

Integrated Math 1 Unit 6 Review

1. Graph the system of equations. Determine the solution.

$$\begin{cases} y = \frac{2}{3}x + 1 & b = 1 & m = \frac{2}{3} \\ x + 3y = 6 & b = 2 & m = -\frac{1}{3} \end{cases}$$

or $x = 6$ $y = 2$

$\therefore (1, \frac{5}{3})$ is the solution.

$$x + 3(\frac{2}{3}x + 1) = 6$$

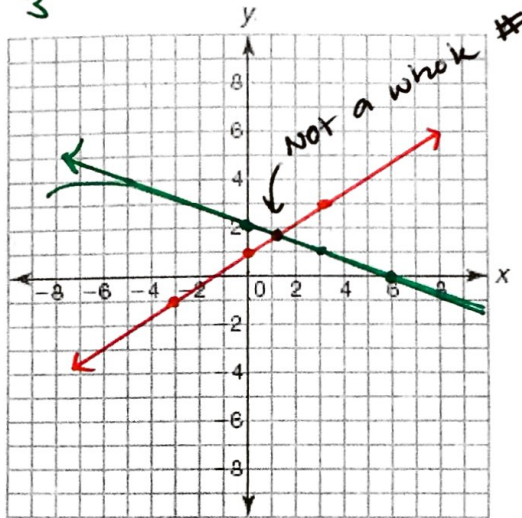
$$x + 2x + 3 = 6$$

$$3x = 3$$

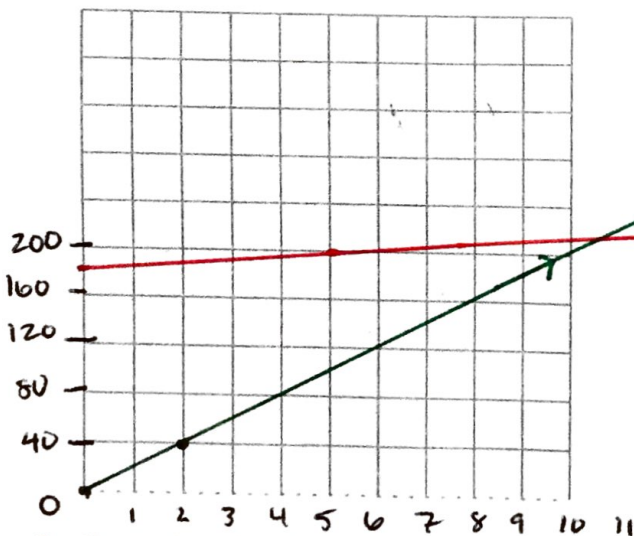
$$x = 1$$

$$y = \frac{2}{3}(1) + \frac{3}{3}$$

$$y = \frac{5}{3}$$



2. Eric is trying to figure out which local farmer to purchase vegetable from. The first farmer offers each box of vegetables for \$4, but charges a \$180 start up fee. The second farmer offers each box of vegetables for \$20, but there is no start up fee. Write a system of linear equations that represents this situation. Graph the equations on graph paper and determine the number of boxes so that the cost will be the same amount. Explain how you would recommend to someone which farmer to use based on cost.



$$f_1 = 180 + 4b$$

$$f_2 = 20b$$

$$20b = 180 + 4b$$

$$\frac{16b}{16} = \frac{180}{16}$$

$$b = 11.25$$

3. Determine the solution to each system of equations.

if you are buying less than or equal to 11 boxes you should go with farmer 2

$$\begin{array}{l} \text{a.} \\ + \end{array} \begin{cases} -3x - y = -4 \\ -5x + y = -12 \end{cases}$$

$$-8x + 0 = -16$$

$$x = 2$$

$$-5(2) + y = -12$$

$$y = -2$$

$\therefore (2, -2)$ is
the solution.

$$\text{b.} \begin{cases} y = 5x - 4 \\ -2x + y = -1 \end{cases}$$

substitution

$$-2x + (5x - 4) = -1$$

$$-2x + 5x - 4 = -1$$

$$3x - 4 = -1$$

$$3x = 3$$

$$x = 1$$

$$\therefore (1, 1)$$

$$y = 5(1) - 4 \quad y = 1$$

$$\text{c.} \begin{cases} \left(\frac{1}{2}x + \frac{3}{2}y\right) = 4 \cdot 2 \\ \left(-\frac{1}{3}y - 7\right) = \left(\frac{2}{3}x\right) \cdot 3 \end{cases} \rightarrow -y - 21 = -2$$

$$x + 3y = 8$$

$$2x - 3y = 21 \xrightarrow{+} \begin{array}{r} x + 3y = 8 \\ 2x - 3y = 21 \\ \hline 7x = 29 \end{array}$$

$$x = \frac{29}{7}$$

$$2\left(\frac{29}{7}\right) - y = 21$$

$$\frac{58}{7} - \frac{147}{7} = y$$

$$y = -\frac{89}{7}$$

4. One pizza shop sells large pizzas for a flat fee of \$10 plus \$2 for each topping. Another pizza shop sells large pizzas for a flat fee of \$12 plus \$1 for each topping. After how many toppings will the cost at both pizza shops be the same?

$$P_1 = 10 + 2t \quad 10 + 2t = 12 + t$$

$$P_2 = 12 + t \quad t = 2 \text{ toppings}$$

5. Determine the number of solutions for each system of equations.

$$\text{a.} \begin{cases} 2x + 3y = 8 \\ 6y = -4x + 16 \end{cases} \rightarrow \begin{cases} 2x + 3y = 8 \\ 4x + 6y = 16 \end{cases}$$

bottom is 2x top. Same line.
infinite solutions.

$$\text{b.} \begin{cases} 12x + 18y = 24 \\ -4x - 6y = 2 \end{cases} \quad \begin{array}{l} -\frac{12}{18} = m = -\frac{2}{3} \\ -\frac{4}{6} = m = -\frac{2}{3} \end{array}$$

Same slope different y int
parallel lines: no solutions.

6. A) When is it best to use graphing to solve a system of equations?

Form is easy to graph: whole number answers.

B) When is it best to use substitution to solve a system of equations? when you have $x = \square$ or

C) When is it best to use linear combinations (elimination) to solve a system of equations?

Lined up

Opposites!

$y = \square$