Standard Form

When an equation is written in the form $Ax + By = C$, where $A \geq 0$, and A, B, and C are integers, it is written in standard form.

Examples

Tutor

Mauldin Middle School wants to make $4,740 from yearbooks. Print yearbooks x cost $60 and digital yearbooks y cost $15. This can be represented by the equation $60x + 15y = 4{,}740$.

(x, y)

2. Use the x- and y-intercepts to graph the equation.

To find the x-intercept, let $y = 0$. To find the y-intercept, let $x = 0$.

$60x + 15y = 4{,}740$

$60x + 15(0) = 4{,}740$

$60x = 4{,}740$

$x = 79$

$60x + 15y = 4{,}740$

$60(0) + 15y = 4{,}740$

$15y = 4{,}740$

$y = 316$

60x+15(0)=4740
60x=4740
60 60 x=79 (79,0)

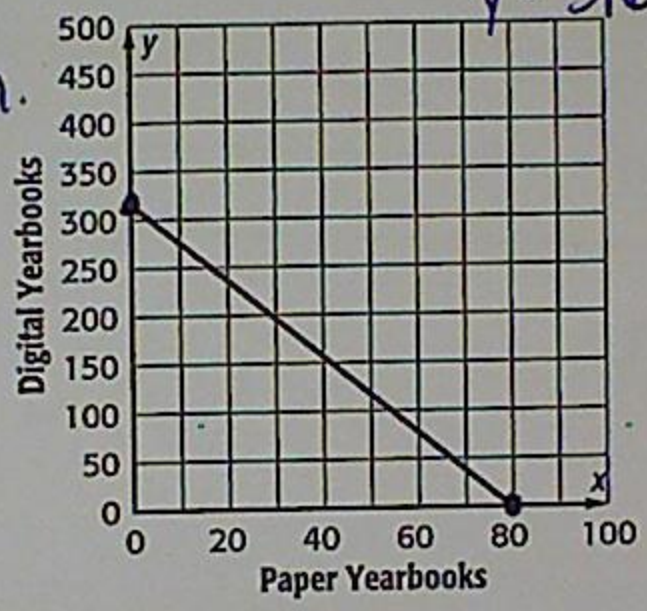
60(0)+15y=4740
15y=4,740
15 15
y=316

3. Interpret the x- and y-intercepts.

Explain what they mean.

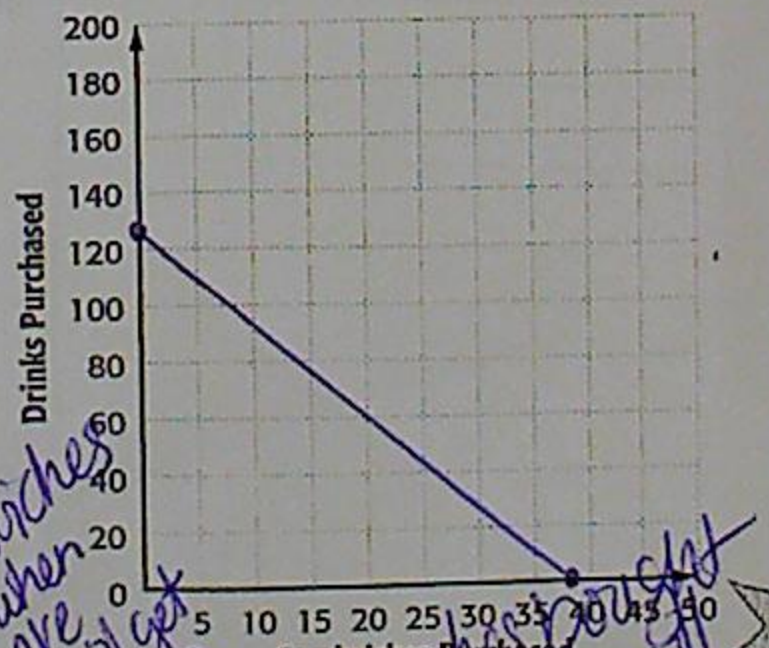
The x-intercept is at the point (79, 0). This means they can sell 79 print yearbooks and 0 digital yearbooks to earn $4,740.

The y-intercept is at the point (0, 316). This means they can sell 0 print yearbooks and 316 digital yearbooks to earn $4,740.



Got It? Do this problem to find out.

c. Mr. Davies spent $230 on lunch for his class. Sandwiches x cost $6 and drinks y cost $2. This can be represented by the equation $6x + 2y = 230$. Use the x- and y-intercepts to graph the equation. Then interpret the intercepts.



38.3 sandwiches purchased when 0 drinks are bought will get you $230.

0 sandwiches purchased & 115 drinks will total $230

Work Zone

STOP and Reflect

Describe below two different methods for graphing a line.

① Put in 0 for y to find the x-int.
② Put in 0 for x to find the y-int
③ graph the 2 points (0, 316)

y-intercept

When an equation is written in slope-intercept form, $y = mx + b$, the y-intercept is equal to b.

