

5.1 WS

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St Thomas Aquinas High School

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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) $2x - 7$ **coefficient: 2** variable: x constant: -7 b) $-3b + 5$ **coefficient -3** variable b constant 5 c) $t - 4$ **coefficient 1** variable t constant -4

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

- a) Sarah is 5 years younger than her sister. **$x =$ sister's age, Sarah = $x - 5$**
 b) The width of the rectangle is 3 cm less than twice its length. **$l =$ length, width = $2l - 3$**
 c) The perimeter of a triangle is increased by 14 cm. **$P =$ perimeter, $P + 14$**
 d) The school sold half of the concert tickets it expected to sell. **$n =$ # of tickets they expected to sell**

Sold = $\frac{n}{2}$ or $\frac{1}{2}n$

3. For each expression

i) identify the number of terms

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

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|-------------------|-------------|----------------------|
| a) $-2x^2$ | i) <u>1</u> | ii) <u>monomial</u> |
| b) $a + b^2 + s$ | i) <u>3</u> | ii) <u>trinomial</u> |
| c) $y - 5$ | i) <u>2</u> | ii) <u>binomial</u> |
| d) $3d^2 - 5xy$ | i) <u>2</u> | ii) <u>binomial</u> |
| e) r | i) <u>1</u> | ii) <u>monomial</u> |
| f) $b^2 - 2b + 7$ | i) <u>3</u> | ii) <u>trinomial</u> |

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
<u>x^2</u>	<u>$c+d$</u>	<u>m^2-n-8</u>	<u>$a^2-3n-6a-5n^2$</u>
<u>$3y$</u>	<u>$7e^2-4f$</u>	<u>$4z^2-y^2-6$</u>	<u>$a+2b-2c-3d$</u>

5. For each polynomial

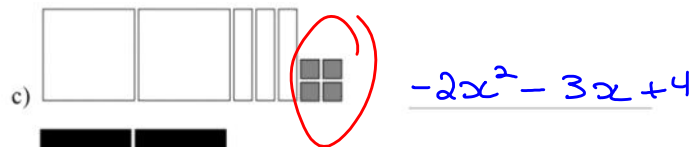
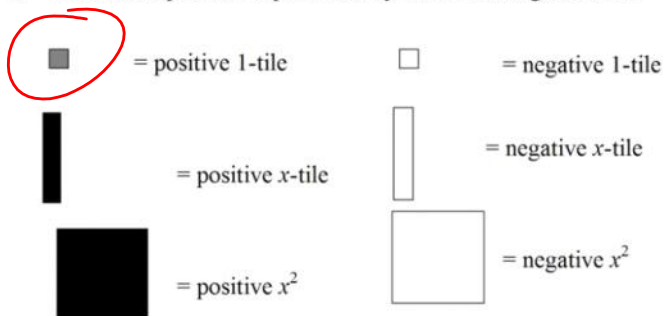
i) state the degree

ii) state the number of terms

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

- | | | | |
|----------------------------|-------------|--------------|------------------------|
| a) $f + g + h$ | i) <u>1</u> | ii) <u>3</u> | iii) <u>trinomial</u> |
| b) $m^2 - mn + n^2$ | i) <u>2</u> | ii) <u>3</u> | iii) <u>trinomial</u> |
| c) $x - y$ | i) <u>1</u> | ii) <u>2</u> | iii) <u>binomial</u> |
| d) s^2 | i) <u>2</u> | ii) <u>1</u> | iii) <u>monomial</u> |
| e) 31 | i) <u>0</u> | ii) <u>1</u> | iii) <u>monomial</u> |
| f) $5d^2 + dh - 11h^2 + 3$ | i) <u>2</u> | ii) <u>4</u> | iii) <u>polynomial</u> |

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



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

- a) Number of terms 3 b) Coefficient of the first term 3 c) Coefficient of the second term -4
 d) state the variables a, c e) Degree of polynomial 2 f) Constant term -8