Algebra RH

Essential Question: Is there another algebraic method to solve linear systems algebraically?

Do Now: Use the substitution method to solve the following linear system. *Don't forget to check your solution with both equations.*

$4x + 3y = 16$
$2x - 3y = 8$

$4x = -3y + 16$

$x = \frac{-3}{4}y + 4$

$2\left(\frac{-3}{4}y + 4\right) - 3y = 8$

$-\frac{3}{2}y + 8 - 3y = 8$

$-\frac{9}{2}y = 0$

$y = 0$

$2x - 3(0) = 8$

$2x = 8$

$x = 4$

$-\frac{3}{2} - \frac{6}{2}$

$x = 4, y = 0$

Solving Linear Systems using the Elimination Method

1. $4x + 3y = 16$
   $2x - 3y = 8$

$6x = 24$

$x = 4$

$4(4) + 3y = 16$

$16 + 3y = 16$

$3y = 0$

$y = 0$

$3 + 6 = 9$

$4 + 1 = 5$

$7 + 7 = 14$

$14 = 14$ ✓

2. $v - w = -5$
   $v + 2w = 4$
   $2v - 2w = -10$

$2(v - w = -5)$

$3v = -6$

$v = -2$

$-2 - w = -5$

$-w = -3$

$w = 3$

3. $3n + m = 2$
   $m + 3 = 2n$

$-1(m + 3n = 2)$

$m - 2n = -3$

$-m - 3n = -2$

$-5n = -5$

$n = 1$

$m + 3 = 2(1)$

$m + 3 = 2$

$m = -1$

4. $y = x - 14$
   $-x + 8y = 0$

$-1(-x + y = -14)$

$-x + 8y = 0$

$x - y = 14$

$7y = 14$

$y = 2$

$2 = x - 14$

$16 = x$

$x = 16$

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

$6x + 14y = 12$

$-6x - 18y = -12$

$-4y = 0$

$y = 0$

$2x + 6(0) = 4$

$2x = 4$

$x = 2$

5. $4(3x + 5y = 6)$

$3(-4x + 2y = 5)$

$12x + 20y = 24$

$-12x + 6y = 15$

$26y = 39$

$y = 1.5$

$3x + 5(1.5) = 6$

$3x + 7.5 = 6$

$3x = -1.5$

$x = -0.5$

6. $x + y = 12$

$-3y = 4x - 10$