

Introduction to Algebraic Expressions

****ANSWERS****

ORDER OF OPERATIONS

Calculating an equation or expression using the following order:

1. Anything in parentheses
2. Exponents
3. Multiplication and division, from left to right
4. Addition and subtraction, from left to right

Using the order of operations, complete the following algebra problems.

Ex. 1. $(5 + 9) - 3^2 + 4 \times 6$

$$14 - 3^2 + 4 \times 6$$

$$14 - 9 + 4 \times 6$$

$$14 - 9 + 24$$

$$5 + 24 = 29$$

2. $24 - 2 + (4 \times 2)$

$$24 - 2 + 8$$

$$22 + 8 = 30$$

3. $8 \times 4 - 9 + 5^2$

$$8 \times 4 - 9 + 25$$

$$32 - 9 + 25$$

$$23 + 25 = 48$$

4. $5 + (7 + 9) - 1 \times 2^3$

$$5 + 16 - 1 \times 2^3$$

$$5 + 16 - 1 \times 8$$

$$5 + 16 - 8$$

$$21 - 8 = 13$$

5. $6 + 12 \div 3 + (17 - 5)$

$$6 + 12 \div 3 + 12$$

$$6 + 4 + 12$$

$$10 + 12 = 22$$

6. $4^2 + 4 \times 3 - 5$

$$16 + 4 \times 3 - 5$$

$$16 + 12 - 5$$

$$28 - 5 = 23$$

Monomials that have the same variables with the same exponent.

Combining like terms reduces multiple monomials into one monomial.

LIKE TERMS

Simplify the following algebraic expressions by combining like terms.

Ex. 1. $7 + 2x - 1 + 5x + 3x^2$ 2. $10x + 8 - 2x + x^3 + 5$ 3. $8 - 3 - 2x + 10x$

$$7 - 1 + 2x + 5x + 3x^2$$

$$6 + 7x + 3x^2$$

$$10x - 2x + 8 + 5 + x^3$$

$$8x + 13 + x^3$$

$$5 + 10x - 2x$$

$$5 + 8x$$

4. $2x^2 + 3x + x^2 - x + 4$

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

$$3x^2 + 2x + 4$$

5. $x + x + 2x^3 + 3x$

$$x + x + 3x + 2x^3$$

$$5x + 2x^3$$

6. $9 + x^3 - 3 + x^3 - 2x$

$$9 - 3 + x^3 + x^3 - 2x$$

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