

11-15-17

Aim: SWBAT classify polynomials, write polynomials in standard form, and state their degree.

HW: **Test Tomorrow**

Packet Page 3 due Friday

Do Now: Unit 4 Packet Page 1 # 1 - 4

AIM: SWBAT classify polynomials, write them in standard form and state their degree.

DO NOW:

List the terms in each expression.

- 1) $6x^2 + 3x - 9$ $6x^2, 3x, -9$ 2) $3x - 5$ $3x, -5$
 3) $15x + 16y - 8 + 12x - 5y$ $15x, 16y, -8, 12x, -5y$ 4) $5xy - y$ $5xy, -y$

CLASSWORK:

Polynomials - a monomial or the sum/difference of monomials. Each monomial in a polynomial is called a **term**.

Types of Polynomials:

Monomials - one term (Ex: $-2x, 4$)

Binomial - two terms (Ex: $3x + 5, x^2 - 9$)

Trinomial - three terms (Ex: $x^2 + 5x + 4$)

If a polynomial has **more than three** terms, it is simply called a polynomial.

Classify the polynomial as a monomial, a binomial, a trinomial, or a polynomial.

- 1) $5m$ monomial 2) $2x + 1$ binomial
 3) $4 + 3y - 8y^3$ trinomial 4) $x^2 + 6x + 5$ trinomial
 5) $x^3 - y^3$ binomial 6) $-5x^2y$ monomial
 7) $x^4 + x^3 + 3x^2 + x - 8$ polynomial 8) $x^8 - x^5 + x^4 + 7$ polynomial

Standard Form - a polynomial in **one variable** with no like terms, and having exponents of the variables arranged in **descending order**. Constant terms are always last in standard form.

Ex: $5x^3 - 2x^2 + 3x + 7$

Write each polynomial in standard form.

- 9) $14x + 2 - 3x^2 + 5x^3$ $5x^3 - 3x^2 + 14x + 2$
 10) $8z^2 - 2z + 7 - 9z^3$ $-9z^3 + 8z^2 - 2z + 7$
 11) $2y - 7y^5 + 3y^2 + 2$ $-7y^5 + 3y^2 + 2y + 2$
 12) $x^3 - 2x^2 + 7x^5 + 4$ $7x^5 + x^3 - 2x^2 + 4$
 13) $2x + 5x^2 - 7$ $5x^2 + 2x - 7$

Like Terms - monomials with the same variables with the same exponents.

Ex: $5m$ & $3m$, $2x^2$ & x^2 , xy^3z & $-9xy^3z$

For each question circle the terms that are Like-Terms:

1) x^2 , $5xy$, $10xy^2$, $3x^2y$, $-2x^2y$

2) xyz , $46xy$, $12zx$, $-6xy$, $8yz$

3) 132 , $4x^2y$, $16zp$, $4x^3h$, $-12hx^3$

4) $7ha$, $8ah$, $9hz^2$, $5p^3x^4$, $11ah^2$

To find the **DEGREE** of a **monomial** you add the exponents of its variables.

A constant has a degree of 0.

Ex. $-6r^2$ has a degree of 2; $\frac{1}{2}bc^8$ has a degree of 9. The exponent of b is 1. You add $1 + 8 = 9$

Find the **degree** of each **monomial**.

1) $11m$ 1 2) y^2 2 3) 12 0 4) $3m^2n$ 3 5) $-2x^2yz^4$ 7

To find the **degree** of a **polynomial** you find the **degree** of **each term** and **choose the largest**.

EX. $4 + 3a - 8a^3$ The **degree of the polynomial is 3**. The last term, $-8a^3$, had the largest sum of exponents.

Find the **degree** of each **polynomial**.

6) $-5x^3yz^2$ 7 7) $x^3 - y^3$ 3 8) $5ab^2 - 2a + b^2$ 3 9) $x + 5$ 1

Simplify each polynomial & write your final answer in standard form.

1) $3y + y^2 + 5y - 9y^2$
 $(y^2 - 9y^2) + (3y + 5y)$
 $-8y^2 + 8y$

2) $(7x + 2x) - 5 + 3$
 $9x - 2$

3) $(-6a + 2a + 7a)$
 $3a$

4) $x^2 + 5x - 7 - 12x - 13$
 $(x^2 + 5x - 12x) - 7 - 13$
 $x^2 - 7x - 20$

5) $5(x^4 - 3x^3 + 2x^2)$
 $5x^4 - 15x^3 + 10x^2$

6) $-3(2y - 7y^2 + 8) - 5y$
 $-6y + 21y^2 - 24 - 5y$
 $(21y^2 - 6y - 5y) - 24$
 $21y^2 - 11y - 24$

7) $4(x + 4) - 3x^4 + 9x^2 - 2x + 5$ 8) $n(n + 5) + 6n$
 $4x + 16 - 3x^4 + 9x^2 - 2x + 5$ $n^2 + 5n + 6n$
 $(-3x^4 + 9x^2) + (4x - 2x) + 16 + 5$ $n^2 + 11n$
 $-3x^4 + 9x^2 + 2x + 21$

9) $x(2x + 3) + 4x^2 - x + 1$
 $2x^2 + 3x + 4x^2 - x + 1$
 $(2x^2 + 4x^2) + (3x - x) + 1$
 $6x^2 + 2x + 1$

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HOMEWORK - Intro to Polynomials

Classify each polynomial as a monomial, binomial, trinomial, or a polynomial.

1) $3x - 5$ _____

2) $x^2 - 3x + 4$ _____

3) $4y$ _____

4) $-7a + 9b$ _____

5) $n^5 - 7n^4 + 5n^3 - n + 2$ _____

6) $-8x^3y^6$ _____

Find the degree of each polynomial.

7) 5 _____

8) $3x^2 + 4y^2$ _____

9) $3x^4y^2z$ _____

10) $7x^3y - 2y^5$ _____

11) $x^5 - 8x^3 + x^6$ _____

12) $-3x^2 + 7x$ _____

Circle the terms that are like terms.

13) $2xy, ut^2x, 2xt^2u, 14xz, -7xut^2$

14) $3x^3p, 12pxy, 3x^3z, -4px^3, 13px^3$

15) $mnr, m^2nr, mn^2r, mnr^2, mn^2r$

16) $4pqs, 2p^2qs, -11pq^2s, 13pq^2s$

17) $13x, 17, 126zu, 31p, -72, 14xy$

18) $\pi r^2, 2\pi r, 3\pi r^3, 5\pi r^2, 8\pi r^3$

Simplify each polynomial and write in standard form.

19) $6x - x^2 + 4x - 7x^2$

20) $2y - 8 + 4y - 2$

21) $-4x^4 - x^3 + x^4$

22) $4(y^3 - 2y^2 + 3)$

23) $-3(3x^3 - 6x + 4x^3) - 2x$

24) $x(3x - 2) + 2x^2 - x + 5$

25) $2n(n^2 - 5n) + 6n^3$

26) $2(x - 5) + 3(x^2 + 6)$