

CURRICULUM MAP MATH GRADE 6

August/September	October	November	December
<p>Patterns, Functions, and Algebra</p> <p><i>1. Represent and analyze patterns, rules and functions, using physical materials, tables and graphs.</i></p> <p>2. Use words and symbols to describe numerical and geometric patterns, rules and functions.</p> <p>3. Recognize and generate equivalent forms of algebraic expressions, and explain how the commutative, associative and distributive properties can be used to generate equivalent forms; e.g., perimeter as $2(l + w)$ or $2l + 2w$.</p> <p><i>6. Evaluate simple expressions by replacing variables with given values, and use formulas in problem-solving situations.</i></p> <p>Number, Number Sense and Operations</p> <p>1. Decompose and recompose whole numbers using factors and exponents (e.g., $32=2 \times 2 \times 2 \times 2 \times 2=2^5$), and explain why “squared” means “second power” and “cubed” means “third power.”</p> <p><i>6. Use the order of operations, including the use of exponents, decimals and rational numbers, to simplify numerical expressions.</i></p> <p><i>11. Perform fraction and decimal computations and justify their solutions; e.g. using manipulatives, diagrams, mathematical reasoning.</i></p> <p>12. Develop and analyze algorithms for computing with fractions and decimals, and demonstrate fluency in their use.</p>	<p>Number, Number Sense and Operations</p> <p>10. Recognize that a quotient may be larger than the dividend when the divisor is a fraction; e.g., $6 \div \frac{1}{2} = 12$</p> <p>13. Estimate reasonable solutions to problem situations involving fractions and decimals; e.g., $\frac{7+12}{8} = 2$ and $4.23 \times 5.8 = 25$</p> <p>Data Analysis and Probability</p> <p><i>4. Understand the different information provided by measures of center (mean, mode and median) and measures of spread (range).</i></p> <p>Number, Number Sense and Operations</p> <p>5. Use models and pictures to relate concepts of ratio, proportion and percent, including percents less than 1 and greater than 100.</p> <p>9. Give examples of how ratios are used to represent comparisons; e.g., part-to-part, part-to-whole, whole-to-part.</p> <p><i>14. Use proportional reasoning, ratios and percents to represent problem situations and determine the reasonableness of solutions.</i></p>	<p>Number, Number Sense and Operations</p> <p>2. Find and use the prime factorization of composite numbers. For example:</p> <p>a. Use the prime factorization to recognize the greatest common factor (GCF).</p> <p>*b. Use the prime factorization to recognize the least common multiple (LCM).</p> <p>c. Apply the prime factorization to solve problems and explain solutions.</p> <p>Data Analysis and Probability</p> <p><i>1. Read, construct and interpret line graphs, circle graph and histograms.</i></p> <p>2. Select, create and use graphical representations that are appropriate for the type of data collected.</p> <p>3. Compare representations of the same data in different types of graphs, such as a bar graph and circle graph.</p> <p>5. Describe the frequency distribution of a set of data, as shown in a histogram or frequency table, by general appearance or shape, e.g., number of modes, middle of data, level of symmetry, outliers.</p> <p>6. Make logical inference from statistical data.</p>	<p>Number, Number Sense and Operations</p> <p>*4. Describe what it means to find a specific percent of a number, using real-life examples.</p> <p>*15. Determine the percent of a number and solve related problems; e.g., find the percent markdown if the original price was \$140, and the sale price is \$100.</p>

