Sec 7-3: Solving systems of equations using ELIMINATION

Solving by elimination may involve:

- Just adding or subtracting the two equations
- Multiplying one of the equations by a constant then adding or subtracting.
- Multiplying both eqUations by a constant then adding or subtracting.

Would either variable be eliminated if you either added or subtracted the two equations?

$3(4x + y = 33)$

$5x - 3y = 37$

Sometimes you need to multiply one of the equations by a constant in order to be able to cancel one of the variables.

$12x + 3y = 99$

$+\ 5x - 3y = 37$

$17x = 136$

$x = 8 \rightarrow y = 1$

$(8, 1)$

Solve using Elimination.

$10m - 7n = -24$

$5(2m - 8n = -18)$

$10m - 7n = -24$

$-10m - 40n = -90$

$\frac{33n}{33} = \frac{66}{33}$

$n = 2$

$(-1, 2)$

$10m - 7(2) = 24$

$10m - 14 = -24$

$+14 \quad +14$

$\frac{10m}{10} = \frac{-10}{10}$

$m = -1$

Solve using Elimination.

$2 \cdot (5x + 6y = 75)$

$3 \cdot (3x - 4y = -31)$

Sometimes you need to multiply BOTH equations by a constant before you can eliminate one of the variables.

$10x + 12y = 150$

$+\ 9x - 12y = -93$

$\frac{19x}{19} = \frac{57}{19}$

$x = 3$

$y = 10$

$5(3) + 6y = 75$

$15 + 6y = 75$

$-15 \quad -15$

$6y = 60$

$(3, 10)$

Solve using Elimination.