12/4 Expressions (no equal sign!)

Simplifying - combine (+) like terms

Ex: $3x - 5 + 2x + 8$

$5x + 3$

Distributive Property: $3(x+4) \rightarrow 3x+12$

Ex: $3(2x-4) + 2x - 1$

$6x - 12 + 2x - 1$

$8x - 13$

careful!

$7 - 2(-2x+8) + x$

$7 + 4x - 16 + x$

$5x - 9$

Adding Polynomials:

Secretly "distribute" 1 to eliminate the parentheses and then combine like terms

Ex: $(-3x^2 + 2x - 7) + (5x^2 - x + 8)$

$2x^2 + x + 1$

Subtracting Polynomials:

KEEP CHANGE CHANGE

Ex: $(2x^2 + 3x - 8) - (x^2 + 5x - 3)$

$\hookrightarrow (2x^2 + 3x - 8) + (-x^2 + -5x + 3)$

$x^2 - 2x - 5$

Solving Equations

Use <u>inverse</u> operations to isolate the variable and solve

One-Step:

Ex: $x + 3 = 8$ $\quad x - 6 = 10$ $\quad \frac{3x}{3} = \frac{12}{3}$

$-3 \quad -3$ $\quad +6 \quad +6$

$x = 5$ $\quad x = 16$ $\quad x = 4$

$(5)\frac{x}{5} = 8(5)$ $\quad \left(\frac{3}{2}\right)\frac{2}{3}x = 12\left(\frac{3}{2}\right)$

$x = 40$ $\quad x = 18$

Two-Step: +/- first, x/÷ second

Ex: $2x + 3 = 5$ $\quad \frac{x}{5} - 6 = -3$

$-3 \quad -3$ $\quad +6 \quad +6$

$\frac{2x}{2} = \frac{2}{2}$ $\quad (5)\frac{x}{5} = 3(5)$

$x = 1$ $\quad x = 15$

Distributive Property:

$3(x + 5) = 18$ $\quad \frac{1}{2}(4x + 8) = 10$

$3x + 15 = 18$ $\quad 2x + 4 = 10$

$-15 \quad -15$ $\quad -4 \quad -4$

$\frac{3x}{3} = \frac{3}{3}$ $\quad \frac{2x}{2} = \frac{6}{2}$

$x = 1$ $\quad x = 3$