Principles of Algebra Name/Date Clee / Today

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 9C.1 – Solving Systems of Equations by Elimination

#1-8, Solve each system of equations by the elimination method.

1. $\begin{cases} 2x - 3y = 6 \\ x + 3y = 12 \end{cases}$

$3x = 18$

$x = 6$

$x + 3y = 12$

$6 + 3y = 12$

$3y = 6$

$y = 2$

The solution is (6,2).

2. $\begin{cases} 4x + 2y = 2 \\ 5x + 2y = 4 \end{cases}$ $\cdot(-1)$

$-4x - 2y = -2$

$5x + 2y = 4$

$x = 2$

$4x + 2y = 2$

$4(2) + 2y = 2$

$8 + 2y = 2$

$2y = -6$

$y = -3$

The solution is (2,-3).

3. $\begin{cases} 3x + 2y = 8 \\ 2x - 6y = 42 \end{cases}$ $\cdot 3$

$9x + 6y = 24$

$2x - 6y = 42$

$11x = 66$

$x = 6$

$3x + 2y = 8$

$3(6) + 2y = 8$

$18 + 2y = 8$

$2y = -10$

$y = -5$

The solution is (6,-5).

4. $\begin{cases} 3x + 4y = 22 \\ x - 5y = -37 \end{cases}$ $\cdot(-3)$

$3x + 4y = 22$

$-3x + 15y = 111$

$19y = 133$

$y = 7$

$3x + 4y = 22$

$3x + 4(7) = 22$

$3x + 28 = 22$

$3x = -6$

$x = -2$

The solution is (-2,7).

5. $\begin{cases} 2x-5y=-19 \\ 3x+2y=0 \end{cases}$

$2x-5y=-19 \xrightarrow{\cdot 2} 4x-10y=-38$

$3x+2y=0 \xrightarrow{\cdot 5} 15x+10y=0$

$19x = -38$

$x=-2$

$3x+2y=0$

$3(-2)+2y=0$

$-6+2y=0$

$2y=6$

$y=3$

The solution is $(-2,3)$.

6. $\begin{cases} x-2y=11 \\ 2y+8=-2x \end{cases}$

Rearrange terms.

$\begin{cases} x-2y=11 \\ 2x+2y=-8 \end{cases}$

$3x = 3$

$x=1$

$x-2y=11$

$1-2y=11$

$-2y=10$

$y=-5$

The solution is $(1,-5)$.

7. $\begin{cases} 2x-3y=6 \\ 6x-9y=9 \end{cases}$

$2x-3y=6 \xrightarrow{\cdot(-3)} -6x+9y=-18$

$6x-9y=9 \longrightarrow 6x-9y=9$

$0 \neq -9$

There is no solution to this system.

(These lines are parallel.)

8. $\begin{cases} 7x+5y=-2 \\ -21x-15y=6 \end{cases}$

$7x+5y=-2 \xrightarrow{\cdot 3} 21x+15y=-6$

$-21x-15y=6 \longrightarrow -21x-15y=6$

$0=0$

Solve for y: $7x+5y=-2$

$5y=-7x-2$

$y=\frac{-7}{5}x-\frac{2}{5}$

Infinitely many solutions. All points on the line $y=\frac{-7}{5}x-\frac{2}{5}$ are solutions to the system.

(These two lines are the same line.)