HANDOUT #2

Overview of the 2010 Mathematics Standards (Common Core State Standards)

The 2010 Mathematics Standards provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are focused, coherent, and relevant to the real world, describing the knowledge and skills that students need for success in college and careers.

In K-8 (Kindergarten, Elementary, and Middle School) each *grade* contains work on several *domains*, as described in the table below. For example: In Grade 1, the content includes Operations and Algebraic Thinking, Number and Operations in Base Ten, Measurement and Data, and Geometry.

<table>
<tr><th>Grade</th><th>K</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>HS Conceptual Categories</th></tr>
<tr><td rowspan="6">Domains</td><td colspan="6">Counting & Cardinality</td><td colspan="2">Ratios & Proportional Relationships</td><td>Functions</td><td>Functions</td></tr>
<tr><td colspan="6">Operations and Algebraic Thinking</td><td colspan="3">Expression and Equations</td><td>Algebra</td></tr>
<tr><td colspan="6">Number and Operations in Base Ten</td><td colspan="3" rowspan="2">The Number System</td><td rowspan="2">Number & Quantity</td></tr>
<tr><td></td><td></td><td></td><td colspan="3">Fractions</td></tr>
<tr><td colspan="6">Measurement and Data</td><td colspan="3">Statistics and Probability</td><td>Statistics & Probability</td></tr>
<tr><td colspan="6">Geometry</td><td colspan="3">Geometry</td><td>Geometry</td></tr>
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In High School, the standards are arranged in *conceptual categories*, such as Algebra or Functions. In each conceptual category there are *domains*, such as Creating Equations and Interpreting Functions.

Conceptual Category	Number & Quantity	Algebra	Functions	Geometry	Statistics & Probability
Domains	The Real Number System	Seeing Structure in Expressions	Interpreting Functions	Congruence	Interpreting Categorical & Quantitative Data
	Quantities	Arithmetic with Polynomials & Rational Expressions	Building Functions	Similarity, Right Triangles, & Trigonometry	Making Inferences & Justifying Conclusions
	The Complex Number System	Creating Equations	Linear, Quadratic, & Exponential Models	Expressing Geometric Properties with Equations	Conditional Probability & the Rules of Probability
	Vector & Matrix Quantities	Reasoning with Equations & Inequalitites	Trigonometric Functions	Geometric Measurement & Dimension	Using Probability to Make Decisions

Mathematical Practices

The Standards for Mathematical Practice describe characteristics and traits that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy). These eight practices can be clustered into the following categories as shown in the chart below: *Habits of Mind of a Productive Mathematical Thinker, Reasoning and Explaining, Modeling and Using Tools, and Seeing Structure and Generalizing.*

Habits of Mind of a Productive Mathematical Thinker MP.1 Make sense of problems and persevere in solving them. MP.6 Attend to precision.	***Reasoning and Explaining*** MP. 2 Reason abstractly and quantitatively. MP. 3 Construct viable arguments and critique the reasoning of others.
	Modeling and Using Tools MP. 4 Model with mathematics. MP. 5 Use appropriate tools strategically.
	Seeing Structure and Generalizing MP. 7 Look for and make use of structure. MP. 8 Look for and express regularity in repeated reasoning.