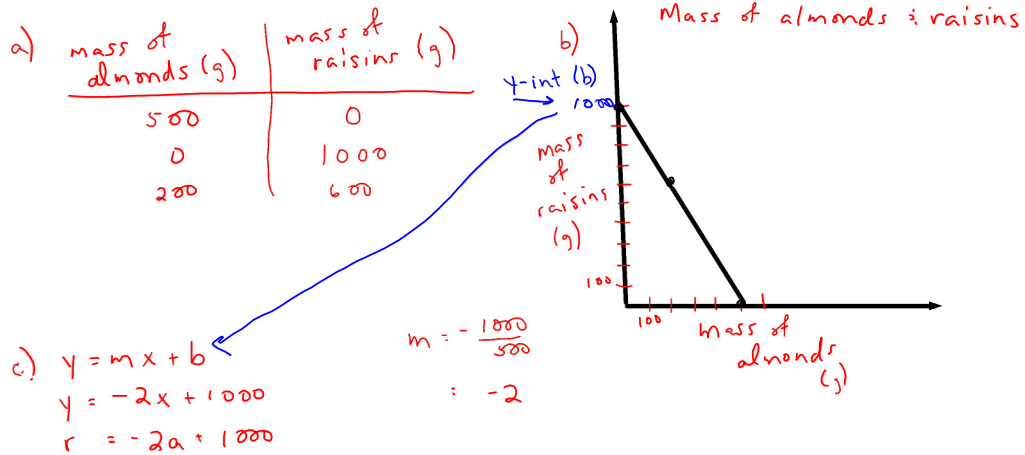
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Sometimes, we have to generate the equation from a graph of generated data.

Example 3

Almonds cost \$2 per 100g and raisins cost \$1 per 100g. Liam has \$10 to purchase both items.

- Generate some data for the relation
- Graph the data
- Write an equation for the relation
- Will Liam spend exactly \$10 if he buys 300g of almonds and 400g of raisins? What about 400g of almonds and 300g of raisins?



c)

$$y = mx + b$$

$$y = -2x + 1000$$

$$r = -2a + 1000$$

d)

300g of almonds	\$6	
400g of raisins	\$4	
	<hr/>	\$10 yes
400g of almonds	\$8	
300g of raisins	\$3	
	<hr/>	\$11 no

Worksheet
1, 4, 5, 6, 8, 11