NOTES

Expressions, Equations, & Inequalities

I. Expression

- a mathematical phrase containing numbers, operations ($+, -, \times, \div$), and/or variables

- Expressions can be *evaluated* or *simplified* but they cannot be *"solved"*

Examples:

$9 \div 3 + 2^2 - 1$ $\qquad$ $\frac{12}{4} + 4(3)$

$5x - 2$ $\qquad$ $9m - 12$

$3 + x + 2$ $\qquad$ $3 + 5$

9 $\qquad$ $5w - 3w$

Numerical expressions can be simplified to one number

$9 \div 3 + 2^2 - 1$ $\qquad$ $\frac{12}{4} + 4(3)$ $\qquad$ $3 + 5$

Algebraic expressions can be simplified

$3 + x + 2$ $\qquad$ $5w - 3w$

Algebraic expressions can be evaluated for given variables

$5x - 2$ when x=3 $\qquad$ $9m - 12$ when m=4

NOTES (continued)

II. Equation

- a mathematical sentence that states two expressions are equivalent
- has an equal sign in between
- Equations can be *solved* and usually have one solution
- Like a balanced scale

Examples:

$3 + x + 2 = 9$

$5w - 3w = 9 \div 3 + 2^2 - 1$

$3 + 5 = 5x - 2$

$\frac{12}{4} + 4(3) = 9m - 12$

Expressions, Equations, & Inequalities

NOTES (continued)

III. Inequality

- a mathematical sentence that states one expressions is greater than or less than another expression
- has inequality signs $>, <, \geq, \leq$
- Inequalities can be *solved* but have many solutions
- Like an unbalanced scale

Examples:

$3 + 5 \leq 5x - 2$

$\frac{12}{4} + 4(3) > 9m - 12$

$5w - 3w \geq 9 \div 3 + 2^2 - 1$

$3 + x + 2 < 9$