6.1 Review	**Period (circle one):** 5 7	**Date:**	**Name:** key

Write a system of linear equations to represent each problem situation. Define each variable. Then, graph the system of equations and estimate the break-even point. Explain what the break-even point represents with respect to the given problem situation.

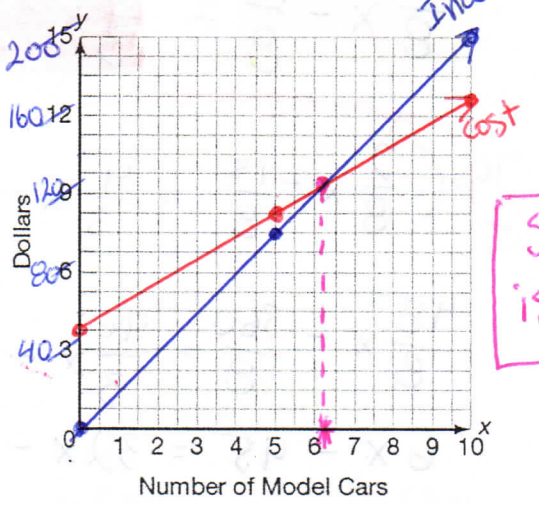
1. Eric sells model cars from a booth at a local flea market. He purchases each model car from a distributor for $12, and the flea market charges him a booth fee of $50. Eric sells each model car for $20.

Cost = 50 + 12x

Income = 20x

x	cost
0	50
5	110
10	170

x	Income
0	0
5	100
10	200



Selling about 6 or 7 model cars is when Eric will break-even

*The scale is off I need to adjust it

Solve each system of linear equations

*Get y's by themselves

$\begin{cases} y = 2.8x - 0.3 \\ 1.1x - 0.2y = 4.3 \end{cases}$

$-1.1x \quad -1.1x$

$\frac{-0.2y}{-0.2} = \frac{4.3}{-0.2} - \frac{1.1x}{-0.2}$

$y = -21.5 + 5.5x$

$\begin{cases} -\frac{1}{6}x + \frac{2}{3}y = -\frac{5}{4} \\ y = \frac{4}{3}x - \frac{11}{3} \end{cases}$

$12 \cdot \left(-\frac{1}{6}x + \frac{2}{3}y = \frac{-5}{4}\right)$

$\frac{12}{1}\left(-\frac{1}{6}x\right) + \frac{12}{1}\left(\frac{2}{3}y\right) = \frac{12}{1}\left(-\frac{5}{4}\right)$

$\frac{-12}{6}x + \frac{24}{3}y = \frac{-60}{4}$

$-2x + 8y = -15$

$+2x \quad +2x$

$\frac{8y}{8} = \frac{2x}{8} - \frac{15}{8}$

$y = \frac{2}{8}x - \frac{15}{8}$

(continued on back)

* set the equations equal and solve for x

$$\begin{cases} y = 2.8x - 0.3 \\ y = 5.5x - 21.5 \end{cases}$$

$2.8x - 0.3 = 5.5x - 21.5$

$-5.5x \quad -5.5x$

$-2.7x - 0.3 = -21.5$

$+0.3 \quad +0.3$

$-2.7x = -21.2$

$\frac{-2.7x}{-2.7} = \frac{-21.2}{-2.7}$

$x = 7.85$

$y = 2.8x - 0.3$

$y = 2.8(7.85) - 0.3$

$y = 21.68$

* write your solution (x, y)

$(7.85, 21.68)$

$y = \frac{2}{8}x - \frac{15}{8}$

$y = \frac{4}{3}x - \frac{11}{3}$

$\frac{2}{8}x - \frac{15}{8} = \frac{4}{3}x - \frac{11}{3}$

$24 \cdot \left(\frac{2}{8}x - \frac{15}{8} = \frac{4}{3}x - \frac{11}{3}\right)$

$\frac{48}{8}x - \frac{360}{8} = \frac{96}{3}x - \frac{264}{3}$

$6x - 45 = 32x - 88$

$-32x \quad -32x$

$-26x - 45 = -88$

$+45 \quad +45$

$-26x = -43$

$\frac{-26x}{-26} = \frac{-43}{-26}$

$x = 1.65$

* Plug in the value of x and solve for y

$y = \frac{4}{3}x - \frac{11}{3}$

$y = \frac{4}{3}(1.65) - \frac{11}{3}$

$y = -1.47$

$(1.65, -1.47)$