Study Guide for Math Test

*Test Date: Tuesday, October 25*

*Length: 44 multiple choice questions*

Great Mathematicians

* **Fibonacci**: Wrote the *Book of Calculation*, introduced Arabic numbers to the western world, and has a sequence named after him (1, 1, 2, 3, 5, 8, 13, 21, 35…).
* **Diophantus**: Wrote *Arithmetica*, first to solve numerical equations, famous for using a riddle for his epitaph, and the father of algebra.
* **Muhammad Al*-*Khwarizmi**: Studied at the House of Wisdom in Baghdad, used the word algebra in the title of his math book, and the 2nd father of algebra.

Number Sense

* **Integers** are whole numbers and their opposites. *Know how to add, subtract, multiply,* and *divide integers.*
* Absolute value of a number is the distance the number is from zero. For example, |-7| = 7 and |7| = 7
* **Order of Operations**: math operations must follow a certain order, which includes:

(1) Parentheses, (2) Exponents, (3) Multiply & Divide Left to Right, and (4) Add & Subtract Left to Right.

Properties of Mathematics

* **Commutative Property of Addition**: order of terms does not affect addition’s outcome. For example, 6 + 7 = 7 + 6
* **Commutative Property of Multiplication**: order of factors does not affect multiplication’s outcome. For example, 6(7) = 7(6)
* **Associative Property of Addition**: how terms are grouped does not affect addition’s outcome. For example, 6 (7 + 8) = (6 + 7) +8
* **Associative Property of Multiplication**: how factors are grouped does not affect multiplication’s outcome. For example, 6 ∙ (7 ∙ 8) = (6 ∙ 7) ∙ 8
* **Distributive Property**: multiply a single term and two or more terms inside a set of parentheses. For example, 5(x + y) = 5x + 5y
* **Additive Inverse**: a number plus its opposite equals zero. For example, 2 + -2 = 0
* **Multiplicative Inverse**: a number times its reciprocal equals one. For example, 2(½) = 1

Simplifying expressions

* Know the difference between expressions and equations. Equations have an “=” and expressions do not.
* Be able to count how many terms are in an expression. For example, the expression 2x2 – 7x + 2y – 8 has four terms. Terms are quantities being added or subtracted together.
* Only like terms can be combined. Like terms have the same variable and exponent. For example, 4y2 and -9y2 are like terms but 6x, -5y, 2x2, and 5 are not.
* Coefficient is the number in front of the variable. For example, 2 is the coefficient for 2x.
* Know to apply the distributive property. For example, -3(2x – 5) = -6x + 15

Solving Equations

* Solve 1-step equations by using the additive or multiplicative inverse.
* Solve 2-step equations.
* Solve multi-step equations. Use your foldable notes to help remember the procedure.

Unit Rate

* Convert a rate into a unit rate. For example, $170 per 10 hours is a rate but $17 per hour is a unit rate because the money is compared to “1” hour.
* Find the unit rate when reading a graph.
* Find the unit rate when reading a table.