EMBRACING MATH THROUGH "BIG IDEAS"

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As we learn and explore mathematical concepts at AES and IES, we will continue to use Pearson Education's Scott Foresman-Addison Wesley *enVision MATH* series (K-3) and Go Math (4-5), as our main tools for delivering mathematical concepts. These standards-based programs incorporate opportunities for students to learn through guided practice and independent practice on a day to day basis. While the *way* in which students are taught to understand math may be different than most of us adults have learned, the "Big Ideas" that we will touch upon in each grade level will be *similar*. Below, I have listed 16 "Big Ideas" in math, with descriptions of each. These "Big Ideas" assure that we remain focused and coherent in mathematics instruction and learning. A charge for in-depth student understanding will lead to higher student achievement. When students know that mathematics is grounded on "Big Ideas," not just skills, and that those ideas are connected, they better understand mathematics. Both *enVision MATH* and *Go Math!* embrace and enhance the focus and coherence vision of the Pennsylvania Core Standards, leading to higher achievement and understanding for all. As the school year progresses, I urge you to make it a regular practice to look at what your child is bringing home, in regards to math and use those materials to foster discussions about student learning and understanding.

1	**Number Uses, Classification and Representation** Numbers can be used for different Purposes and numbers can be classified and represented in different ways.	**9**	**The Base-Ten Numeration System** The base-ten numeration system is a scheme for recording numbers using digits 0–9, groups of ten, and place value.
2	**Numbers and the Number Line** The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.	**10**	**Solving Equations and Inequalities** Rules of arithmetic and algebra can be used together with notions of equivalence to transform equations and inequalities so solutions can be found.
3	**Basic Facts and Algorithms** There is more than one algorithm for each of the operations with rational numbers.	**11**	**Ratio and Proportionality** When mathematical or real-world quantities have a relationship that can be stated as "for every *x* units of the first quantity there are *y* units of the second quantity," this relationship can be described using a ratio.
4	**Equivalence** Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.	**12**	**Patterns, Relations, and Functions** Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how members of one set are related to members of a second set.
5	**Comparison and Relationships** Numbers, expressions, measures, and objects can be compared and related to other numbers, expressions, measures, and objects in different ways.	**13**	**Geometric Figures** Two- and three-dimensional objects with or without curved surfaces can be described, classified, and analyzed by their attributes. An object's location in space can be described quantitatively.
6	**Operation Meanings and Relationships** There are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations	**14**	**Measurement** Some attributes of objects are measurable and can be quantified using unit amounts.
7	**Estimation** Numbers can be approximated by numbers that are close. Numerical calculations can be approximated by replacing numbers with other numbers that are close and easy to compute with mentally.	**15**	**Data Collection and Representation** Some questions can be answered by collecting and analyzing data, and the question to be answered determines the data that need to be collected and how best to collect the data. Data can be represented visually using tables, charts, and graphs. The type of data determines the best choice of visual representation.
8	**Properties** For a given set of numbers there are relationships that are always true, called properties, and these are the rules that govern arithmetic and algebra.	**16**	**Practices, Processes, and Proficiencies** Mathematics content and practices can be applied to solve problems.