

Warm Up

1) Find the slope: (-3, 5) (0, 10)

2) Simplify: $\frac{9x^4y^2}{3x^{-5}y^2}$

3) Write in Scientific Notation: 3,450,000,000

4) Write the exponential function. A manufacturing plant earned \$80 per man-hour of labor when it opened. Each year, the plant earns an additional 5% percent per man-hour. What is the amount $A(t)$ that the plant earns per man-hour t years after it opens.

Questions/Examples

Example of a polynomial:

monomials
degree
exponents
sum
term
sum/
difference
terms

monomial
polynomial
trinomial
binomial

Notes: Polynomials

- A polynomial is a _____ or _____ of _____.

- Each monomial in the polynomial is called a _____.

# of Terms	Polynomial Classification	Example
1		
2		
3		
4+		

- Polynomials can be classified by the number of _____:

- The _____ of a monomial is the _____ of _____ in that monomial.

Examples: 1) $2x^2y^3z$ 2) $\frac{4m^3np^4}{3}$

Questions/Examples

Example of a polynomial:

Notes: Polynomials

- A polynomial is a **sum** _____ or **difference** of **monomials**.

- Each monomial in the polynomial is called a **term**.

# of Terms	Polynomial Classification	Example
1	monomial	$2n^2$
2	binomial	$3a^4 - 2$
3	trinomial	$7x^3 + 4x - 2$
4+	polynomials	$3xy - 5y + x - 1$

- Polynomials can be classified by the number of **terms**:

- The **degree** of a monomial is the **sum** of **exponents** in that monomial.

Classify & name the degree 1) $2x^2y^3z$ **monomial; 6** 2) $\frac{4m^3np^4}{3}$ **monomial; 8**

Example:

Find the degree of the polynomial.

$$4x^2y^3 + 7x^4y^2 - 2x^2y^5$$

Example of a polynomial in standard form:

- The _____ of a polynomial is the _____ of the monomial with the _____.

Standard _____ of a polynomial is when we write the polynomial in _____ order according to the _____ of a specified variable

Example: Write the polynomial in Standard form according to the variable x. $-5x^2y + x^5 + 7xy^4 + 4x^3$

Word bank:

degree

exponent

form

greatest

same as the degree

exponent

descending

Example:

Find the degree of the polynomial.

$$4x^2y^3 + 7x^4y^2 - 2x^2y^5$$

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Example of a polynomial in standard form:

• The **degree** of a polynomial is the **same as the degree** of the monomial with the **greatest exponent**.

Standard **form** of a polynomial is when we write the polynomial in **descending** / order according to the **exponent** of a specified variable

Example: Write the polynomial in Standard form according to the variable x . $-5x^2y + x^5 + 7xy^4 + 4x^3$

Example in Standard Form:

$$x^5 + 4x^3 - 5x^2y + 7xy^4$$

8-4 Skills Practice

Polynomials

Page ____

State whether each expression is a polynomial. If the expression is a polynomial, identify it as a *monomial*, a *binomial*, or a *trinomial*.

1. $5mn + n^2$

2. $4by + 2b - by$

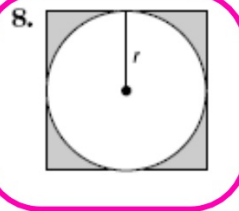
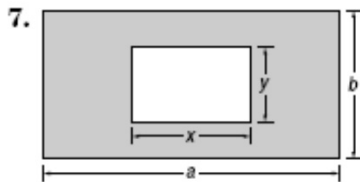
3. -32

4. $\frac{3x}{7}$

5. $5x^2 - 3x^{-4}$

6. $2c^2 + 8c + 9 - 3$

GEOMETRY Write a polynomial to represent the area of each shaded region.



Find the degree of each polynomial.

