Assignment 6.1_1	Period (circle one): 5 7	Date:	Name: Key

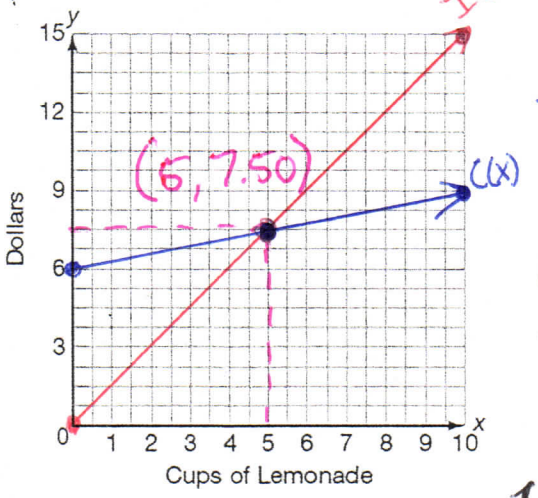
Write a system of linear equations to represent each problem situation. Define each variable. Then, graph the system of equations and estimate the break-even point. Explain what the break-even point represents with respect to the given problem situation.

. Ramona sets up a lemonade stand in front of her house. Each cup of lemonade costs Ramona $0.30 to make, and she spends $6 on the advertising signs she puts up around her neighborhood. She sells each cup of lemonade for $1.50.

x = # of cups of lemonade

costs $= 0.30x + 6$ $\quad C(x) = .30x + 6$

Income $= 1.50x$ $\quad I(x) = 1.50x$



costs

x	$C(x)$
0	6
5	7.5
10	9

Income

x	$I(x)$
0	0
5	7.5
10	15

The break-even point is (5, 7.50). Selling 5 cups of lemonade costs the same amount as the money she makes selling the cups, $7.50

Choose which numbers to plug in for x, and find out $C(x)$ "the cost of selling x cups of lemonade"

Solve each system of equations by substitution. Determine whether the system is consistent or inconsistent.

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

$y - 3x = 4$ $\quad +3x \quad +3x$

$y = 3x + 4$

$3x - 2 = 3x + 4$

$-3x \quad -3x$

$-2 = 4$

No solution

*Since $-2 \neq 4$ that means that there is no point that is the same for both graphs.

The system is inconsistent

$\begin{cases} \frac{1}{2}x + \frac{3}{2}y = -7 \\ \frac{1}{3}y = (2x - 10)\frac{3}{12} \end{cases}$

$\frac{1}{2}x + \frac{3}{2}y = -7$

$-\frac{1}{2}x \quad -\frac{1}{2}x$

$\left(\frac{2}{3}\right)\frac{3}{2}y = \left(-\frac{1}{2}x - 7\right)\frac{2}{3}$

$y = -\frac{2}{6}x - \frac{14}{3}$

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

$y = 6x - 30$

$6x - 30 = -\frac{1}{3}x - \frac{14}{3}$

$\left(6x - 30 = -\frac{1}{3}x - \frac{14}{3}\right) \cdot 3$ *multiply whole equation by 3 to get rid of the fractions

$18x - 90 = -x - 14$

$+x \quad +x$

$19x - 90 = -14$

$+90 \quad +90$

$\frac{19x}{19} = \frac{76}{19}$

$x = 4$

plug $x = 4$ into one of the equations to solve for y

$y = 6x - 30$

$y = 6(4) - 30$

$y = 24 - 30$

$y = -6$

Solution is $(4, -6)$