7.3.3 CW: Name _____

Solving Linear Systems by Elimination/Combinations

5+7
7+5

Checklist:

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

1. $x + 3y = 12$
$-3y + x = 30$

$x + 3y = 12$
$x - 3y = 30$
$\frac{2x}{2} = \frac{42}{2}$
$x = 21$

$(21, -3)$

$21 + 3y = 12$
$-21 \quad -21$
$\frac{3y}{3} = \frac{-9}{3}$
$y = -3$

1.

2.

3.

2. $3x + 2y = 8$
$2y = 12 - 5x$
$+5x \quad +5x$

$2y = 12 - 5(2)$
$2y = 12 - 10$
$\frac{2y}{2} = \frac{2}{2}$
$y = 1$

$(3x + 2y = 8)(-1)$
$5x + 2y = 12$
$-3x - 2y = -8$
$5x + 2y = 12$
$\frac{2x}{2} = \frac{4}{2}$
$x = 2$

$(2, 1)$

3. $-6x + 3y = -6$
$6y = -2x + 30$
$+2x \quad +2x$

$-6x + 3y = -6$
$3(2x + 6y = 30)$
$-6x + 3y = -6$
$6x + 18y = 90$
$\frac{21y}{21} = \frac{84}{21}$
$y = 4$

$6(4) = -2x + 30$
$24 = -2x + 30$
$-30 \quad -30$
$\frac{-6}{-2} = \frac{-2x}{-2}$
$x = 3$

$(3, 4)$

Checklist:

- 1. Are Like Terms in Columns? ☐
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- 5. Check you solution ☐

4. $y = 2x - 4$
   $2x - y = 52$

$-2x + y = -4$

$0 = 48$ NO solution

$y = 2x + 4$
$-y = -2x + 52$

$0 = 48$

5. $4y - 5 = -7x$
   $4y = 2x + 14$

$-1(4y = -7x + 5)$
$4y = 2x + 14$

$-4y = 7x - 5$
$4y = 2x + 14$

$0 = 9x + 9$
$-9 \quad -9$
$-9 = 9x \quad x = -1$

4.
5. (-1, 3)

$4y = 2(-1) + 14$
$4y = -2 + 14$
$4y = 12$
$y = 3$

6. The drama club is selling gift baskets to raise money for new costumes. During the fall play, they sold a combined 3 regular gift baskets and 4 deluxe gift baskets, earning a total of $227. During the spring musical, they sold 6 regular gift baskets and 2 deluxe gift baskets, earning a total of $208.

a. Identify the variables
   x: cost of a regular gift basket
   y: cost of a deluxe gift basker

b. Write and solve a system to determine the price of each type of gift basket.

$3x + 4y = 227$
$-2(6x + 2y = 208)$

$3x + 4y = 227$
$-12x - 4y = -416$

$-9x = -189$
$\frac{-9x}{-9} = \frac{-189}{-9}$
$x = 21$

$3(21) + 4y = 227$
$63 + 4y = 227$
$-63 \quad -63$
$4y = 164$
$y = 41$

c. Explain your solution in the context of the problem.

The regular giftt basket sold for $21 and the deluxe gift basket sold for $41.