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7.1 Notetaking with Vocabulary

I can find the degree of 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, $6x^2$, $-2st^1$, 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
$\frac{1}{2}a^1b^2$	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. $-2ab^1c^1$ 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 1st term is called the leading coefficient

$2x^3 + x^2 - 5x^1 + 12$

leading coefficient — degree — constant

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

$3x^2+x+5$ $\sqrt{5}\,y^1$

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 that 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. → hori. → verti.

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

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

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

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

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

$4a+3$

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

horizontal

$x^2+-x^2+3x+6x+5+-4$

$0 + 9x + 1$

$9x+1$

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

$3t^3+t^2+0t-3$
$+\ -2t^3+2t^2+7t+0$
$1t^3+3t^2+7t-3$

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

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

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

$g-4+-3g+6$

$g+-3g-4+6$

$\boxed{-2g+2}$

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

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

$-5h-2$

$+\ -7h-6$

$\boxed{-12h-8}$

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

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

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

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

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

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