MATH NEWS

Algebra I, Module 1, Topic B

Algebra I

Module 1: Relationships Between Quantities and Reasoning with Equations and Their Graphs

Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 1 of Eureka Math (Engage New York) focuses on linear, quadratic, and exponential functions. These are the functions students will focus on throughout their Algebra I course. The goal is to introduce students to these functions by having them make graphs of a situation (usually based upon time) in which these functions naturally arise. As they graph, they will reason quantitatively and use units to solve problems related to the graphs they create.

Focus Area Topic B:

The Structure of Expressions

Words to Know

Numerical Symbol: A *numerical symbol* is a symbol that represents a specific number.

Variable Symbol: A variable symbol is a symbol that is a placeholder for a number. It is possible that a question may restrict the type of number that a placeholder might permit, maybe integers only or a positive real number, for instance.

Numerical Expression: A *numerical expression* is an algebraic expression that contains only numerical symbols (no variable symbols) and that evaluates to a single number.

Algebraic Expression: An *algebraic expression* is either (1) a numerical symbol or a variable symbol or (2) the result of placing previously generated algebraic expressions into the two blanks of one of the four operators ((__)+(__), (__)−(__), (__)×(__), (__)÷(__)) or into the base blank of an exponentiation with an exponent that is a rational number.

Equivalent Numerical Expressions: Two numerical expressions are *equivalent* if they evaluate to the same number.

Equivalent Algebraic Expressions: Two algebraic expressions are *equivalent* if we can convert one expression into the other by repeatedly applying the Commutative, Associative, and Distributive Properties and the properties of rational exponents to components of the first expression.

Polynomial Expression: A *polynomial expression* is either (1) a numerical expression or a variable symbol or (2) the result of placing two previously generated polynomial expressions into the blanks of the addition operator (__+__) or the multiplication operator (__×__).

Monomial: A *monomial* is a polynomial expression generated using only the multiplication operator (__×__). Monomials are products whose factors are numerical expressions or variable symbols.

Degree of a Monomial: The *degree* of a non-zero monomial is the sum of the exponents of the variable symbols that appear in the monomial.

Standard Form of a Polynomial Expression in One Variable: A polynomial expression with one variable symbol x is in *standard form* if it is expressed as $anxn + an-1xn-1 + \cdots + a1x + a0$, where n is a non-negative integer, and $a0$, $a1$, $a2$,…, an are constant coefficients with $an \neq 0$. A polynomial expression in x that is in standard form is often called a *polynomial in* x.

Degree of a Polynomial in Standard Form: The *degree of a polynomial in standard form* is the highest degree of the terms in the polynomial, namely n.

Leading Term and Leading Coefficient of a Polynomial in Standard Form: The term $anxn$ is called the *leading term,* and an is called the *leading coefficient.*

Constant Term of a Polynomial in Standard Form: The *constant term* is the value of the numerical expression found by substituting 0 into all the variable symbols of the polynomial, namely $a0$.

The Distributive Property: If a, b, and c are real numbers, then $a(b + c) = ab + ac$.

The Commutative Property of Addition: If a and b are real numbers, then $a + b = b + a$.

The Associative Property of Addition: If a, b, and c are real numbers, then $(a + b) + c = a + (b + c)$

The Commutative Property of Multiplication: If a and b are real numbers, then $a \times b = b \times a$.

The Associative Property of Multiplication: If a, b, and c are real numbers, then $(ab) = (bc)$.

Standard form of the polynomial: A polynomial expression with one variable symbol x is in *standard form* if it is expressed as, $anxn+an-1xn-1+\cdots+a1x+a0$, where n is a non-negative integer, and $a0,a1,a2\ldots,an$ are constant coefficients with $an\neq 0$. A polynomial expression in x that is in standard form is often called a *polynomial in* x.

Focus Area Topic B:

The Structure of Expressions

Lesson 6: Algebraic Expressions—The Distributive Property
http://youtu.be/-eRKropEtNk

Lesson 7: Algebraic Expressions—The Commutative and Associative Properties
http://youtu.be/0mnYedtg-9w

Lesson 8: Adding and Subtracting Polynomials
http://youtu.be/BL04OZs6grM
Additonal Example:
http://youtu.be/b4I5r_mbxIE

Lesson 9: Multiplying Polynomials
http://youtu.be/VGyII-4fbkU