6.4 - Standard Form

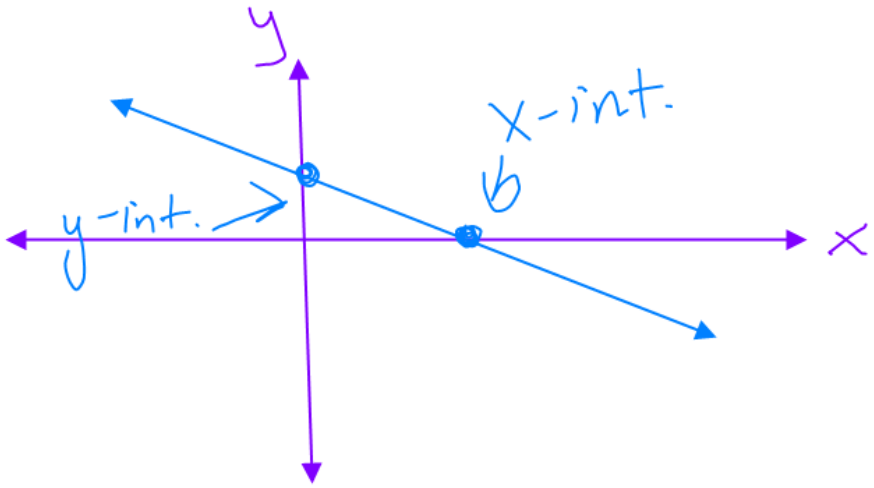
$2x + 4y = 12$

Vocabulary:

Standard Form: $Ax + By = C$

x-intercept: crosses the x-axis

y-intercept: crosses the y-axis



Standard Form

Lesson 6-4

Additional Examples

OBJECTIVE 1

1 EXAMPLE Find the *x*- and *y*-intercepts of $2x + 5y = 6$.

x-int.

* plug 0 in for y

$2x + 5(0) = 6$

$2x = 6$

$x = 3$

$(3, 0)$

(x, y)

y-int.

* plug 0 in for x

$2(0) + 5y = 6$

$\frac{5y}{5} = \frac{6}{5}$

$y = 1\frac{1}{5}$

$(0, 1\frac{1}{5})$

Find the x and y intercepts of each equation.

#1. $x + 2y = 18$

x int.

$x + 2(0) = 18$

$x = 18$

$(18, 0)$

y-int.

