



Note: Levels A-I represent Grade Levels K-8;

**Florida - Grade 7 -Math
/Benchmarks 2005**

Standards

**PLATO Courseware Covering
Florida - Grade 7 - Math**

Number Sense, Concepts, and Operations

Standard 1: The student understands the different ways numbers are represented and used in the real world. (MA.A.1.3)

1. associates verbal names, written word names, and standard numerals with integers, fractions, decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.

(Plato provides online tools for associating written word names with figures;) **Math Expeditions H** - Compare Numbers to Millions; Write Decimals and Fractions as Percents; Write Ratios; **Math Fundamentals** - Ratio Concepts; Proportion Concepts;

2. understands the relative size of integers, fractions, and decimals; numbers expressed as percents; numbers with exponents; numbers in scientific notation; radicals; absolute value; and ratios.

Math Expeditions H - Order Numbers to Millions; Order Numbers and Decimals; Compare and Order Fractions;;

3. understands concrete and symbolic representations of rational numbers and irrational numbers in real-world situations.

Math Expeditions H - Solve Rates and Proportions; Find Percents; Solve Percents; Find Numbers from Percents;

4. understands that numbers can be represented in a variety of equivalent forms, including integers, fractions, decimals, percents, scientific notation, exponents, radicals, and absolute value.

Math Expeditions H - Compare Numbers and Decimals; **Math Fundamentals** - Addition Properties; Multiplication Properties 1; Decimal Fractions 1 & 2; Problem Solving 5;

<p>Standard 2: The student understands number systems. (MA.A.2.3)</p>			
<p>1. understands and uses exponential and scientific notation.</p>			<p><u>Math Expeditions I</u> - Write in Scientific Notation; <u>Algebra 1</u> - Exponents: Exponential Form; Exponents: Expanded Form; Exponents: Product Rule; Exponents: Power Rule;</p>
<p>2. understands the structure of number systems other than the decimal number system.</p>			<p>Plato does not cover this benchmark;</p>
<p>Standard 3: The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving. (MA.A.3.30)</p>			
<p>1. understands and explains the effects of addition, numbers, fractions, including mixed numbers, and decimals, including the inverse relationships of positive and negative numbers.</p>			<p><u>Math Expeditions H</u> - Add Numbers up to 6-digits; Add Decimals; Subtract Numbers up to 6-digits; Subtract Decimals; Multiply 1-digit Numbers; Multiply by 2,3, or 4-digit Numbers; Multiply Decimals; Divide Whole Numbers; Divide a Decimal by a Whole Number; Divide by Decimals; Add and Subtract Different Fractions; Add Mixed Numbers; Subtract Mixed Numbers; Multiply Fractions and Mixed Numbers; Divide Fractions; <u>Math Fundamentals</u> - Addition Skills 1; Adding and Subtracting Fractions 2; Subtracting Mixed Numbers 2; Dividing Fractions 2; Multiplying and Dividing Mixed Numbers 2; Problem Solving 4; <u>Algebra 1</u> - Multiplying Common Fractions; Adding and Subtracting Fractions; Adding and Subtracting Mixed Numbers; Dividing Fractions; Multiplying and Dividing Mixed Numbers; Using Basic Number Ideas;</p>

<p>2. selects the appropriate operation to solve problems involving addition, subtraction, multiplication, and division of rational numbers, ratios, proportions, and percents, including the appropriate application of the algebraic order of operations.</p>			<p><u>Math Fundamentals</u> - Ratio/Proportion/Percent Review; Subtraction Skills 2&3; Problem Solving 1; Multiplication Skills 1,2,3&4; Multiplication Review I; <u>Algebra 1</u> - Adding Monomials; Subtracting Monomials; Multiplying Monomials; Dividing Monomials; Adding Binomials and Monomials; Subtracting Binomials and Monomials; Multiplying Binomials and Monomials; Dividing Binomials and Monomials;</p>
<p>3. adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.</p>			<p><u>Math Fundamentals</u> - Addition Skills 2; Problem Solving 2; Division Skills 3; Division Review I; Division Skills 4&5; <u>Algebra 1</u> - Mental Math with Whole Numbers; Mental Math with Fractions and Percents;</p>
<p>Standard 4: The student uses estimation in problem solving and computation. (MA.A.4.3)</p>			
<p>1. uses estimation strategies to predict results and to check the reasonableness of results.</p>			<p><u>Math Expeditions H</u> - Estimate Sums; Estimate Differences; Estimate Product; Estimate Quotient; <u>Applied Math</u> - Estimating; <u>Algebra 1</u> - Estimation Basics; Estimation by Clustering;</p>
<p>Standard 5: The student understands and applies theories related to numbers. (MA.A.5.3)</p>			
<p>1. uses concepts about numbers, including primes, factors, and multiples, to build number sequences.</p>			<p><u>Algebra 1</u> - Prime and Composite; Greatest Common Factor of Monomials; Monomial Factors of Polynomials; Binomial Factors of Polynomials 1 & 2;</p>
<p>Measurement</p>			
<p>Standard 1: The student measures quantities in the real world and uses the measures to solve problems. (MA.B.1.3)</p>			

