Name Key Period _____ Date _____

What You Should Be Able To Do For the It's In The System Unit Test

Write each equation in Slope-Intercept and Standard Forms.

$6y = \frac{3}{5}x - 7$

$\frac{1}{6}[6y = \frac{3}{5}x - 7]$

$y = \frac{1}{10}x - \frac{7}{6}$

$5[6y = \frac{3}{5}x - 7]$

$30y = 3x - 35$

$-30y \quad -30y$

$0 = 3x - 30y - 35$

$+35 \quad +35$

$35 = 3x - 30y$

$3x - 30y = 35$

slope $= \frac{1}{10}$

x-int: $(35/3, 0)$

y-int: $(0, -\frac{7}{6})$

$\frac{3}{2}x = 5y - \frac{1}{3}$

$-5y \quad -5y$

$6[\frac{3}{2}x - 5y = -\frac{1}{3}]$

$9x - 30y = -2$

$\frac{1}{5}[5y = \frac{3}{2}x + \frac{1}{3}]$

$y = \frac{3}{10}x + \frac{1}{15}$

slope $= \frac{3}{10}$

y-int: $(0, \frac{1}{15})$

x-int: $(-\frac{2}{9}, 0)$

$4y - \frac{2}{7}x + 3 = 0$

$-\frac{2}{7}x + 4y + 3 = 0$

$-3 \quad -3$

$-7[-\frac{2}{7}x + 4y = -3]$

$2x - 28y = 21$

$4y - \frac{2}{7}x + 3 = 0$

$+\frac{2}{7}x \quad +\frac{2}{7}x$

$4y + 3 = \frac{2}{7}x$

$-3 \quad -3$

$\frac{1}{4}[4y = \frac{2}{7}x - 3]$

$y = \frac{1}{14}x - \frac{3}{4}$

slope $= \frac{1}{14}$

y-int: $(0, -\frac{3}{4})$

x-int: $(\frac{21}{2}, 0)$

Solve with substitution:

$$\begin{cases} -1 = 3y - x \\ 2x + 4y = 12 \end{cases}$$

$-1 = 3y - x$

$+x \quad +x$

$x - 1 = 3y$

$+1 \quad +1$

$x = 3y + 1$

$2x + 4y = 12$

$2(3y + 1) + 4y = 12$

$6y + 2 + 4y = 12$

$10y + 2 = 12$

$-2 \quad -2$

$\frac{10y}{10} = \frac{10}{10}$

$y = 1$

$-1 = 3y - x$

$-1 = 3(1) - x$

$-1 = 3 - x$

$-3 \quad -3$

$-1[-4 = -x]$

$4 = x$

$(4, 1)$

Solve with combination/elimination:

$$\begin{cases} 2x - 5y = 15 \\ 3x + 7y = 8 \end{cases}$$

$3[2x - 5y = 15]$

$2[3x + 7y = 8]$ $\Rightarrow$

$6x - 15y = 45$

$6x + 14y = 16$

$-29y = 29$

$\frac{-29y}{-29} = \frac{29}{-29}$

$y = -1$

$2x - 5y = 15$

$2x - 5(-1) = 15$

$2x + 5 = 15$

$-5 \quad -5$

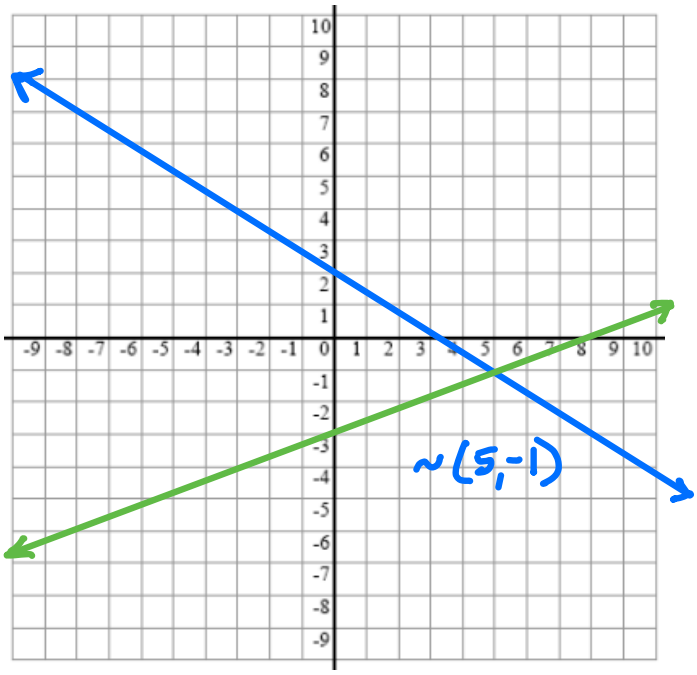
$\frac{2x}{2} = \frac{10}{2}$

$x = 5$

$(5, -1)$

Find a common solution by graphing.

$$\begin{cases} 3x - 8y = 24 \\ y = -\frac{3}{5}x + 2 \end{cases}$$



Solve algebraically to find the exact solution.

