5.1 Intro to Polynomials: The Language of Mathematics

Warm Up: An **expression** can be thought of as a shorthand way of writing a word statement. For example, consider the word statement:
"The length of a rectangle is two units more than triple its width". You could represent the rectangle's length with the expression, **$3w+2$**, where the variable w is its width.
The expression, **$3w + 2$** consists of:

- a numerical **coefficient**, 3
- a variable, ***w***
- a constant, **+2**

1. For each expression, identify the numerical coefficient, the variable, and the constant.

a) $2x - 7$ **b)** $-3b + 5$ **c)** $t - 4$

2. Write an expression for each sentence. State what each variable represents.

a) Sarah is *5 years younger* than her sister.

b) The width of the rectangle is *3 cm less than twice* its length.

c) The perimeter of a triangle is *increased by 14 cm*.

d) The school sold *half* of the concert tickets it expected to sell.

3. For each expression

i) identify the number of terms

ii) identify the expression as a monomial, binomial, or trinomial

a) $\mathbf{-2x^2}$ **i)** ____ **ii)** _____

b) $\mathbf{a + b^2 + s}$ **i)** ____ **ii)** _____

c) $\mathbf{y - 5}$ **i)** ____ **ii)** _____

d) $\mathbf{3d^2 - 5xy}$ **i)** ____ **ii)** _____

e) $\mathbf{r}$ **i)** ____ **ii)** _____

f) $\mathbf{b^2 - 2b + 7}$ **i)** ____ **ii)** _____

4. Identify each polynomial below as a monomial, binomial, or trinomial. If it is none of these, identify it as a polynomial.

$c + d$ $3y$ $-7e^2 - 4f$ $a^2 - 3n - 6a - 5n^2$

x^2 $m^2 - n - 8$ $a + 2b - 2c - 3d$ $4z^2 - y^2 - 6$

Monomials	Binomials	Trinomials	Polynomials
_____	_____	_____	_____
_____	_____	_____	_____

5. For each polynomial

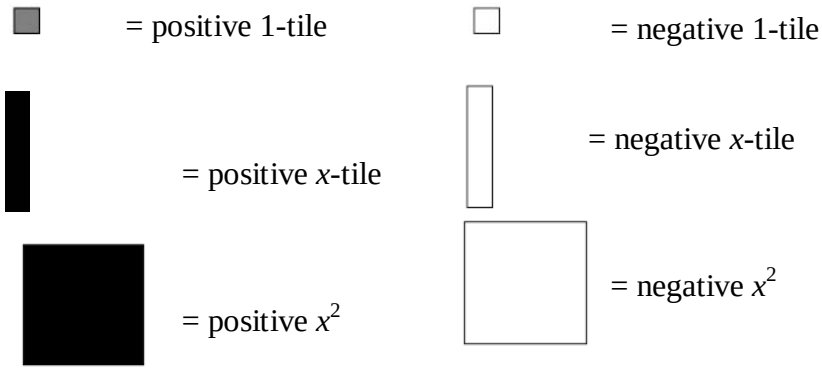
   i) state the degree

   ii) state the number of terms

   iii) identify the expression as a monomial, binomial, or trinomial

a) $f + g + h$	i) _____	ii) _____	iii _____
b) $m^2 - mn + n^2$	i) _____	ii) _____	iii _____
c) $x - y$	i) _____	ii) _____	iii _____
d) s^2	i) _____	ii) _____	iii _____
e) 31	i) _____	ii) _____	iii _____
f) $5d^2 + dh - 11h^2 + 3$	i) _____	ii) _____	iii _____

6. Write the expression represented by each set of algebra tiles.



a) _____

b) _____

c) _____

d) _____

7. For the polynomial $\mathbf{3a^2 - 4ac - 8}$ state the following.

   a) Number of terms _____ b) Coefficient of the first term _____ c) Coefficient of the second term __
   d) state the variables_____ e) Degree of polynomial _____ f) Constant term _____