Algebra 1
Unit 1 Notes – Basic Algebraic Concepts

Essential Questions:

I. Order of Operations

P – parenthesis (or any grouping symbol)
E – exponents
M/D - x and / from left to right!
A/S - +/- from left to right!

Examples:

1) $4^2 + 7 \cdot 9 \div 3$

2) $2 + 16 \div 4^2 - (5 \cdot 2 - 7)$

3) $\frac{4 \cdot 6 + (3^2 - 3)}{7 + 3^3 \div 3}$

Now, try these with a partner:

1) $35 - 5\,[-8 - (-2)]$

2) $30 - (78 - 91)$

3) $3 + 6 \div 2 \cdot 3 - 36 \div 3^2$

II. Evaluating Expressions

Variable:

Algebraic Expression:

Absolute Value:

Examples: Evaluate each expression using the given values.

1) $m^3 - 6n^2$ when m = -2 and n = 3

2) $\frac{3a^2 - b}{a+6}$ when a = -4 and b = 2

3) $|3x - 19| + 10y$ when x = 4, y = 2

4) $4 - |x - 6| - 8$ when x = -4

Now try these with a partner:

1) Find the value of $x^3 + 3x^2 - 2$ when x = 3

2) Evaluate $2y^2(x+y)$ when x = 1 and y = 5

3) Find the value of $2x^2 + x - 2$ when x = -2

4) Find the value of $|x + 8| - 3x$ when x = -1

III. Combining Like Terms

Terms: Coefficient: Constant: Like Terms:

Example: Identify the terms, like terms, coefficients, and constant terms of the expression:

2x – 5 + 8x – 3

Terms:_____ Like terms: _____Coefficients_____ Constants_____

What does it mean to combine like terms?

Examples: Combine like terms.

1) n – 10 + 3n – 6

2) 5x – 4 + 10 + 7x

3) 12xy – 4x + 7yx – 9y + 3x – 17

4) $7x^2 - 5x + 3x - 2x^2 + 4y^2$

5) $7xy^2 + 2y^2 - 4 + 7x^2y - 8y^2$

IV. Distributive Property

a (b + c) = _____ a(b – c) = _____

Examples:

1) 5(n + 4)

2) 3(x – 6)

3) 2x(x + 7)

4) 3y(x – 5)

5) 7 + 2(x + 3)

6) 2(4x – 3) + 7(x + 5)

7) 6 – 5(2 – 3x)

8) 4 + 5(x-2) – 7

9) 7 – 2(x + 6) – (x+4)

10) 3(x – 7) – 5(x + 1)