

CURRICULUM MAP

MATH

Grade 8

August/September	October	November	December
<p>Patterns, Function, & Algebra (Chapter 1)</p> <p>1. Relate the various representations of a relationship; i.e., relate a table to graph, description and symbolic form. (8-A-2)</p> <p>7. Use symbolic algebra (equations and inequalities), graphs and tables to represent situations and solve problems. (8-A-1)</p> <p>Number, Number Sense & Operations (Chapter 2)</p> <p>1. Use scientific notation to express large numbers and small numbers between 0 and 1. (8-NS-1)</p> <p>3. Apply order of operations to simplify expressions and perform computations involving integer exponents and radicals. (8-NS-1)</p> <p>4. Explain and use the inverse and identity properties and use inverse relationships (addition/subtraction, multiplication/division, squaring/square roots) in problem solving situations. (8-A-1)</p> <p>8. Add, subtract, multiply, divide and compare numbers written in scientific notation. (8-NS-1)</p>	<p>Number, Number Sense & Operations (Chapter 3)</p> <p>2. Recognize that natural numbers, whole numbers, integers, rational numbers and irrational numbers are subsets of the real number system. (8-NS-1)</p> <p>7. Find the square root of perfect squares, and approximate the square root of non-perfect squares as consecutive integers between which the root lies; e.g., $\sqrt{130}$ is between 11 and 12. (8-NS-1)</p> <p>Patterns, Function, & Algebra (Chapter 10 and Chapter 12, Sections 4 – 8)</p> <p>3. Identify functions as linear or nonlinear based on information given in a table, graph or equation. (8-A-2)</p> <p>4. Extend the uses of variables to include covariants where y depends on x. (8-A-1)</p> <p>8. Write, simplify and evaluate algebraic expressions (including formulas) to generalize situations and solve problems. (8-A-2)</p> <p>9. Solve linear equations and inequalities graphically, symbolically and using technology. (8-A-2)</p>	<p>Patterns, Function, & Algebra (Chapter 11)</p> <p>6. Describe the relationship between the graph of a line and its equation, including being able to explain the meaning of slope as a constant rate of change and y-intercept in real-world problems. (8-A-1)</p> <p>10. Solve 2 by 2 systems of linear equations graphically and by simple substitution. (8-A-2)</p> <p>11. Interpret the meaning of the solution of a 2 by 2 system of equations; i.e., point, line, no solution. (8-A-1)</p> <p>12. Solve simple quadratic equations graphically; e.g., $y = x^2 - 16$. (8-A-2)</p> <p>13. Compute and interpret slope, midpoint and distance given a set of ordered pairs. (8-A-1)</p> <p>14. Differentiate and explain types of changes in mathematical relationships, such as linear vs. nonlinear, continuous vs. non-continuous, direct variation vs. inverse variation. (8-A-1)</p> <p>15. Describe and compare how changes in an equation affects the related graphs; e.g., for a linear equation changing the coefficient of x affects the slope and changing the constant affects the intercepts. (8-A-1)</p>	<p>Data Analysis & Probability (Chapter 9)</p> <p>10. Calculate the number of possible outcomes for a situation, recognizing and accounting for when items may occur more than once or when order is important. (8-DAP-1)</p> <p>11. Demonstrate an understanding that the probability of either of two disjoint events occurring can be found by adding the probabilities for each and that the probability of one independent event following another can be found by multiplying the probabilities. (8-DAP-1)</p>

1st 9-Weeks SCA Ch. 1, 2, 3, 10, 11, 12-4 thru 12-8 (End of November)

2nd 9-Weeks SCA Ch. 4, 9, 11 (Mid January)

3rd 9-Weeks SCA Ch. 5-6 (End of March)

4th 9-Weeks SCA Ch. 7, 8, 12 (End of May)

(5/14/08)

