1.3 Evaluating expressions

Evaluate: substitute a given value in for a variable.

*Anytime you substitute replace the variable with the number "inside" parentheses.

Ex: $4a+5$ Evaluate when $a=-2$

$4(-2)+5 = -8+5$

$= \boxed{-3}$

Ex: $x^2 - 8$ Evaluate when $x = -4$

$(-4)^2 - 8$

$= 16 - 8$

$= 8$

Ex: $-x^3 + 2x - 1$ Evaluate when $x = 2$

$-(2)^3 + 2(2) - 1$

$= -8 + 4 - 1$

$= -4 - 1$

$= -5$

$-4 + -1$

Combine Like Terms

Like Terms: have the same variable and the same exponent.

Like Terms	NOT Like Terms
$2x$, $3x$	$4x$, $4y$
$-4a^2$, $8a^2$	$3a$, $4a^2$
$4xy$, $-2xy$	$5x^2$, $5y^2$

* When we combine like terms we add/subtract the coefficents (#'s in front) and the variables & exponents stay the same.

Ex: $4x + 5x = 9x$

$5a + 3b - 2a + 4b = 3a + 7b$

$4x^2 + 3x - 8x^2 - 9x = -4x^2 - 6x$

4-8

4+-8

3-9

3+-9

-6

$12a - 6b + 4b - 3a + 2b^2$

$-6+4$

-2

$\boxed{9a - 2b + 2b^2}$

Distributive Prop.

$a(b+c) = ab + ac$

Ex: $2(x+4) = 2x + 8$

$-5(a-4) = \boxed{-5a + 20}$

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

$= -8x+6+4$

$= \boxed{-8x+10}$

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

$= 15x+10-2x+8$

$= \boxed{13x+18}$

2.1 Solving one & two-step equations

* Get the variable by itself
* We use opposite operations

+/−

×/÷

Ex:

$$x + \cancel{5} = 8$$
$$\cancel{-5} \quad -5$$
$$x = 3$$

$$x + 5 = 8$$
$$(3) + 5 = 8 \checkmark$$

Ex:

$$\cancel{4}\cdot\frac{x}{\cancel{4}} = 6\cdot 4$$

$$x = 24$$

$$\frac{24}{4} = 6 \checkmark$$

$$\frac{-\cancel{3}x}{-\cancel{3}} = \frac{-36}{-3}$$

$$\boxed{x = 12}$$

$$-3(12) = -36 \checkmark$$

Two-Step

$$2x - \cancel{5} = 3$$
$$\cancel{+5} \quad +5$$

$$\frac{\cancel{2}x}{\cancel{2}} = \frac{8}{2}$$

$$x = 4$$

$$2(4) - 5 = 3$$
$$8 - 5 = 3 \checkmark$$

$$\frac{x}{-2} + \cancel{8} = 3$$

$$\cancel{-8} \qquad -8$$

$$\cancel{-2} \cdot \frac{x}{\cancel{-2}} = -5(-2)$$

$$\boxed{x = 10}$$

$3 - 8$

$3 + -8$

$$\frac{10}{-2} + 8 = 3$$

$-5 + 8 = 3$ ✓

$$-3x \cancel{-4} = 20$$
$$\cancel{+4} \qquad +4$$

$$\frac{\cancel{-3}x}{\cancel{-3}} = \frac{24}{-3}$$

$$x = -8$$