Name "Teacher" Pd 1,2 Date January 31 2018 **Section 2.S.2**

Standard Form Systems of Equations

You want to buy some new pairs of jeans and new dresses, for a total of 6 items of clothing. You go to a store that sells dresses for $25 and jeans for $50. You want to spend a total of $200, which is how much money you got for your birthday. How many jeans and how many dresses do you buy? (Ignore tax.)

Variables

x: Dresses.

y: Jeans.

Total Items Equation

$x + y = 6$

$x + 0 = 6$

$x = 6$ (6,0).

$0 + y = 6$

$y = 6$ (0,6)

Total Spending Equation

$25x + 50y = 200$

$25x + 50(0) = 200$

$\frac{25x}{25} = \frac{200}{25}$

$x = 8$ (8,0)

$25(0) + 50y = 200$

$\frac{50y}{50} = \frac{200}{50}$

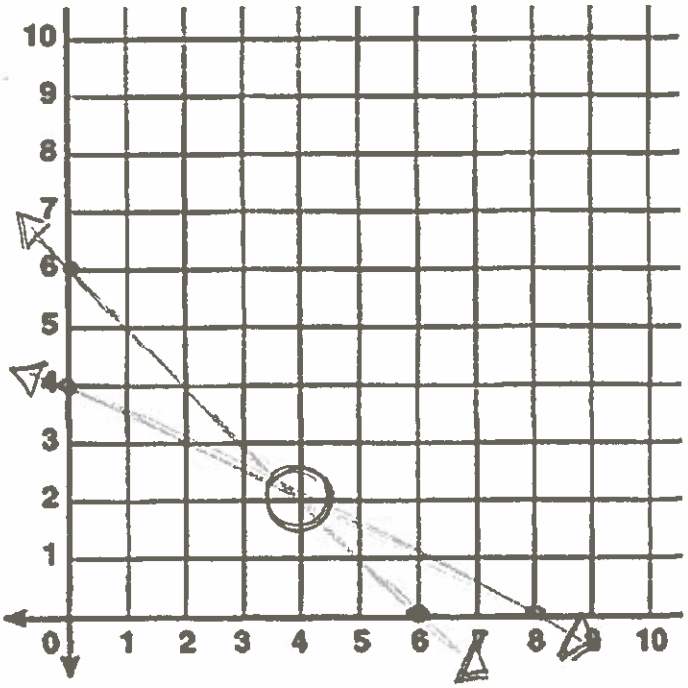
$y = 4$

(0,4)

Reminder

To find x-intercept:
→ set $y = 0$

To find y-intercept:
→ set $x = 0$



x y
(4, 2)

you can buy (4) dresses, and (2) pairs of jeans.

How can we check the solution?

$x + y = 6$

$4 + 2 = 6$

$6 = 6$

$25x + 50y = 200$

$25(4) + 50(2) = 200$

$100 + 100 = 200$

$200 = 200$

Solve the System by Graphing the Standard Form Equations
Then check the solution.

$x - y = -1$

x-int: $x - 0 = -1$

$x = -1$

$(-1, 0)$

y-int: $\frac{0 - 1y}{-1} = \frac{-1}{-1}$

$y = 1$

$(0, 1)$

Check: $1 - 2 = 1$

$-1 = -1$ ✓

$2x + y = 4$

x-int: $\frac{2x + 0}{2} = \frac{4}{2}$

$x = 2$

$(2, 0)$

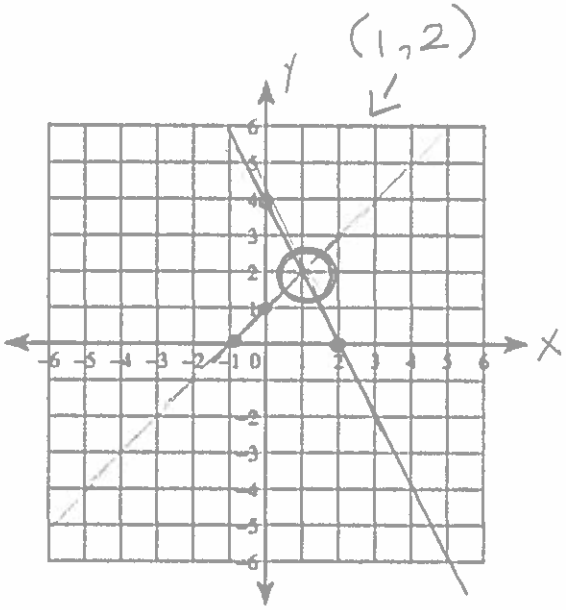
y-int: $2(0) + y = 4$

$y = 4$

$(0, 4)$

Check: $2(1) + 2 = 4$

$4 = 4$ $2 + 2 = 4$



$x + 2y = 4$

x-int: $x + 2(0) = 4$

$x = 4$

$(4, 0)$

y-int: $\frac{0 + 2y}{2} = \frac{4}{2}$

$y = 2$

$(0, 2)$

Check: $2 + 2(1) = 4$

$2 + 2 = 4$

$4 = 4$ ✓

$3x + 2y = 8$

$\frac{3x + 2(0)}{3} = \frac{8}{3}$

$x = \frac{8}{3}$

Convert to $y = mx + b$

$3x + 2y = 8$

$-3x \quad -3x$

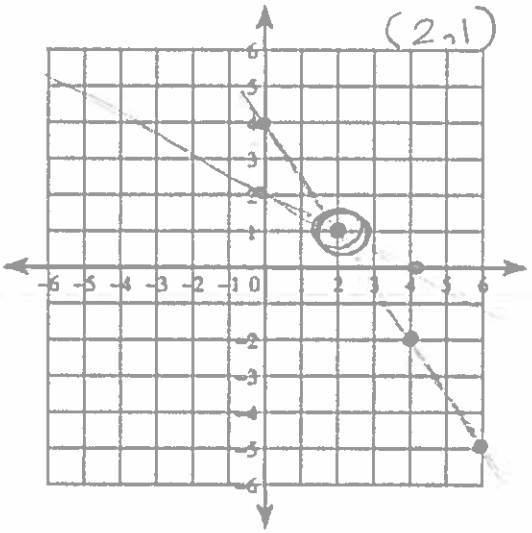
$\frac{2y}{2} = \frac{-3x + 8}{2}$

$y = -\frac{3}{2}x + 4$

Check: $3(2) + 2(1) = 8$

$6 + 2 = 8$

$8 = 8$ ✓



<u>Multiple Choice Practice - Use your calculator!! You only have to show the work for the correct choice.</u>

(1) Which of the following points is the solution to the system of equations?

$y = 2x + 4$ $\quad$ $y = 5x - 2$

a. $(-2, 8)$ $\quad$ b. $(8, -2)$ $\quad$ c. $(2, 8)$ $\quad$ d. $(8, 2)$

(2) Which of the following systems of equations has the solution $(1, -3)$?

a. $4x - y = 7$, $4x + 2y = -10$ $\quad$ b. $4x - y = 7$, $2x + 4y = -10$ $\quad$ c. $4x + y = 7$, $2x + 4y = -1$ $\quad$ d. none of these