

Order of Operations

Warmup: Complete these before watching the video

Addition

$$6 + 9$$

Subtraction

$$4 - 2$$

Multiplication

$$9(4)$$

Division

$$8 \div 2$$

Parentheses

$$4 + (2 + 8)$$

Parentheses

$$20 \times (6 + 8)$$

Exponents

$$3^4$$

Exponents

$$12^2$$

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- I. Numerical Expressions
- II. Order of Operations
- III. Expressions with Exponents
- IV. Complex Numerical Expressions
- V. Problem Solving: Using Expressions
- VI. Challenge: Evaluate Algebraic Expressions after substitution.

Homeschool



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Pre-Algebra and Geometry I

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I. Numerical Expressions

Match the expression with the correct label.

$$15 \div 5 + (3^4 - 2) \times 10$$

$$15 \div 5 + (x^4 - 2)$$

$$5(x + 7)$$

$$4 + (2^3 - 5) - 9$$

Numerical Expression:

Numbers and at least one operation.

Numerical Expression

Algebraic Expression

Parentheses

Simplify inside the parentheses first

Exponents

Simplify Exponents

Multiplication or Division

Multiplication or Division are equal in rank.
Simplify from left to right.

Addition or Subtraction

Addition or Subtraction are equal in rank.
Simplify from left to right.

From Left to Right



II. Order of Operations

$$(8 - 3) \times (4 + 2)$$

3. $(7+5) \times (2+1)$

4. $(4 \times 2) \times (10-7)$

$$6 + 4 \times 2 - 5$$

5. $8 \div 2 + 25 \div 5$

III. Expressions with Exponents

$$45 - (3 \times 2)^2$$

$$6(10 - 6)^2 \div 4$$

6. $(4 + 1)^2 + 6$

7. $(2 + 3)^2 + 7(1)$

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

IV. Complex Numerical Expressions

$$5 + (8 - 3)^2 \div (3 + 2)$$

Parentheses

Exponents

Multiplication or Division

Addition or Subtraction

$$9. 10 - (4 + 6)^2 \div (5 \cdot 5)$$

V. Problem Solving: Using Expressions

The distance around a geometric figure is called the **perimeter**. Write a numerical expression to find the perimeter of a stop sign if each side is 12 Inches long, then evaluate the expression.

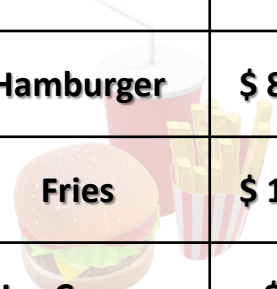


**Goal of these questions
Is to write an
algebraic expression**

V. Problem Solving: Using Expressions

The distance around a geometric figure is called the **perimeter**. Write a numerical expression to find the perimeter of a stop sign if each side is 12 Inches long, then evaluate the expression.





Drink	\$ 1.75
Hamburger	\$ 8.50
Fries	\$ 1.00
Ice Cream	\$ 2

10. The Villa family went out to eat to celebrate Tom's 5th birthday. There are 8 people in the family. Each person in the family ordered a drink, hamburger, and fries. The six children all ordered an ice cream for dessert. Write an expression to find the cost of the meal, then evaluate the expression.

VI. Challenge: Evaluating Algebraic Expressions after substitution.

Evaluate $(b + c)^2 - a$ when $a=3$, $b=4$ and $c=2$

11. Evaluate $a(b + c) + 10$ when $a=2$, $b=9$ and $c=1$