



# Monomials, Binomials, and Polynomials

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Constants like 13 are monomials since they can be written as  $13x^0 = 13 \cdot 1 = 13$  where the *variable* is  $x^0$ .



The ending of these words "**nomial**" is Greek for "part".

- A **monomial** is the product of non-negative integer powers of variables. Consequently, a monomial has NO variable in its denominator. It has one term. (**mono** implies **one**)

**13, 3x, -57, x<sup>2</sup>, 4y<sup>2</sup>, -2xy, or 520x<sup>2</sup>y<sup>2</sup>**  
(notice: no negative exponents, no fractional exponents)

- A **binomial** is the sum of two monomials. It has two unlike terms. (**bi** implies **two**)

**3x + 1, x<sup>2</sup> - 4x, 2x + y, or y - y<sup>2</sup>**

- A **trinomial** is the sum of three monomials. It has three unlike terms. (**tri** implies **three**)

**x<sup>2</sup> + 2x + 1, 3x<sup>2</sup> - 4x + 10, 2x + 3y + 2**

- A **polynomial** is the sum of one or more terms. (**poly** implies **many**)

**x<sup>2</sup> + 2x, 3x<sup>3</sup> + x<sup>2</sup> + 5x + 6, 4x - 6y + 8**

Polynomials are in **simplest form** when they contain no like terms.

**x<sup>2</sup> + 2x + 1 + 3x<sup>2</sup> - 4x** when simplified becomes **4x<sup>2</sup> - 2x + 1**

Polynomials are generally written in **descending order**.

**Descending:** **4x<sup>2</sup> - 2x + 1** *exponents of variables decrease from left to right*

Student Name: \_\_\_\_\_

Score: \_\_\_\_\_

**State the type of polynomials**

1.  $12a^2b + ab^5 + b^2c$  \_\_\_\_\_

2.  $15abc^2 + a^2bc - c^4$  \_\_\_\_\_

3.  $10x^2yz$  \_\_\_\_\_

4.  $5x^3 + 8xy$  \_\_\_\_\_

5.  $xyz^3 + 3xy - 91xz + 8z^4$  \_\_\_\_\_

6.  $p^3$  \_\_\_\_\_

7.  $p^2qr + 8st^3 + 2r^4 - s^{10}$  \_\_\_\_\_

8.  $a^3 + b^3 + c^3$  \_\_\_\_\_

9.  $-9s^3rt + 3st + 1$  \_\_\_\_\_

10.  $u^4 - 35v^5w - uv + 8$  \_\_\_\_\_

Student Name: \_\_\_\_\_

Score: \_\_\_\_\_

**Identify the type of polynomials**

1.  $x + 2y$  \_\_\_\_\_

2.  $15ab^2 + 3$  \_\_\_\_\_

3.  $p^2 + 5p + 1$  \_\_\_\_\_

4.  $-x^5yz + 4y^2z + xy$  \_\_\_\_\_

5.  $x^5$  \_\_\_\_\_

6.  $5u^3vw - 9uvw^4$  \_\_\_\_\_

7.  $x^2 + 2xy + y^2$  \_\_\_\_\_

8.  $-25u$  \_\_\_\_\_

9.  $8pq^2 + 7pq + qr^2$  \_\_\_\_\_

10.  $4y^3z - 3yz^3$  \_\_\_\_\_

Student Name: \_\_\_\_\_

Score: \_\_\_\_\_

**State the type of polynomials**

1.  $5x^2 + 3x - 7$  \_\_\_\_\_

2.  $x - y$  \_\_\_\_\_

3.  $5u$  \_\_\_\_\_

4.  $u^2v + 2uv - 7uv^3$  \_\_\_\_\_

5.  $7u^2 + 4v^2$  \_\_\_\_\_

6.  $p^3 + 3p^2q + 3pq^2$  \_\_\_\_\_

7.  $10pqr$  \_\_\_\_\_

8.  $8ab + 5b^3$  \_\_\_\_\_

9.  $3s^3 + 2st + 3t^3$  \_\_\_\_\_

10.  $34p^3rst^3$  \_\_\_\_\_