Lesson 9 Evaluating and Comparing Algebraic Expressions

An **algebraic expression** is an expression with variables and/or numbers that uses operations.

Evaluate means to substitute values for the variables and to simplify using the order of operations.

Examples:

Evaluate each expression for the given values.

a. *(Ex 1)* $3x - 4b + 2bx;\ x = 10, b = 2$

b. *(Ex 2)* $2ab - 4a^2 + 10;\ a = -1, b = 8$

c. *(Ex 3)* Compare the expressions when $x = 2$ and $y = 5$. Use $<$, $>$, or $=$.

$$(6x^2 + y^3) - 3x^6 \bigcirc 8x^4 - y^3$$

d. *(Ex 4)* **Climate** The lowest recorded temperature is $-89.4°C$ in Antarctica. The expression $\frac{9}{5}C + 32$ can be used to convert Celsius measurements to Fahrenheit. What is the lowest recorded temperature in degrees Fahrenheit?

$3x - 4b + 2bx$

a) $3(10) - 4(2) + 2(2)(10)$

$30 - 8 + 40$

$22 + 40$

62

b) $2ab - 4a^2 + 10$

$2(-1)(8) - 4(-1)^2 + 10$

$2(-1)(8) - 4(1) + 10$

$-16 - 4 + 10$

$-20 + 10$

-10

c) $6x^2 + y^3 - 3x^6 \quad 8x^4 - y^3$

$6(2)^2 + (5)^3 - 3(2)^6 \quad 8(2)^4 - 5^3$

$6(4) + 125 - 3(64) \quad 8(16) - 125$

$24 + 125 - 192 \quad 128 - 125$

$149 - 192 \quad 3$

-43

$<$

d) $\frac{9}{5}C + 32 \quad C = -89.4$

$\frac{9}{5}(-89.4) + 32$

$-160.92 + 32$

-128.92