<p>1. uses concrete and graphic models to derive formulas for finding perimeter, area, surface area, circumference, and volume of two- and threedimensional shapes, including rectangular solids and cylinders.</p>			<p><u>Math Expeditions H</u> - Find the Perimeter; Find the Area; Find the Surface Area; <u>Math Fundamentals</u> - Area Measurement; Volume and Capacity Measurement; Measurement Review; Problem Solving 7;</p>
<p>2. uses concrete and graphic models to derive formulas for finding rates, distance, time, and angle measures.</p>			<p><u>Math Expeditions H</u> - Measure Angles; <u>Applied Math</u> - Time Applications; Clocks and Time Zones; Using Base, Rate, and Portion;</p>
<p>3. understands and describes how the change of a figure in such dimensions as length, width, height, or radius affects its other measurements such as perimeter, area, surface area, and volume.</p>			<p><u>Geometry and Measurement 2</u> - The Sum of the Angles in a Triangle; The Pythagorean Theorem 2; Solving Right Triangle Problems; 30-60 Degree Right Triangles; Proportionality; A Sense of Proportion; Not Everything is Created Equal;</p>
<p>4. constructs, interprets, and uses scale drawings such as those based on number lines and maps to solve real-world problems.</p>			<p><u>Math Problem Solving</u> - Shelf Space;</p>
<p>Standard 2: The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary). (MA.B.2.3)</p>			
<p>1. uses direct (measured) and indirect (not measured) measures to compare a given characteristic in either metric or customary units.</p>			<p><u>Geometry and Measurement 1</u> - Metric Measurement;</p>
<p>2. solves problems involving units of measure and converts answers to a larger or smaller unit within either the metric or customary system.</p>			<p><u>Applied Math</u> - Converting Linear Measurement; Converting Weight Measurement; Converting Volume Measurement; Using Linear Measurement Tools;</p>
<p>Standard 3: The student estimates measurements in real-world problem situations. (MA.B.3.3)</p>			

<p>1. solves real-world and mathematical problems involving estimates of measurements including length, time, weight/mass, temperature, money, perimeter, area, and volume, in either customary or metric units.</p>			<p><u>Math Expeditions H</u> - Find the Volume; <u>Geometry and Measurement 1</u> - Area, part 2; Volume;</p>
<p>Standard 4: The student selects and uses appropriate units and instruments for measurement to achieve the degree of precision and accuracy required in real-world situations. (MA.B.4.3)</p>			
<p>1. selects appropriate units of measurement and determines and applies significant digits in a realworld context. (Significant digits should relate to both instrument precision and to the least precise unit of measurement.); 2. selects and uses appropriate instruments, technology, and techniques to measure quantities in order to achieve specified degrees of accuracy in a problem situation.</p>			<p><u>Math Expeditions H</u> - Find the Circumference; <u>Geometry and Measurement 2</u> - Area and Volume of Cylinders; Area and Volume of Cones;</p>
<p>Geometry and Spatial Sense</p>			
<p>Standard 1: The student describes, draws, identifies, and analyzes two- and three-dimensional shapes. (MA.C.1.3)</p>			
<p>1. understands the basic properties of, and relationships pertaining to, regular and irregular geometric shapes in two and three dimensions.</p>			<p><u>Math Expeditions H</u> - Classify Points, Lines, and Angles; Identify Geometric Shapes; <u>Geometry and Measurement 2</u> - Introduction to Polygons; Summing up Angles; Angles in Regular Polygons; Parallelograms:part 1; Introduction to Circles; Tangents; Arcs and Chords; Inscribed Angles; Circles and Angles; Circles and Segments;</p>
<p>Standard 2: The student visualizes and illustrates ways in which shapes can be combined, subdivided, and changed. (MA.C.2.3)</p>			

