

Operations on Monomials and Polynomials (1A10.0)

Name _____

Class _____ Date _____

Score _____

A **monomial** is the product of a number and/or at least one variable raised to a non-negative integer power.

Monomials	Not monomials
$2x^2$	$2x^{1.5}$
x^2y^3z	$9y^{-3}$
$8mn^2$	5^z

Example: simplify $6q^3 - 2q^3 + r^3$.

$6q^3$ and $2q^3$ have the same base (q) and the same power (3), so you can subtract.

r^3 has a different base (r), so you can't add it:

$$6q^3 - 2q^3 + r^3 = 4q^3 + r^3$$

A **polynomial** is the sum or difference of **one or more monomials**.

Monomial	$2x^2$
Binomial	$3m^4 - 2n$
Trinomial	$x^3 + 4y - z^5$

Example: $(2x^3 + x^2y - 5) + (5x^2y + x + 8) =$

Group like terms: $(2x^3) + (x^2y + 5x^2y) + (x) + (-5 + 8)$

Add like terms: $2x^3 + 6x^2y + x + 3$

Example: $(3x^2)(2x^3 + 4xy - 1) =$

Distribute: $(3x^2)(2x^3 + 4xy - 1) = (3x^2)(2x^3) + (3x^2)(4xy) + (3x^2)(-1)$

Multiply the monomials: $(3x^2)(2x^3) + (3x^2)(4xy) + (3x^2)(-1) = 6x^5 + 12x^3y - 3x^2$

1) Simplify. $(x^3 + 2x - 2) - (x^3 - 3x - 2)$

- A. $-x - 2$
- B. $5x - 4$
- C. $5x - 2$
- D. $5x$

2) Simplify. $(2x^2 - 5x + 1) + (x^3 - x^2 + 5x)$

- A. $x^3 + x^2 + 1$
- B. $x^3 - x^2 - 10x + 1$
- C. $x^2 - 5x + 1$
- D. $x^3 - x^2 + 1$

3) Simplify. $(3x^2 - 6x + 10) - (2x^2 - 6x + 7)$

- A. $x^2 - 12x - 3$
- B. $x^2 + 3$
- C. $5x^2 - 6x - 3$
- D. $5x^2 - 3x$

4) Simplify. $(x^2 - 7x + 14) + (x^2 + 7x - 4)$

- A. $14x + 10$
- B. $x^2 - 7x + 10$
- C. $2x^2 + 10$
- D. 10

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

- A. $x^2 + 5$
- B. $x^2 - 6x + 13$
- C. $x^2 - 3x + 13$
- D. $x^2 - 3x + 5$

6) Simplify. $(2x)(9x^2 + 6x)$

- A. $18x^3 + 6x^2$
- B. $18x^2 + 12x$
- C. $18x^3 + 12x^2$
- D. $18x^2 + 6x$

7) Simplify. $(x^2)(3x + 3)$

- A. $3x^2 + 3x$
- B. $3x^3 + 3x^2$
- C. $6x^2$
- D. $3x^3 + 3$

8) Simplify. $(3x)(5x)(-2x)$

- A. $30x^3$
- B. $-30x^2$
- C. $30x^2$
- D. $-30x^3$

9) Simplify. $\frac{6x^2 + 9x}{3x}$

- A. 3
- B. $3x + 3$
- C. $2x + 3$
- D. $2x$

10) Simplify. $\frac{12x^2 + 8x}{4x}$

- A. $2x$
- B. $3x + 1$
- C. $4x + 3$
- D. $3x + 2$

11) Simplify. $(x^2 + 1)(x^3 + 1)$

- A. $x^5 + x^3 + x^2 + 1$
- B. $x^5 + x^3 + 1$
- C. $x^6 + x^3 + x^2 + 1$
- D. $x^6 + x^3 + 1$

12) Simplify. $\frac{10x^2 + 5x + 5}{5}$

- A. $2x^2 + x + 5$
- B. $2x^2 + 1$
- C. $2x^2 + x + 1$
- D. $2x^2 + x$

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13) The height of a triangle equals x . If the base of the same triangle equals $x + 1$, which of the following expressions represents the area of the triangle?

A. $\frac{2x + 1}{2}$

B. $\frac{x + 1}{2}$

C. $x^2 + 1$

D. $\frac{x^2 + x}{2}$

14) A house contains two square rooms. The length of the four sides of one room is x and the length of the sides of the other room is y . Which of the following expressions represents the sum of the areas of the two square rooms?

A. $2x^2 + 2y^2$

B. $2xy$

C. $x^2 + y^2$

D. $2x + 2y$

15) A rectangular solid has length l , width $l + 1$, and height $l + 2$. Which of the following expressions represents the volume of this solid?

A. $3l^3 + 3$

B. $3l^2 + 3$

C. $l^3 + 2l^2 + 2l$

D. $l^3 + 3l^2 + 2l$

16) A movie theater has n rows of seats with each row containing $n + 15$ seats. Which expression represents the total number of seats in the theater?

A. $2n + 15n$

B. $n^2 + 15n$

C. $2n^2 + 15$

D. $n^2 + 15$