When you have 79 print yearbooks and 0 digital copies, that will equal $4740. When you have 0 print yearbooks & 316 digital, you can earn the total.

Show your work.

c.

y-int 6(0)+2y=230
(0,115) 2y/2 = 230/2
y=115

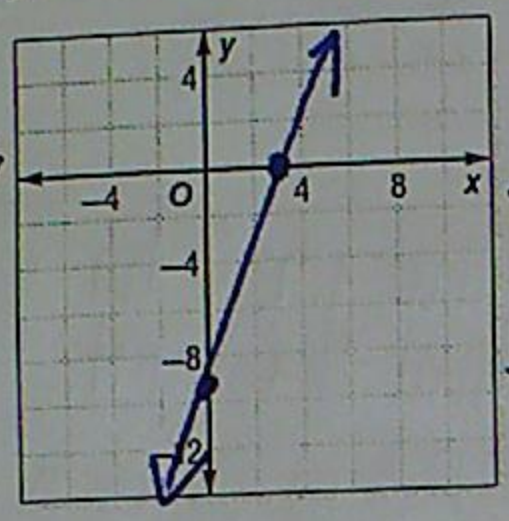
x-int 6x+2(0)=230
(38.3,0) 6x/6 = 230/6
x=38.3

Guided Practice

State the *x*- and *y*-intercepts of each equation. Then use the intercepts to graph the equation. (Example 1)

1. $y = 3x - 9$

b=-9 (0,-9) y-int



Show your work.

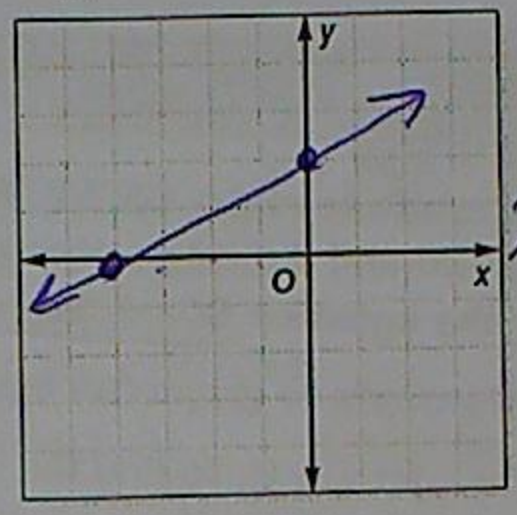
0=3x-9
+9 +9

$\frac{9}{3} = \frac{3x}{3}$

x=3

x-int (3,0)

2. $y = \frac{1}{2}x + 2$



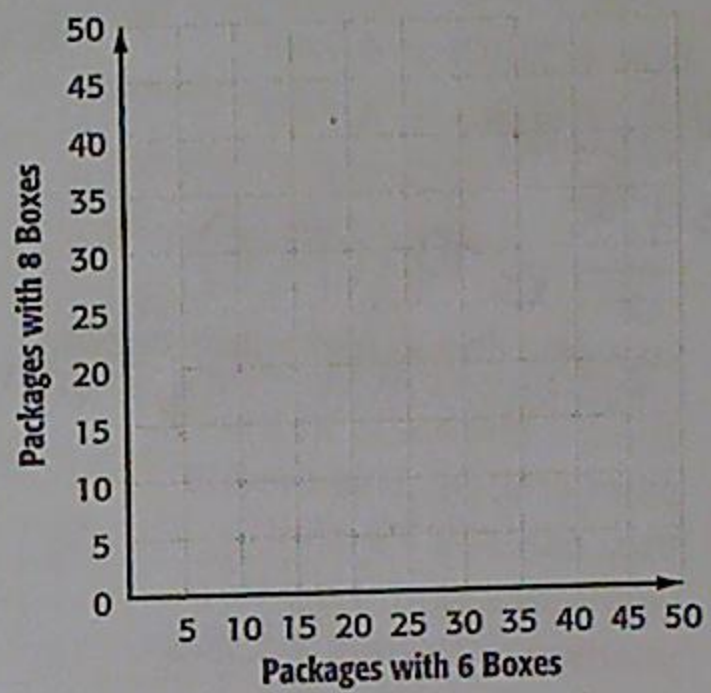
$0 = \frac{1}{2}x + 2$

-2 -2

$-2 = \frac{1}{2}x \cdot 2$

-4 = x

3. A store sells juice boxes in packages of 6 boxes and 8 boxes. They have 288 total juice boxes. This is represented by the function $6x + 8y = 288$. Use the *x*- and *y*-intercepts to graph the equation. Then interpret the *x*- and *y*-intercepts. (Examples 2 and 3)



4. **Building on the Essential Question** How can the *x*-intercept and *y*-intercept be used to graph a linear equation?

Rate Yourself!

Are you ready to move on? Shade the section that applies.

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