7.3.1 CW: Solving Linear Systems by Elimination Name _____

The Steps to Solve using Elimination/Combinations:

1. ___Arrange___ the equations so like terms are in columns.

2. ___Multiply___ one or more equations so coefficients are opposites for at least one variable. (May not always need to do this – if they are already opposites)

Combine

3. ___Add___ the equations and ___solve___ for one of the variables.

4. ___Substitute___ your solution into either original equation to ___solve___ for the other variable.

5. ___Check___ the solutions in the original equations.

Example

$$7x - 5y = 10$$
$$+ \underline{-4x + 5y = 20}$$
$$3x = 30$$
$$\frac{3x}{3} = \frac{30}{3}$$
$$x = 10$$

$7(10) - 5y = 10$

$70 - 5y = 10$

$-70 \quad -70$

$-5y = -60$

$\frac{-5y}{-5} = \frac{-60}{-5}$

$y = 12$

(10, 12)

Checklist:

- [x] 1. Are Like Terms in Columns?
- [x] 2. Do I have coefficients that are opposites? (either x or y)
- [x] 3. Solve for one variable (combine eqns)
- [x] 4. Use substitution to solve for the other variable
- [ ] 5. Check you solution

Checklist:

1. Are Like Terms in Columns? ☑
2. Do I have coefficients that are opposites? (x) ☐
3. Solve for one variable combine ☑
4. Use substitution to solve for the other variable ☑
5. Check you solution ☐

$$2x + 4y = 14$$
$$-2x + 3y = 21$$

$\frac{7y}{7} = \frac{35}{7}$

$y = 5$

$2x + 4(5) = 14$

$2x + 20 = 14$

$-20 \quad -20$

$\frac{2x}{2} = \frac{-6}{2}$

$x = -3$

$(-3, 5)$

$$6x + 10y = -28$$
$$-5x - 10y = 30$$

$x = 2$

$6(2) + 10y = -28$

$12 + 10y = -28$

$-12 \quad -12$

$\frac{10y}{10} = \frac{-40}{10}$

$y = -4$

$(2, -4)$

$$-2x + -10y = 60$$
$$2x + -7y = 25$$

$\frac{-17y}{-17} = \frac{85}{-17}$

$y = -5$

$2x - 7(-5) = 25$

$2x + 35 = 25$

$-35 \quad -35$

$\frac{2x}{2} = \frac{-10}{2}$

$x = -5$

$(-5, -5)$