$3x - 8y = 24$

$5\left[y = -\frac{3}{5}x + 2\right] \Rightarrow 5y = -3x + 10$

$+3x \quad +3x$

$3x + 5y = 10$

$3x - 8y = 24$

$3x + 5y = 10$

$-13y = 14$

$\frac{-13y}{-13} = \frac{14}{-13}$

$y = -\frac{14}{13}$

$3x - 8y = 24$

$3x - 8\left(-\frac{14}{13}\right) = 24$

$13\left[3x + \frac{112}{13} = 24\right]$

$39x + 112 = 312$

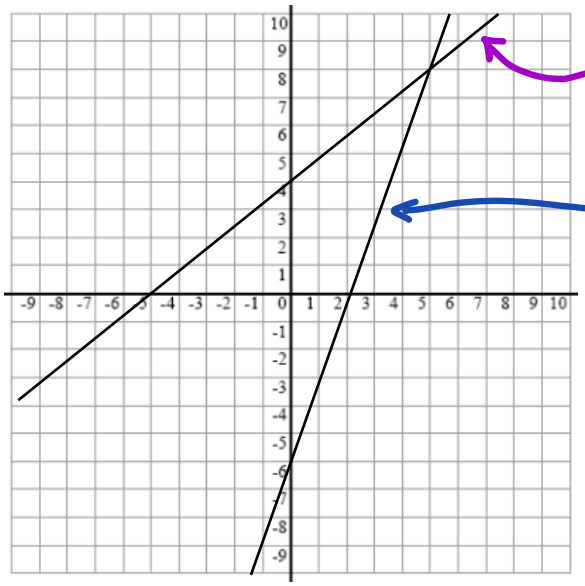
$-112 \quad -112$

$\frac{39x}{39} = \frac{200}{39}$

$x = \frac{200}{39}$

$\left(\frac{200}{39}, -\frac{14}{13}\right)$

Write the system of equations pictured below.



$y = \frac{4}{5}x + 4$

$y = \frac{14}{5}x - 6$

Write a system of equations with …

One solution (not the one above!)

Any two equations that do not have the same slope.

$$\begin{cases} y = 5x - 6 \\ y = -3x + 2 \end{cases}$$

No solutions Any two parallel lines, same slopes different y-intercepts.

$y = \frac{2}{5}x + 5$

$5\left[y = \frac{2}{5}x - 4\right] \Rightarrow 5y = 2x - 4$

$\begin{cases} y = \frac{2}{5}x + 5 \\ 2x - 5y = -4 \end{cases}$

Infinite Solutions same equations, may just look differently.

$6x - 5y = 7$

$\frac{6x}{5} - \frac{7}{5} = \frac{5y}{5} \rightarrow y = \frac{6}{5}x - \frac{7}{5}$

$\begin{cases} 6x - 5y = 7 \\ y = \frac{6}{5}x - \frac{7}{5} \end{cases}$

For the following situations, define your variables, write, and solve the system.

Ms. Kitts works at a music store. Last week she sold 6 more than 3 times the number of CDs that she sold this week. Ms. Kitts sold a total of 110 CDs over the 2 weeks. How many CDs did she sell each week?

Let x = # of CD's sold last week
Let y = # of CD's sold this week

$\begin{cases} x = 3y + 6 \\ x + y = 110 \end{cases}$

$3y + 6 + y = 110$
$4y + 6 = 110$
$-6 \quad -6$
$\frac{4y}{4} = \frac{104}{4}$
$y = 26$

$x + y = 110$
$x + (26) = 110$
$-26 \quad -26$
$x = 84$

She sold 84 CD's last week and 26 CD's this week.

Chase and Sara went to the candy store. Chase bought 5 pieces of fudge and 3 pieces of bubble gum for a total of $5.70. Sara bought 2 pieces of fudge and 10 pieces of bubble gum for a total of $3.60. How much does a piece of fudge cost?

Let x = cost of a piece of fudge
Let y = cost of a piece of bubble gum

$10[5x + 3y = 5.70] \Rightarrow 50x + 30y = 57.00$
$3[2x + 10y = 3.60] \quad\quad 6x + 30y = 10.80$

$\frac{44x}{44} = \frac{46.2}{44}$
$x = 1.05$

A piece of fudge costs $1.05.

