Introduction

This alignment summarizes the relationship between the 2001 Ohio Academic Content Standards (Ohio ACS) for Mathematics and the 2010 Common Core State Standards (CCSS) adopted by Ohio on June 7, 2010. The Crosswalk lists all of the kindergarten through high school domains and clusters and their corresponding benchmarks from the 2001 standards. This document is provided to assist curriculum specialists and teachers in reviewing their current curriculum and instruction in preparation for the transition to the CCSS. The CCSS can be found at www.corestandards.org.

The structure and organization of the standards has changed. The frameworks for the 2001 and 2010 sets of standards are not parallel. While there are clear connections between both sets of standards, there also are significant differences.

2001 Academic Content Standards for Mathematics
Standards
Benchmarks (by grade band)
Indicators (by grade)

2010 Common Core State Standards for Mathematics

Grades K -8	High School
Grade	Conceptual Category
Domain	Domain
Cluster	Cluster
Standard (Statements)	Standard (Statements)

Each grade also identifies "critical areas" of focus

This document connects the CCSS clusters and standard statements (2010) with the Ohio benchmarks (2001). **Alignments are not exact.** The intent and level of expectation for each of these sets of standards varies, making it difficult to say that the connections made show full alignment. Additional resources and tools such as the Alignment Toolkit: Phase 1 Gap Analysis located on Mathematics Common Core State Standards and Model Curriculum page will provide additional support for curriculum review and alignment.

Process

A committee of teachers, teacher educators, ESC consultants, and other mathematics professionals were brought together to assist the Ohio Department of Education in the process of identifying the connections between the 2010 CCSS and the 2001 Ohio ACS for Mathematics. This task included aligning the 2001 benchmarks to the 2010 CCSS standard statements, which are grouped by clusters.

Benchmarks may be aligned to one or several of the standard statements within a cluster. Benchmarks identified as prerequisite skills or concepts are not included as connections. Additionally, the number of benchmarks connected to a cluster does not imply any level of alignment or coverage. Finally, we caution users of this crosswalk that alignment of a benchmark to a 2010 cluster does not necessarily imply that 2001 indicators associated with the benchmark align to the same cluster.

How to Use This Document

The first three columns identify the Conceptual Category, Domain and Cluster from the 2010 Common Core State Standards for Mathematics. The fourth column identifies a corresponding benchmark(s) from 2001 Ohio Academic Content Standards for Mathematics that are aligned to the 2010 CCSS.

Common Core State Standards K – 8			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Number and Quantity	Real Number System	Extend the properties of exponents to rational exponents.	**OH.11-12.N.C** Apply factorials and exponents, including fractional exponents, to solve practical problems.
		Use properties of rational and irrational numbers.	**OH.11-12.P.E** Evaluate a mathematical argument and use reasoning and logic to judge its validity.

Reading the Ohio Code used for the benchmarks.

Ohio. Grade Band. Standard. Benchmark

The standards in the benchmark code are identified by the following notation.

- **N. – Number, Number Sense and Operations**
- **M. – Measurement**
- **G. – Geometry and Spatial Sense**
- **A. – Patterns, Functions and Algebra**
- **D. – Data Analysis and Probability**
- **P. – Mathematical Processes**

As mentioned above, the alignment between the two sets of standards is not perfect and should not be used to re-purpose curriculum and instructional materials for teaching the 2010 CCSS. This document should be used to begin the conversation and the analyses of these two sets of standards.

The transition from the current Ohio ACS to the newly adopted CCSS needs to be a thoughtful process involving professional development about the CCSS, local district analysis of what needs to be changed accompanied by the creation and implementation of a sensible plan that gradually moves toward the CCSS by 2014.