$0 + 2y = 18$

$y = 9$

$(0, 9)$

#3. $-5x + y = 30$

X int

$-5x + 0 = 30$

$-5x = 30$

$x = -6$

$(-6, 0)$

y int

$-5(0) + y = 30$

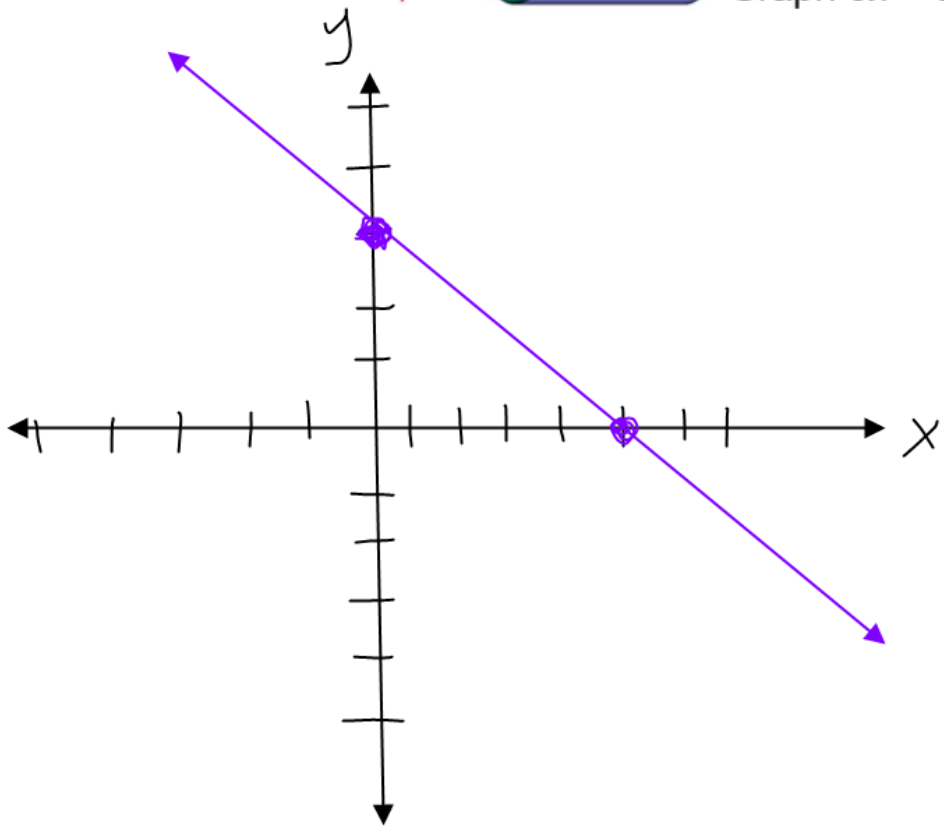
$y = 30$

$(0, 30)$

Additional Examples

OBJECTIVE 1

2 EXAMPLE Graph $3x + 5y = 15$ using intercepts.



x-int

$3x = 15$

$x = 5$

$(5, 0)$

y-int

$5y = 15$

$y = 3$

$(0, 3)$

Graph the following equations by using the x and y intercepts.

#13. $x + y = 2$

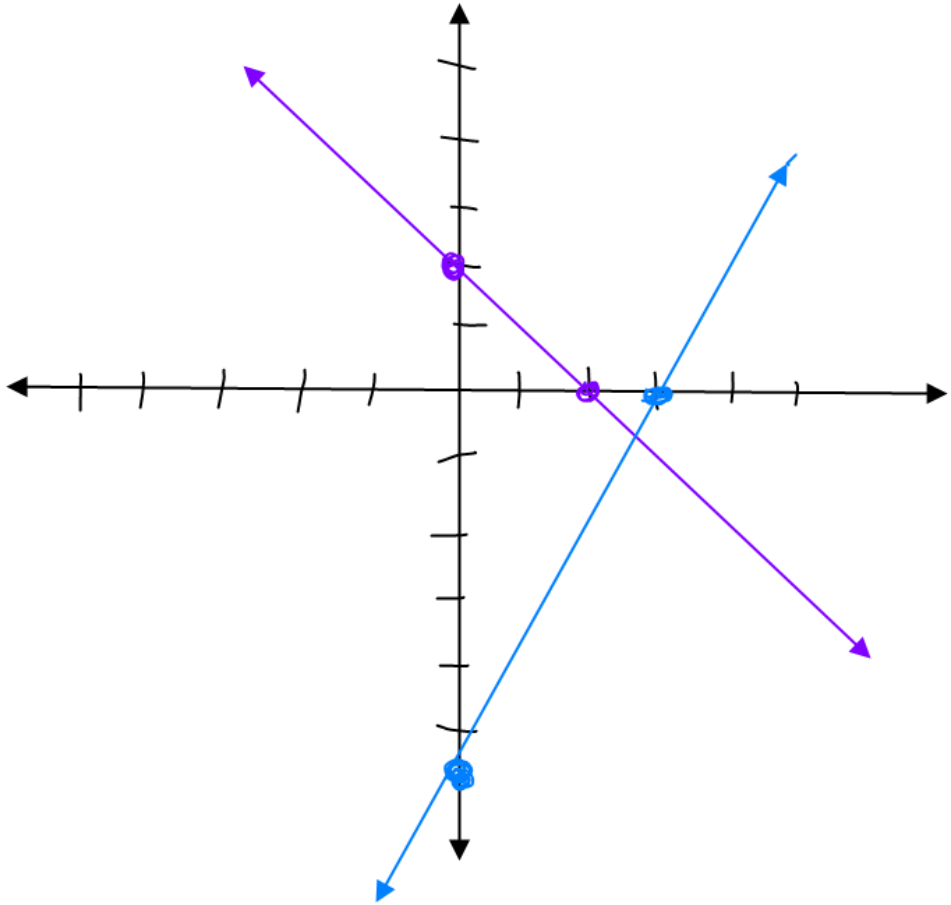
$x = 2$ $(2, 0)$

$y = 2$ $(0, 2)$

#17. $-2x + y = -6$

$x = 3$ $(3, 0)$

$y = -6$ $(0, -6)$



(x, y)

(0, 4)

(1, 4)

(2, 4)

Additional Examples

OBJECTIVE 1

3 EXAMPLE

a. Graph $y = 4$

y = horizontal

b. Graph $x = -3$.

