

# 7.1 Notetaking with Vocabulary

I can find the <sup>many</sup> degree of <sup>one</sup> monomials.

I can classify polynomials by leading term degree and by the number of terms.

I can add and subtract polynomials.

I can use my understanding of polynomials to create mathematical models that enable me to solve real life problems.

Write the meaning of each vocabulary term.

Ex. 5,  $x^1$ ,  $6x^2$ ,  $-2st^4$ , 0

monomial - a number, a variable or the product of a number and one or more variables with whole number exponents.

degree of a monomial - the sum of the variable exponents  
 - the degree of a non-zero constant is 0.  
 - the constant 0 has no degree

## Find the Degrees of Monomials

Expression	Monomial Polynomial? If yes, degree? If no, why not?
10	Yes, degree = 0
$3x^1$	Yes, degree = 1
$5+x$	No, b/c it is a sum not a product
$\frac{2}{n} = 2n^{-1}$	No, can't have variable in denominator
$\frac{1}{2}ab^2$	Yes, degree = $1+2=3$
$-1.8m^5$	Yes, degree = 5
$4^x$	No, cannot have variable as exponent
$x^{-1}$	No, cannot have negative exponent

$$10 = 10 \cdot 1 = 10 \cdot x^0$$

In Exercises 1–8, find the degree of the monomial.

1.  $-6s^1$

deg = 1

2.  $w^1$

deg = 1

3. 8

deg = 0

4.  $-2abc^1$

deg = 3

5.  $7x^2y^1$

deg = 3

6.  $4r^2s^3t^1$

deg = 6

7.  $10mn^3$

deg = 4

8.  $\frac{2}{3}$

deg = 0

### Polynomials

A **polynomial** is a monomial or a sum of monomials.

Each monomial is called a **term** of the polynomial.

A polynomial with two terms is a **binomial**.

A polynomial with three terms is **trinomial**.

Binomial

$5x^1 + 2$

Trinomial

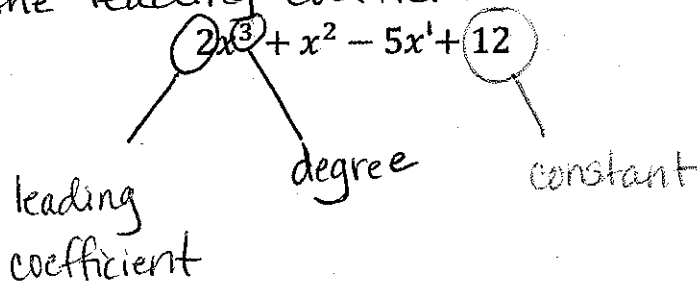
$x^2 + 5x^1 + 2$

The **degree of a polynomial** is the greatest degree of the terms.

A polynomial in one variable is in **standard form** when exponents of terms decrease from left to right.

When you write a polynomial in standard form,

the coefficient of the 1<sup>st</sup> term is called the **leading coefficient**.



**7.1 Notetaking with Vocabulary (continued)**

In Exercises 9–12, write the polynomial in standard form. Identify the degree and leading coefficient of the polynomial. Then classify the polynomial by the number of terms.

9.  $x + 3x^2 + 5$

10.  $\sqrt{5}y$

11.  $3x^5 + 6x^8$

12.  $f^2 - 2f + f^4$

$3x^2 + x + 5$

$\sqrt{5}y$

deg. = 2

deg. = 1

l. coef. = 3

l. coef. =  $\sqrt{5}$

trinomial

monomial

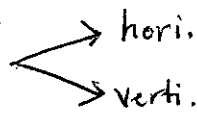
A set of numbers is closed under an operation performed on any two numbers in the set <sup>that</sup> results in a number that is also in the set. For example:

$2 + 3 = 5$

The set of polynomials is closed under addition and subtraction. So the sum or

difference of any two polynomials is also a polynomial.

In Exercises 13–16, find the sum. *put in standard form*



13.  $(-4x + 9) + (6x - 14)$

14.  $(-3a - 2) + (7a + 5)$

$-4x + 9$   
 $+ 6x - 14$   
-----  
 $2x - 5$

vertical

$-3a + 7a - 2 + 5$

horizontal method

$4a + 3$

15.  $(x^2 + 3x + 5) + (-x^2 + 6x - 4)$

16.  $(t^2 + 3t^3 - 3) + (2t^2 + 7t - 2t^3)$

horizontal

$x^2 + -x^2 + 3x + 6x + 5 + -4$   
 $0 + 9x + 1$

$9x + 1$

$+ 3t^3 + t^2 + 0t - 3$   
 $- 2t^3 + 2t^2 + 7t + 0$

$1t^3 + 3t^2 + 7t - 3$

In Exercises 17-20, find the difference. change to + by distributing

17.  $(g - 4) - (3g - 6)$

$$(g - 4) + -1(3g - 6)$$

$$g - 4 + -3g + 6$$

$$g + -3g - 4 + 6$$

$$\boxed{-2g + 2}$$

19.  $(-x^2 - 5) - (-3x^2 - x - 8)$

18.  $(-5h - 2) - (7h + 6)$  the -

$$(-5h - 2) + (-7h - 6)$$

$$-5h - 2$$

$$+ -7h - 6$$

$$\boxed{-12h - 8}$$

20.  $(k^2 + 6k^3 - 4) - (5k^3 + 7k - 3k^2)$

$$(6k^3 + k^2 - 4) + (-5k^3 - 7k + 3k^2)$$

$$+ \quad 6k^3 + k^2 + 0k - 4$$

$$- 5k^3 + 3k^2 - 7k + 0$$

$$\boxed{1k^3 + 4k^2 - 7k - 4}$$