

Major Topics

- Algebraic expressions
- Number systems
- Order of operations
- Equations & Inequalities
- Absolute Value

Formulas

If $|A| < b$ then rewrite as
 $-b < A < b$

If $|A| > b$ then rewrite as
 $A < -b$ or $A > b$

Vocabulary

- Variable
- Constant
- Coefficient
- Reciprocal
- Opposite
- Absolute value
- Whole numbers
- Integers
- Rational numbers
- Irrational numbers
- Real numbers
- Like terms
- Solution
- Inverse operation
- Compound inequality

You should be able to:

- Apply order of operations
- Simplify algebraic expressions
- Evaluate algebraic expressions
- Identify number systems
- Solve equations (linear, literal, & absolute value)
- Solve & graph inequalities
- Solve & graph absolute value inequalities

Practice:

1. Identify all sets of numbers that each number belongs.

- a) 6 b) -5 c) $\frac{3}{2}$ d) 3π e) 1.95 f) $\sqrt{5}$ g) $-7\frac{3}{4}$ h) $-2.\bar{3}$

2) Simplify each algebraic expression.

- a) $3x - 5y + 2y - 9x$ b) $4x - 2(3x - 4) - 11$ c) $(5x^2 - 3x + 8) - (2x^2 + 8x - 7)$

3) Evaluate each algebraic expression for the given value.

- a) $\frac{4(2k-5)-3(k+4)}{3k+7}$ for $k = -2$ b) $-m^2 - (4m + 8n) - 7n$ for $m = 3$ and $n = -4$

4) Solve each equation for x .

- a) $3x - 9 = 9x + 27$ b) $4 - 5(6x + 12) = 12x + 28 - 8x$ c) $\frac{8x-9}{3} = -13$
d) $9x + g = h$ e) $\frac{7-3x}{k} = T$ d) $Qx + 3x = 4P$ e) $|5x - 6| + 3 = 17$

5) Solve and graph each inequality.

- a) $3x - 6 > 9$ b) $2x + 8 \leq 5x - 1$ c) $-6 < 4x + 2 \leq 18$
d) $|3x + 6| \geq 24$ e) $|2x - 5| < 9$

Identify all sets of numbers that each number belongs.

- 1) $\frac{2}{3}$ 2) -8 3) $2\sqrt{10}$ 4) 1.79 5) $-\frac{13}{9}$

Simplify each algebraic expression.

- 6) $6m - 8n - 3m + 5n$ 7) $3y^2 - 5y(2y + 1) - 13y$

Evaluate each algebraic expression for the given value.

- 8) $\frac{2g-3(g+1)}{g^2-3g}$ for $g = -5$ 9) $2t^2 - (3t - v) + 6v$ for $t = -3$ and $v = 6$

Solve each equation for x .

- 10) $13x + 5 = 2x - 7$ 11) $2x - 3(7x - 3) = 8x - (7 + 2x)$

- 12) $\frac{8-3x}{2} = 16$ 13) $5|3x + 4| = 10$

- 14) $z - 7x = 10$ 15) $\frac{6x+3}{m} = r$ 16) $tx + vx = a - b$

Solve and graph each inequality.

- 17) $5x + 6 \leq 21$ 18) $3x - 7 > x - 10$ 19) $37 \leq 9 - 7x < 58$

- 20) $|6x + 10| \leq 64$ 21) $|10x - 15| > 34$