Addition Property of Equality:

If a = b, then a + x = b + x

Also

If a = b and c = d, then a + c = b + d

You can add the same or equal quantities to
both sides of an equation and still have a true statement

Subtraction Property of Equality:

If a = b, then a - x = b - x

Also

If a = b and c = d, then a - c = b - d

You can subtract the same or equal quantities from
both sides of an equation and still have a true statement

Sec 7-3 Solving Systems Using Elimination

Also called Addition/Subtraction Method

When two equations are added together or
subtracted from each other and
one of the variables is eliminated.

This method is used mainly when both equations
are in Standard Form.

If two things are identical then you can eliminate
them by using what math operation?

Subtract

Ex: 2w & 2w

$2w - 2w = 0$

If two things are opposites then you can eliminate
them by using what math operation?

Add

Ex: -8c & 8c

$-8c + 8c = 0$

Solve using Elimination.

$$\begin{array}{r} 4x + y = 22 \\ +\ 3x - y = 13 \\ \hline 7x = 35 \end{array}$$

$x = 5$

$4(5) + y = 22$

$20 + y = 22$

$y = 2$

sol: (5, 2)

Solve using Elimination.

$$\begin{array}{r} 6a + 5b = 8 \\ -\ 6a + 7b = 16 \\ \hline -2b = -8 \end{array}$$

$b = 4$

$6a + 5(4) = 8$

$6a + 20 = 8$

$6a = -12$

$a = -2$

$(-2, 4)$

From the bellwork. Solve using Elimination.

$$\begin{array}{r} y = 1.2x - 2 \\ -\ y = -4.8x + 19 \\ \hline 0 = 6x - 21 \end{array}$$

$21 = 6x$

$3.5 = x$ Now find the value of y

Solve. $2 \cdot \frac{x}{2} = 8 \cdot 2$

$x = 16$

Multiplication Property of Equality:

You can multiply both sides of an equation by the same number and still have a true statement.

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

$4x + y = 33$

$5x - 3y = 37$

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

$$\begin{array}{r} 12x + 3y = 99 \\ +\ 5x - 3y = 37 \\ \hline 17x = 136 \end{array}$$

$x = 8$ $y = 1$ $(8, 1)$

Solve using Elimination.

$10m - 7n = -24$

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

$$\begin{array}{r} 10m - 7n = -24 \\ -\ 10m - 40n = -90 \\ \hline 33n = 66 \end{array}$$

$n = 2$

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

$-16 = -18$

$+16 \quad +16$

$2m = -2$

$m = -1$

$(-1, 2)$