CURRICULUM MAP

MATH

Grade 8

January	February	March	April	May
<p>Data Analysis & Probability (Chapter 4)</p> <p>7. Identify different ways of selecting samples, such as survey response, random sample, representative sample and convenience sample. (8-DAP-2)</p> <p>8. Describe how the relative size of a sample compared to the target population affects the validity of predictions. (8-DAP-2)</p> <p>2. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose; e.g., line graph for change over time, circle graph for part-to-whole comparison, scatterplot for relationship between two variants. (8-DAP-2)</p> <p>5. Explain the mean's sensitivity to extremes and its use in comparison with the median and mode. (8-DAP-2)</p> <p>4. Compare two sets of data using measures of center (mean, mode, median) and measures of spread (range, quartiles, interquartile range, percentiles). (8-DAP-2)</p> <p>6. Make conjectures about possible relationship in a scatterplot and approximate line of best fit. (8-DAP-2)</p> <p>1. Use, create and interpret scatterplots and other types of graphs as appropriate. (8-DAP-2)</p> <p>9. Construct convincing arguments based on analysis of data and interpretation of graphs. (8-DAP-2)</p>	<p>Geometry & Spatial Sense (Chapter 5)</p> <p>2. Recognize the angles formed and the relationship between the angles when two lines intersect and when parallel lines are cut by a transversal. (8-GS-1)</p> <p>1. Make and test conjectures about characteristics and properties (e.g., sides, angles, symmetry) of two-dimensional figures and three-dimensional objects. (8-GS-2)</p> <p>4. Represent and analyze shapes using coordinate geometry; e.g., given three vertices and the type of quadrilateral, find the coordinates of the fourth vertex. (8-GS-2)</p> <p>5. Draw the results of translations, reflections, rotations and dilations of objects in the coordinate plane, and determine properties that remain fixed; e.g., lengths of sides remain the same under translations. (8-GS-1)</p> <p>6. Draw nets for a variety of prisms, pyramids, cylinders and cones. (8-GS-1)</p> <p>Measurement (Chapter 6)</p> <p>8. Find the sum of the interior and exterior angles of regular convex polygons with and without measuring the angles with a protractor. (8-GS-2)</p> <p>9. Demonstrate understanding of the concepts of perimeter, circumference and area by using established formulas for triangles, quadrilaterals, and circles to determine the surface area and volume of prisms, pyramids, cylinders, spheres and cones. (Note: Only volume should be calculated for spheres and cones.) (8-M-2)</p>	<p>Measurement (Chapter 6 cont.)</p> <p>5. Determine surface area for pyramids by analyzing their parts. (8-M-2)</p> <p>10. Use conventional formulas to find the surface area and volume of prisms, pyramids and cylinders and the volume of spheres and cones to a specified level of precision. (8-M-2)</p> <p>4. Derive formulas for surface area and volume and justify them using geometric models and common materials. For example, find:</p> <p>a. the surface area of a cylinder as a function of its height and radius;</p> <p>b. that the volume of a pyramid (or cone) is one-third of the volume of a prism (or cylinder) with the same base area and height. (8-M-2)</p> <p>3. Use appropriate levels of precision when calculating with measurements. (8-M-1)</p> <p>Geometry & Spatial Sense (Chapter 6)</p> <p>3. Use proportions in several forms to solve problems involving similar figures (part-to-part, part-to-whole, corresponding sides between figures). (8-M-2)</p>	<p>Patterns, Function, & Algebra (Chapter 11)</p> <p>5. Use physical models to add and subtract monomials and polynomials, and to multiply a polynomial by a monomial. i.e. foil (8-A-2)</p> <p>Number, Number Sense & Operations (Chapter 7)</p> <p>6. Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions. (8-NS-1)</p> <p>Measurement (Chapter 7)</p> <p>2. Use proportional relationships and formulas to convert units from one measurement system to another; e.g., degrees Fahrenheit to degrees Celsius. (8-NS-1)</p> <p>6. Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs. (8-A-1)</p> <p>7. Apply proportional reasoning to solve problems involving indirect measurements or rates. (8-NS-1)</p>	<p>Patterns, Function, & Algebra (Chapter 8)</p> <p>16. Use graphing calculators or computers to analyze change; e.g., interest compounded over time as a nonlinear growth pattern. (8-A-1)</p> <p>Number, Number Sense & Operations (Chapter 8)</p> <p>5. Determine when an estimate is sufficient and when an exact answer is needed in problem situations, and evaluate estimates in relation to actual answers; e.g., very close, less than, greater than. (8-NS-1)</p> <p>Measurement (Chapter 7)</p> <p>1. Compare and order the relative size of common U.S. customary units and metric units; e.g., mile and kilometer, gallon and liter, pound and kilogram. (8-M-1)</p> <p>Patterns, Function, & Algebra (Chapter 12 , Sections 1-3)</p> <p>2. Generalize patterns and sequences by describing how to find the nth term. (8-A-1)</p>

**Holt Middle School Math
Course 3
Book Overview**

Chapter 1 – Solving Equations, Inequalities, and Graphing (x,y)

Chapter 2 – Integers, Exponents, Scientific Notation, One-Step Equations

Chapter 3 – Number System, Square Roots, Cubed Roots

Chapter 4 – Samples, Data, Graphing

Chapter 5 – Basic Polygons, Transformations

Chapter 6 – Perimeter, Area, Volume, Surface Area

Chapter 7 – Proportions, Similar Figures, Scale Drawings

Chapter 8 – Percents

Chapter 9 – Probability

Chapter 10 – Linear Equations, Multi-Step Equations

Chapter 11 – Graphing Linear Equations, $y = mx + b$

Chapter 12 – Sequences (Sections 1-3)

Chapter 12 – Linear, Exponential, and Quadratic Functions (Sections 4-8)

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 8-10 program:

- A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem, choose method for obtaining this information, and set limits for acceptable solution.
- B. Apply mathematical knowledge and skills routinely in other content areas and practical situations.
- C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the x -intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.
- D. Apply reasoning processes and skills to construct logical verifications or counter-examples to test conjectures and to justify and defend algorithms and solutions.
- E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.
- F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.
- G. Write clearly and coherently about mathematical thinking and ideas.
- H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.