1. understands the geometric concepts of symmetry, reflections, congruency, similarity, perpendicularity, parallelism, and transformations, including flips, slides, turns, and enlargements.			<u>Math Expeditions H</u> - Identify Congruent and Similar; <u>Geometry and Measurement 2</u> - Congruent Triangles 1; Symmetry; Translations; Rotations;
2. predicts and verifies patterns involving tessellations (a covering of a plane with congruent copies of the same pattern with no holes and no overlaps, like floor tiles).			This is covered in the benchmark above.
Standard 3: The student uses coordinate geometry to locate objects in both two and three dimensions and to describe objects algebraically. (MA.C.3.3)			
1. represents and applies geometric properties and relationships to solve real-world and mathematical problems.			<u>Math Expeditions H</u> - Find the Circumference; <u>Geometry and Measurement 2</u> - Area of Right Triangles and Parallelograms; Area of Any Triangle;
2. identifies and plots ordered pairs in all four quadrants of a rectangular coordinate system (graph) and applies simple properties of lines.			<u>Math Expeditions H</u> - Locate Coordinate Points; <u>Algebra 1</u> - Coordinate Plane; Identifying Points on a Coordinate Plane; Ordered Pairs as Solutions to a Linear Equation;
Algebraic Thinking			
Standard 1: The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions. (MA.D.1.3)			
1. describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.			<u>Algebra 1</u> - Patterns and Sequences; Functions; Describing Functions with Equations, Tables, and Graphs; Linear Patterns;
2. creates and interprets tables, graphs, equations, and verbal descriptions to explain cause-and-effect relationships.			<u>Algebra 1</u> - Graphs, Slopes, and y-Intercepts; Equations, Graphs, Slopes, and y-Intercepts; Interpreting Graphs to Solve Problems;

<p>Standard 2: The student uses expressions, equations, inequalities, graphs, and formulas to represent and interpret situations. (MA.D.2.3)</p>			
<p>1. represents and solves real-world problems graphically, with algebraic expressions, equations, and inequalities.</p>			<p><u>Algebra 1</u> - Expressions in 1 Variable; Expressions in 2 or More Variables; Determining the True Value of a Statement;</p>
<p>2. uses algebraic problem-solving strategies to solve real-world problems involving linear equations and inequalities.</p>			<p><u>Algebra 1</u> - Linear Equations in 1 Variable: Solving by Inspection; Linear Equations in 1 Variable: Isolating the Variable; Linear Inequalities in 1 Variable, Parts 1 & 2; More Difficult Linear Inequalities in 1 Variable; Using Linear Equations to Solve Problems;</p>
<p>Data Analysis and Probability</p>			
<p>Standard 1: The student understands and uses the tools of data analysis for managing information. (MA.E.1.3)</p>			
<p>1. collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations.</p>			<p><u>Math Expeditions H</u> - Data from Graphs; <u>Data Skills</u> - Reading Complex Charts; Constructing Graphs and Charts;</p>
<p>2. understands and applies the concepts of range and central tendency (mean, median, and mode).</p>			<p><u>Math Expeditions H</u> - Find Range, Median, Mode, and Mean; <u>Algebra 1</u> - Mean, Median, and Mode;</p>
<p>3. analyzes real-world data by applying appropriate formulas for measures of central tendency and organizing data in a quality display, using appropriate technology, including calculators and computers.</p>			<p><u>Algebra 1</u> - Solving Problems with Percents; Solving Problems with Mean, Median, and Mode;</p>

<p>Standard 2: The student identifies patterns and makes predictions from an orderly display of data using concepts of probability and statistics. (MA.E.2.3)</p>			
<p>1. compares experimental results with mathematical expectations of probabilities.</p>			<p><u>Math Expeditions H</u> - Find Probabilities and Outcomes; <u>Algebra 1</u> - Probability and Possible Outcomes;</p>
<p>2. determines odds for and odds against a given situation.</p>			<p><u>Algebra 1</u>- Probability of an Event;</p>
<p>Standard 3: The student uses statistical methods to make inferences and valid arguments about real-world situations. (MA.E.3.3)</p>			
<p>1. formulates hypotheses, designs experiments, collects and interprets data, and evaluates hypotheses by making inferences and drawing conclusions based on statistics (range, mean, median, and mode) and tables, graphs, and charts.</p>			<p><u>Algebra 1</u> - Solving Problems with Mean, Median, and Mode;</p>
<p>2. identifies the common uses and misuses of probability and statistical analysis in the everyday world.</p>			<p><u>Algebra 1</u> - Solving Problems with Probability;</p>
<p><u>Courses Used:</u> Math Expeditions; Math Fundamentals; Algebra 1; Applied Math; Geometry and Measurement 1&2; Math Problem Solving; Data Skills;</p>			