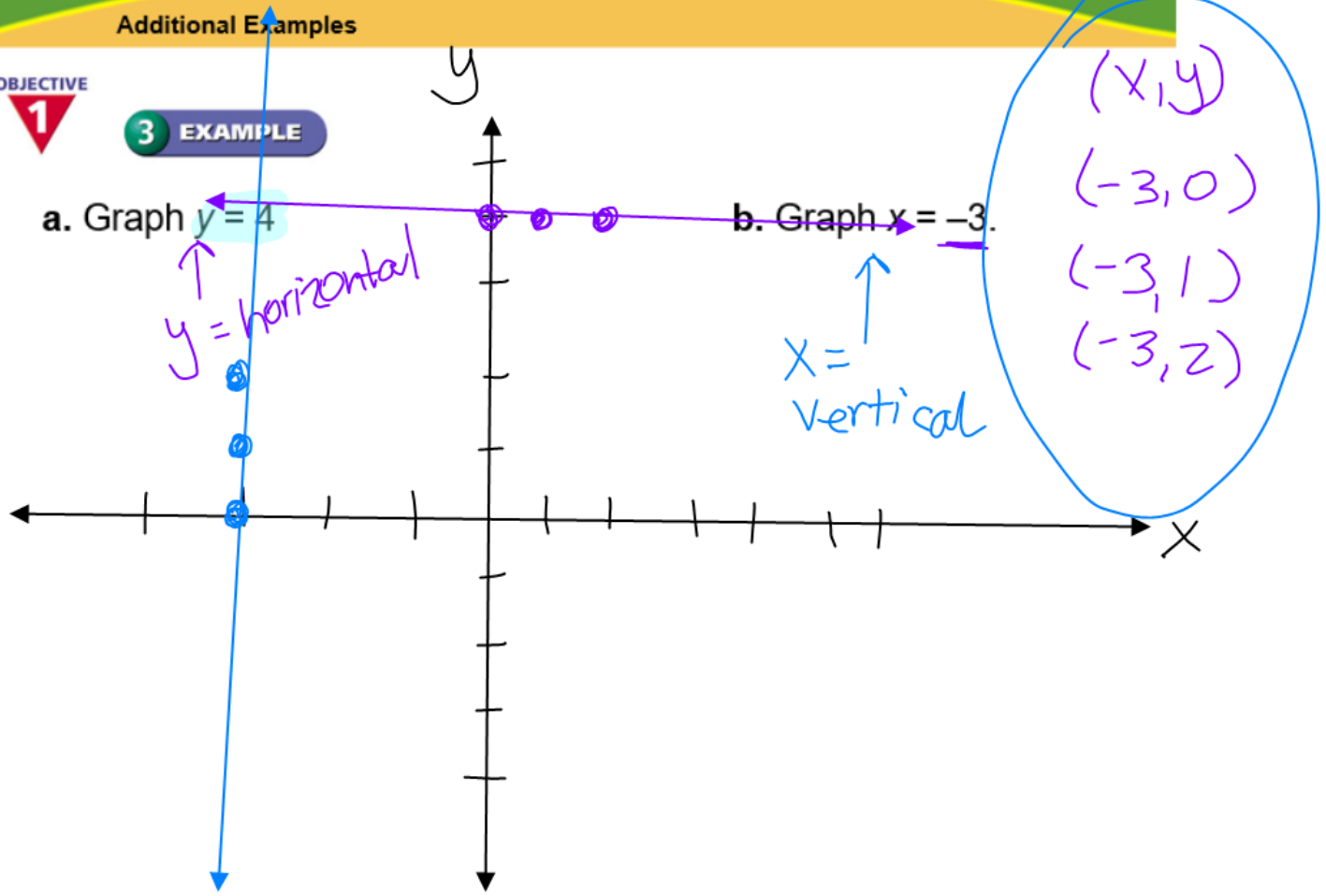
X = Vertical

(x, y)

(-3, 0)

(-3, 1)

(-3, 2)