Common Core State Standards High School			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Number and Quantity	Real Number System	Extend the properties of exponents to rational exponents.	**OH.11-12.N.C** Apply factorials and exponents, including fractional exponents, to solve practical problems.
		Use properties of rational and irrational numbers.	**OH.11-12.P.E** Evaluate a mathematical argument and use reasoning and logic to judge its validity.
	Quantities	Reason quantitatively and use units to solve problems.	**OH.8-10.M.A** Solve increasingly complex non-routine measurement problems and check for reasonableness of results. **OH.11-12.M.A** Explain differences among accuracy, precision and error, and describe how each of those can affect solutions in measurement situations. **OH.11-12.M.B** Apply various measurement scales to describe phenomena and solve problems. **OH.11-12.M.D** Solve problem situations involving derived measurements; e.g., density, acceleration.
	Complex Number System	Perform arithmetic operations with complex numbers.	**OH.11-12.A.B** Use the quadratic formula to solve quadratic equations that have complex roots. **OH.11-12.N.E** Represent and compute with complex numbers.
		(+) Perform arithmetic operations with complex numbers.	**OH.11-12.N.E** Represent and compute with complex numbers.
		(+) Represent complex numbers and their operations on the complex plane.	**OH.11-12.N.E** Represent and compute with complex numbers.
		Use complex numbers in polynomial identities and equations.	**OH.11-12.A.B** Use the quadratic formula to solve quadratic equations that have complex roots.
	Vector and Matrix Quantities	(+) Represent and model with vector quantities.	**OH.11-12.A.D** Apply algebraic methods to represent and generalize problem situations involving vectors and matrices.
		(+) Perform operations on vectors.	**OH.11-12.N.D** Demonstrate fluency in operations with real numbers, vectors and matrices, using mental computation or paper and pencil calculations for simple cases and technology for more complicated cases.
		(+) Perform operations on matrices and use matrices in applications.	**OH.11-12.A.D** Apply algebraic methods to represent and generalize problem situations involving vectors and matrices. **OH.11-12.G.B** Represent transformations within a coordinate system using vectors and matrices. **OH.11-12.N.A** Demonstrate that vectors and matrices are systems having some of the same properties of the real number system. **OH.11-12.N.B** Develop an understanding of properties of and representations for addition and multiplication of vectors and matrices. **OH.11-12.N.D** Demonstrate fluency in operations with real numbers, vectors and matrices, using mental computation or paper and pencil calculations for simple cases and technology for more complicated cases.

Common Core State Standards High School			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Algebra	Seeing Structure in Expressions	Interpret the structure of expressions	**OH.11-12.A.C** Use recursive functions to model and solve problems; e.g., home mortgages, annuities.
		Write expressions in equivalent forms to solve problems.	**OH.8-10.A.G** Solve quadratic equations with real roots by graphing, formula and factoring. **OH.11-12.A.C** Use recursive functions to model and solve problems; e.g., home mortgages, annuities.
	Arithmetic with Polynomials and Rational Expressions	Perform arithmetic operations on polynomials.	**OH.8-10.N.C** Apply properties of operations and the real number system, and justify when they hold for a set of numbers.
		Understand the relationship between zeros and factors of polynomials.	**OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.
		(+) Use polynomial identities to solve problems.	**OH.11-12.N.C** Apply factorials and exponents, including fractional exponents, to solve practical problems. **OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.
		Rewrite rational expressions	**No Aligned Benchmarks**
	Creating Equations	Create equations that describe numbers or relationship.	**OH.8-10.A.D** Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.
	Reasoning with Equations and Inequalities	Understand solving equations as a process of reasoning and explain the reasoning.	**OH.5-7.A.I** Explain how inverse operations are used to solve linear equations. **OH.8-10.A.F** Solve and graph linear equations and inequalities.
		Solve equations and inequalities in one variable.	**OH.5-7.A.H** Solve linear equations and inequalities symbolically, graphically and numerically. **OH.8-10.A.F** Solve and graph linear equations and inequalities. **OH.8-10.A.G** Solve quadratic equations with real roots by graphing, formula and factoring. **OH.11-12.A.B** Use the quadratic formula to solve quadratic equations that have complex roots.
		Solve systems of equations.	**OH.8-10.A.H** Solve systems of linear equations involving two variables graphically and symbolically.
		(+) Solve systems of equations.	**OH.11-12.A.D** Apply algebraic methods to represent and generalize problem situations involving vectors and matrices.
		Represent and solve equations and inequalities graphically.	**OH.5-7.A.F** Use representations, such as tables, graphs and equations, to model situations and to solve problems, especially those that involve linear relationships. **OH.8-10.A.C** Translate information from one representation (words, table, graph or equation) to another representation of a relation or function. **OH.8-10.A.F** Solve and graph linear equations and inequalities. **OH.8-10.A.H** Solve systems of linear equations involving two variables graphically and symbolically.

