Algebra 1: 6.1 Homework **Name** _____ **Period** ____
Transformations and Substitution

Transform both equations in each system of equations so that every coefficient in an integer.

- **Multiply decimals by a multiple of 10.**
- **Multiply fractions by the least common denominator.**

Do NOT solve!

1. $\begin{cases} \frac{1}{2}x+\frac{3}{2}y=4 & \times 2 \\ \frac{2}{3}x-\frac{1}{3}y=7 & \times 3 \end{cases}$

$1x + 3y = 8$

$2x - 1y = 21$

2. $\begin{cases} 0.5x+1.2y=2 & \times 10 \\ 3.3x-0.7y=3 & \times 10 \end{cases}$

$5x + 12y = 20$

$33x - 7y = 30$

3. $\begin{cases} \frac{5}{4}x-3=\frac{1}{6}y & \times 12 \text{ (LCD)} \\ \frac{2}{5}x+\frac{1}{5}y=\frac{9}{5} & \times 5 \end{cases}$

$15x - 36 = 2y$

$2x + 1y = 9$

4. $\begin{cases} 0.3y=2-0.8x & \times 10 \\ 1.1x=3y-0.4 & \times 10 \end{cases}$

$3y = 20 - 8x$

$11x = 30y - 4$

5. $\begin{cases} \frac{1}{3}x+\frac{1}{2}y=5 & \times 6 \text{ (LCD)} \\ \frac{3}{4}x-\frac{1}{4}y=10 & \times 4 \end{cases}$

$2x + 3y = 30$

$3x - 1y = 40$

Solve each system of equations by substitution.

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

$y = 2(4) - 3$

$y = 8 - 3$

$y = 5$

We know that $x = 4$

$(4, 5)$

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

$3x - 2 - 3x = 4$

$-2 \neq 4$

No solution

8. $\begin{cases} \frac{1}{2}x + \frac{3}{2}y = -7 & \times 2 \\ \frac{1}{3}y = 2x - 10 & \times 3 \end{cases}$

$1x + 3y = -14$

$1y = 6x - 30$

$x + 3(6x - 30) = -14$

$x + 18x - 90 = -14$

$19x - 90 = -14$

$+90 \quad +90$

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

$x = 4$

$y = 6(4) - 30$

$y = 24 - 30$

$y = -6$

$(4, -6)$

9. $\begin{cases} 0.8x - 0.2y = 1.5 & \times 10 \\ 0.1x + 1.2y = 0.8 & \times 10 \end{cases}$

$8x - 2y = 15$

$1x + 12y = 8$

$x = -12y + 8$

$8(-12y + 8) - 2y = 15$

$-96y + 64 - 2y = 15$

$-98y + 64 = 15$

$-64 \quad -64$

$\frac{-98y}{-98} = \frac{-49}{-98}$

$y = \frac{1}{2}$

$x = -12\left(\frac{1}{2}\right) + 8$

$x = -6 + 8$

$x = 2$

$(2, \frac{1}{2})$