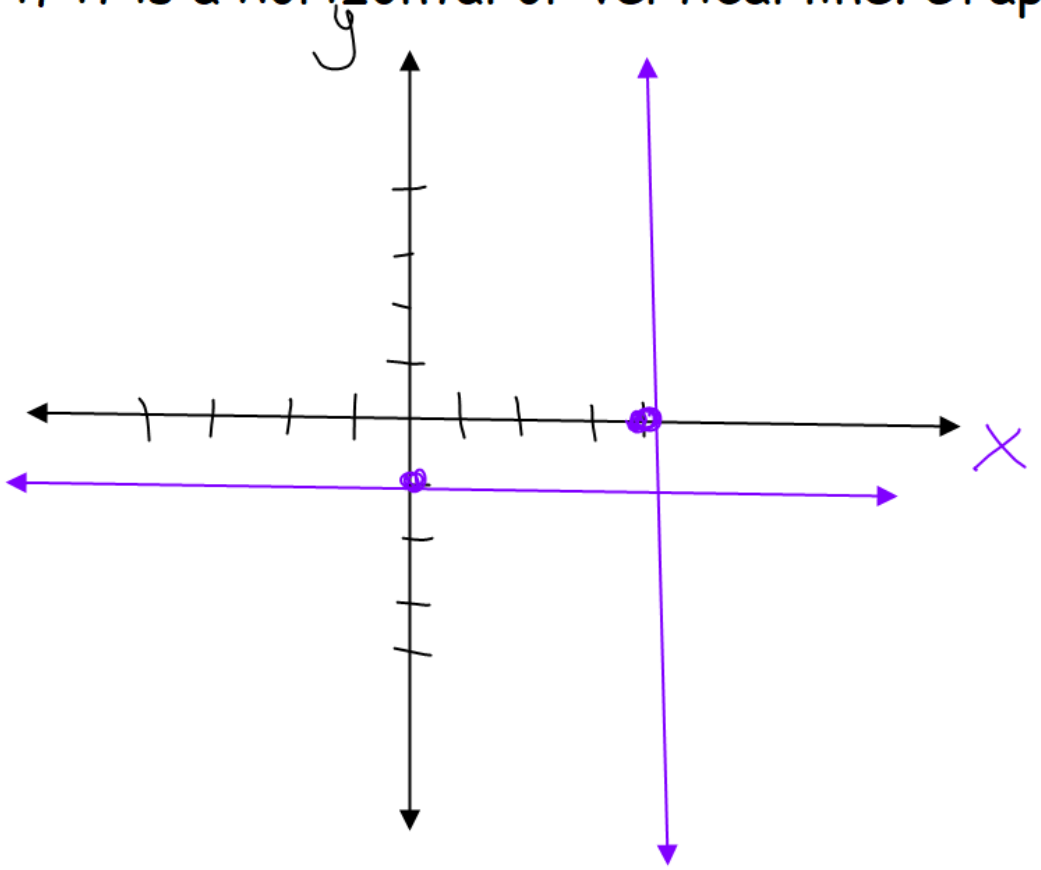
For each equation, tell if it is a horizontal or vertical line. Graph.

horizontal

#19. $y = -1$

vertical

#20. $x = 4$



$y = \frac{2}{3}x$

Additional Examples

OBJECTIVE 2

4 EXAMPLE Write $y = \frac{2}{3}x + 6$ in standard form using integers.

whole #'s

$Ax + By = C$

$3\left(y = \frac{2}{3}x + 6\right)$

$3y = 2x + 18$

$-2x \quad -2x$

$-2x + 3y = 18$

Write equation in standard form using integer coefficients.

$Ax+By=C$

#29. $2\left(y=\frac{1}{2}x-3\right)$

$2y=1x-6$

$-1x \quad -1x$

$-1x+2y=-6$

or

$-x+2y=-6$

#31. $4\left(y=-\frac{3}{4}x-4\right)$

$4y=-3x-16$

$+3x \quad +3x$

$3x+4y=-16$

OBJECTIVE 2

$Ax + By = C$

5 EXAMPLE Write an equation in standard form to find the number of hours you would need to work at each job to make a total of $130.

Job	Amount Paid per hour
Mowing lawns	$12
Delivering newspapers	$5

x = Mowing lawns

y = Delivering newspapers

$12x + 5y = 130$

37. Fitness Larry runs at an average rate of 8 mi/h. He walks at an average rate of 3 mi/h.

a. Define a variable for time spent walking. Define a different variable for time spent running.

b. Write an equation in standard form to relate the times he could spend running and walking if he travels a distance of 15 mi.

$Ax + By = C$

a) x = running

y = walking

b) $8x + 3y = 15$

Homework: pg.333 #4, 6, 10-12, 16, 23, 24, 30, 36, 72, 74