9/23/09

**Indicator not covered in textbook
Power Indicators are in italics.*

CURRICULUM MAP MATH GRADE 6

January	February	March	April	May
<p>Geometry and Spatial Sense</p> <p>1. Classify and describe two-dimensional and three-dimensional geometric figures and objects by using their properties; e.g., interior angle measures, perpendicular/parallel sides, congruent angles/sides.</p> <p>2. <i>Use standard language to define geometric vocabulary: vertex, face, altitude, diagonal, isosceles, equilateral, acute, obtuse and other vocabulary as appropriate.</i></p> <p>3. Use multiple classification criteria to classify triangles; e.g., right scalene triangle.</p> <p>4. Identify and define relationships between planes; i.e., parallel, perpendicular and intersecting.</p>	<p>Geometry and Spatial Sense</p> <p>6. Draw similar figures that model proportional relationships; e.g., model similar figures with a 1 to 2 relationship by sketching two of the same figure, one with corresponding sides twice the length of the other.</p> <p>*7. Build three-dimensional objects with cubes, and sketch the two-dimensional representations of each side; i.e., projection sets.</p> <p>Measurement</p> <p>1. Understand and describe the difference between surface area and volume.</p> <p>4. <i>Determine which measure (perimeter, area, surface areas, volume) matches the context for a problem situation; e.g., perimeter is the context for fencing a garden, surface area is the context for painting a room.</i></p> <p>5. Understand the difference between perimeter and area, and demonstrate that two shapes may have the same perimeter, but different areas or they may have the same area, but different perimeters.</p>	<p>Measurement</p> <p>6. Describe what happens to the perimeter and area of a two-dimensional shape when the measurements of the shape are changed; e.g., length of sides are doubled</p> <p>2. Use strategies to develop formulas for finding circumference and area of circles and to determine the area of sectors; e.g., $\frac{1}{2}$ circle, $\frac{2}{3}$ circle, $\frac{1}{3}$ circle, and $\frac{1}{4}$ circle.</p> <p>3. Estimate perimeter or circumference and area for circles, triangles, and quadrilaterals, and surface area and volume for prisms and cylinders by:</p> <p>a. estimating lengths using string or links, areas using tiles or grid, and volumes using cubes;</p> <p>b. measuring attributes (diameter, side lengths, or heights) and using established formulas for circles, triangles, rectangles, parallelograms and rectangular prisms.</p>	<p>Number, Number Sense and Operations</p> <p>7. Use simple expressions involving integers to represent and solve problems; e.g., if a running back loses 15 yards on the first carry but gains 8 yards on the second carry, what is the net gain/loss?</p> <p>Patterns, Functions, and Algebra</p> <p>*4. Solve simple linear equations and inequalities using physical models, paper and pencil, tables and graphs.</p> <p>*5. Produce and interpret graphs that represent the relationship between two variables.</p> <p>Data Analysis and Probability</p> <p>7. <i>Design an experiment to test a theoretical probability and explain how the results may vary.</i></p> <p>Geometry and Spatial Sense</p> <p>5. <i>Predict and describe sizes, positions and orientations of two-dimensional shapes after transformations such as reflections, rotations, translations and dilations.</i></p>	<p>Number, Number Sense and Operations</p> <p>3. Explain why a number is referred to as being “rational,” and recognize that the expression $\frac{a}{b}$ can mean a parts of size $\frac{1}{b}$ each, a divided by b, or the ratio of a to b.</p> <p>Patterns, Functions, and Algebra</p> <p>*7. Identify and describe situations with constant or varying rates of change, and compare them.</p> <p>8. Use technology to analyze change; e.g., use computer applications or graphing calculators to display and interpret rate of change.</p>

9/23/09

**Indicator not covered in textbook
Power Indicators are in italics.*

Benchmarks

Mathematical Processes Standard

Students use mathematical processes and knowledge to solve problems. Students apply problem-solving and decision-making techniques, and communicate mathematical ideas. The benchmarks for mathematical processes articulate what students should demonstrate in problem solving, representation, communication, reasoning and connections at key points in their mathematics program. Specific grade-level indicators have not been included for the mathematical processes standard because content and processes should be interconnected at the indicator level. Therefore, mathematical processes have been embedded within the grade-level indicators for the five content standards.

By the end of the 5-7 program:

- A. Clarify problem-solving situation and identify potential solution processes; e.g., consider different strategies and approaches to a problem, restate problem from various perspectives.
- B. Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine problem situations.
- C. Use more than one strategy to solve a problem, and recognize there are advantages associated with various methods.
- D. Recognize whether an estimate or an exact solution is appropriate for a given problem situation.
- F. Use deductive thinking to construct informal arguments to support reasoning and to justify solutions to problems.
- G. Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures.
- G. Relate mathematical ideas to one another and to other content areas; e.g., use area models for adding fractions, interpret graphs in reading, science and social studies.
- H. Use representations to organize and communicate mathematical thinking and problem solutions.
- I. Select, apply, and translate among mathematical representations to solve problems; e.g., representing a number as a fraction, decimal or percent as appropriate for a problem.
- J. Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
- K. Recognize and use mathematical language and symbols when reading, writing and conversing with others.

**Indicator not covered in textbook
Power Indicators are in italics.*