6.2_3 Assignment	Period (circle one): 5 7	Date:	Name: Key

Write a system of equations to represent the problem situation. Solve the system of equations using the linear combinations method.

1. The high school marching band is selling fruit baskets as a fundraiser. They sell a large basket containing 10 apples and 15 oranges for $20. They sell a small basket containing 5 apples and 6 oranges for $8.50. How much is the marching band charging for each apple and each orange?

y = the price of an orange
x = the price of an apple

$$\begin{cases} 10x + 15y = 20 \\ 5x + 6y = 8.50 \end{cases}$$

multiplying the bottom equation by -2 creates opposites among the x's

$\cdot -2$

$$\begin{array}{r} 10x + 15y = 20 \\ -10x - 12y = -17 \\ \hline 3y = 3 \\ \frac{3y}{3} = \frac{3}{3} \\ y = 1 \end{array}$$

combine the equations

solve for y

substitute y into either equation and solve for x

$10x + 15y = 20$
$10x + 15(1) = 20$
$10x + 15 = 20$
$-15 \quad -15$
$\frac{10x}{10} = \frac{5}{10}$
$x = 0.5$

write your solution as an ordered pair

$(0.5, 1)$

The marching band charges $0.50 per apple and $1 per orange

Solve each system of linear equations.

2. $\begin{cases} 4x - y = 2 \\ 2x + 2y = 26 \end{cases}$

$\cdot 2$

want to make the y's opposites

$$\begin{array}{r} 8x - 2y = 4 \\ 2x + 2y = 26 \\ \hline \frac{10x}{10} = \frac{30}{10} \\ x = 3 \end{array}$$

$2x + 2y = 26$
$2(3) + 2y = 26$
$6 + 2y = 26$
$-6 \quad -6$
$\frac{2y}{2} = \frac{20}{2}$
$y = 10$

$(3, 10)$

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

$\frac{1}{2}x - 3 = -3x + 5$
$2 \cdot (\frac{1}{2}x - 3) = (-3x + 5) \cdot 2$
$x - 6 = -6x + 10$
$+6x \quad +6x$
$7x - 6 = 10$
$+6 \quad +6$
$\frac{7x}{7} = \frac{16}{7}$
$x = \frac{16}{7}$

$y = -3(\frac{16}{7}) + 5$
$y = -\frac{48}{7} + \frac{5 \cdot 7}{1 \cdot 7}$
$y = -\frac{48}{7} + \frac{35}{7}$
$y = \frac{-13}{7}$

$(\frac{16}{7}, \frac{-13}{7})$