9. 12

10. $3r^4$

11. $b + 6$

12. $4a^3 - 2a$

13. $5abc - 2b^2 + 1$

14. $8x^5y^4 - 2x^8$

Warm Up

- 1) Some banks charge a fee on savings accounts that are left inactive for an extended period of time. The equation $y = 5000(0.98)^x$ represents the value, y , of one account that was left inactive for a period of x years. What is the y -intercept of this equation and what does it represent?
- 2) Find the exponential equation, $y = a(b^x)$, of the exponential function containing the points $(0,4)$ and $(2,16)$.
- 3) The exponential function $f(x) = 15,000(1.02)^x$ models the amount of money in a savings account over a period of time. What is the rate and what does it represent? How much money would you have after 4 years?

There are two ways of adding polynomials:

1. **Chart method:** Vertically align **like terms** and add.
2. **Standard method:** Group like terms using the associative and commutative properties; then add.

Example

Add the following polynomials.

$$(4x^2 + 3x - 8) + (-2x^2 + x + 5)$$

Method 1:

Method 2:

There are two ways of subtracting polynomials:

*Rewrite the second polynomial using opposite operations

1. **Chart method:** Vertically align **like terms** and combine.

2. **Standard method:** Group like terms using the associative and commutative properties; then combine.

Example

Subtract the following polynomials.

$$(4x^2 + 3x - 8) - (-2x^2 + x + 5)$$

Method 1:

Method 2:

Adding/Subtracting Polynomials

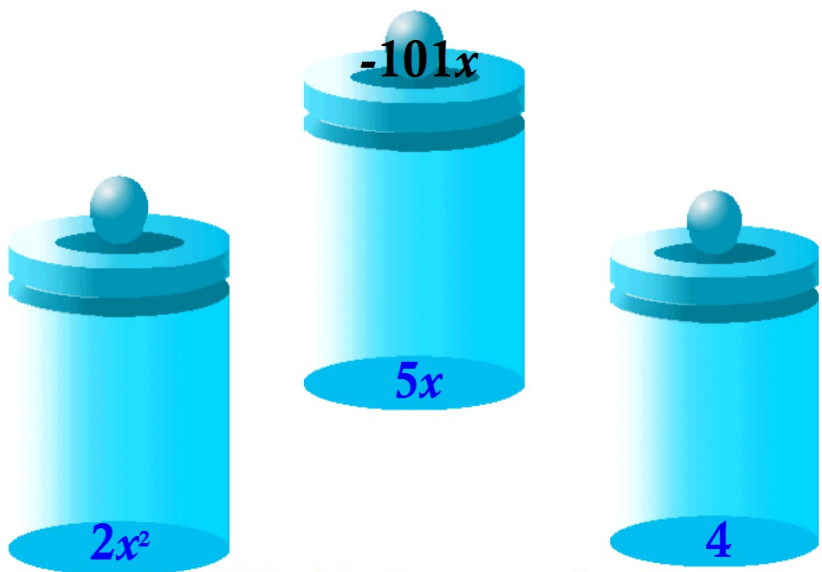


Adding Polynomials

- Add the **coefficients** of **like terms**.

x^3	$3xyz$	$-x^2y$
$\frac{x}{8}$	14	
	$-10x$	
		$3x$
$-5x$	$3x^2$	$\frac{34}{x}$
	2	-1
$4xy$	$5x^4$	$7x^2$
	x	2^3

Terms with the exact same variables
AND exponents



What is the sum of each jar?

Exercises**Find each sum.**

1. $(4a - 5) + (3a + 6)$

Level 1

2. $(6x + 9) + (4x^2 - 7)$

3. $(6xy + 2y + 6x) + (4xy - x)$

4. $(x^2 + y^2) + (-x^2 + y^2)$

5. $(3p^2 - 2p + 3) + (p^2 - 7p + 7)$ *Level 2*

6. $(2x^2 + 5xy + 4y^2) + (-xy - 6x^2 + 2y^2)$

7. $(5p + 2q) + (2p^2 - 8q + 1)$

8. $(4x^2 - x + 4) + (5x + 2x^2 + 2)$

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

Level 3

10. $(x^2 + 2xy + y^2) + (x^2 - xy - 2y^2)$