Solve for x and graph your solutions.

$$3(4-5x) \geq 4x-20$$

$12-15x \geq 4x-20$

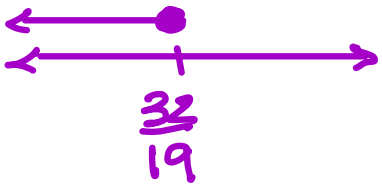
$+15x \quad +15x$

$12 \geq 19x-20$

$+20 \quad +20$

$\frac{32}{19} \geq \frac{19x}{19}$

$\frac{32}{19} \geq x$



$\frac{32}{19}$

$$\frac{4x+3}{7} - 5 < 3x-2$$

$+5 \quad +5$

$7\left[\frac{4x+3}{7} < 3x+3\right]$

$4x+3 < 21x+21$

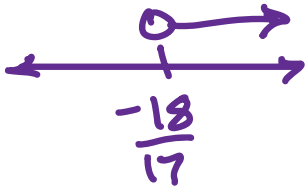
$-3 \quad -3$

$4x < 21x+18$

$-21x \quad -21x$

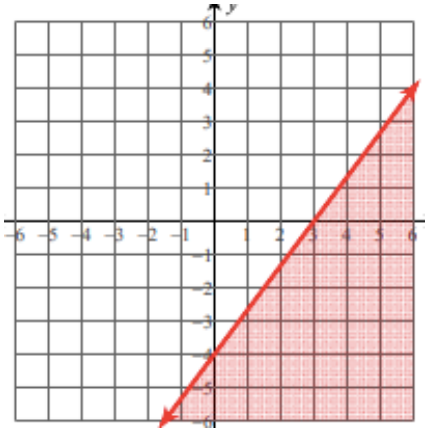
$\frac{-17x}{-17} < \frac{18}{-17}$

$x > -\frac{18}{17}$

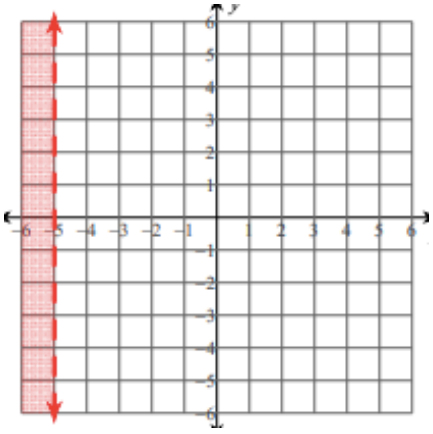


$-\frac{18}{17}$

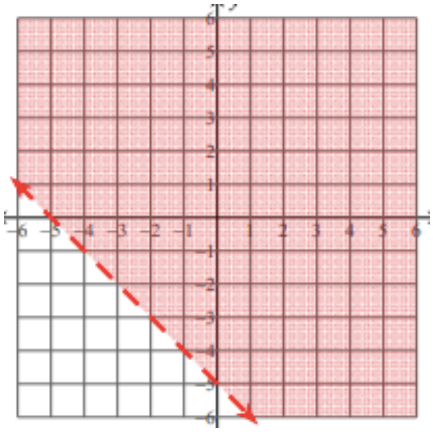
Write the equations for the inequalities graphed below.



$y \leq \frac{4}{3}x-4$



$x < -5$



$y > -x-5$

A trailer can carry a maximum weight of 160 pounds and a maximum volume of 15 cubic feet. A microwave oven weighs 30 pounds and has 2 cubic feet of volume, while a printer weighs 20 pounds and has 3 cubic feet of space. If they have to bring more than one microwave, how many combinations of printers and microwaves can they carry?

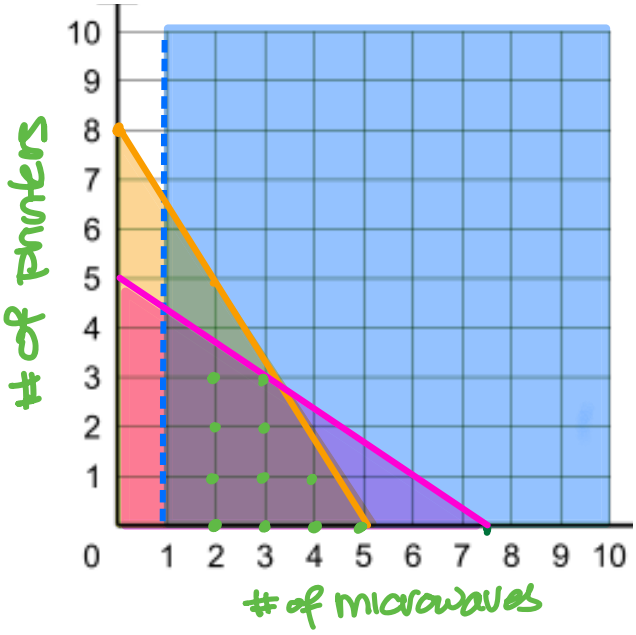
Let x = # of microwaves

Let y = # of printers

$30x+20y \leq 160$

$2x+3y \leq 15$

$x > 1$



There are 11 combinations of printers and microwaves the trailer can carry