Common Core State Standards High School			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Functions	Interpreting Functions	Understand the concept of a function and use function notation.	**OH.8-10.A.A** Generalize and explain patterns and sequences in order to find the next term and the nth term. **OH.11-12.A.C** Use recursive functions to model and solve problems; e.g., home mortgages, annuities.
		Interpret functions that arise in applications in terms of the context.	**OH.8-10.A.C** Translate information from one representation (words, table, graph or equation) to another representation of a relation or function. **OH.8-10.A.E** Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros. **OH.8-10.A.J** Describe and interpret rates of change from graphical and numerical data. **OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.
		Analyze functions using different representations.	**OH.5-7.A.K** Graph linear equations and inequalities. **OH.8-10.A.B** Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations. **OH.8-10.A.C** Translate information from one representation (words, table, graph or equation) to another representation of a relation or function. **OH.8-10.A.E** Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros. **OH.8-10.A.F** Solve and graph linear equations and inequalities. **OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.
	Building Functions	Build a function that models a relationship between two quantities.	**OH.8-10.A.A** Generalize and explain patterns and sequences in order to find the next term and the nth term. **OH.11-12.A.C** Use recursive functions to model and solve problems; e.g., home mortgages, annuities.
		Build new functions from existing functions.	**OH.8-10.A.E** Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.
	Linear, Quadratic, and Exponential Models	Construct and compare linear, quadratic, and exponential models and solve problems.	**OH.8-10.A.D** Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.
		Interpret expressions for functions in terms of the situation they model	**No Aligned Benchmarks**
	Trigonometric Functions	(+) Extend the domain of trigonometric functions using the unit circle.	**OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.
		Model periodic phenomena with trigonometric functions.	**OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.
		(+) Prove and apply trigonometric identities.	**OH.11-12.G.A** Use trigonometric relationships to verify and determine solutions in problem situations.

Common Core State Standards High School			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Geometry	Congruence	Experiment with transformations in the plane	**OH.5-7.G.H** Predict and describe results (size, position, orientation) of transformations of two-dimensional figures. **OH.8-10.G.A** Formally define geometric figures. **OH.8-10.G.F** Represent and model transformations in a coordinate plane and describe the results.
		Understand congruence in terms of rigid motions	**OH.8-10.G.H** Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.
		Prove geometric theorems	**OH.8-10.G.C** Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines. **OH.8-10.G.G** Prove or disprove conjectures and solve problems involving two- and three-dimensional objects represented within a coordinate system. **OH.8-10.G.H** Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.
		Make geometric constructions.	**OH.8-10.G.E** Draw and construct representations of two- and three-dimensional geometric objects using a variety of tools, such as straightedge, compass and technology.
	Similarity, Right Triangles, and Trigonometry	Understand similarity in terms of similarity transformations	**OH.5-7.G.H** Predict and describe results (size, position, orientation) of transformations of two-dimensional figures. **OH.8-10.G.B** Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence.
		Prove theorems involving similarity	**OH.5-7.G.F** Describe and use the concepts of congruence, similarity and symmetry to solve problems. **OH.5-7.G.J** Apply properties of equality and proportionality to solve problems involving congruent or similar figures; e.g., create a scale drawing. **OH.8-10.G.B** Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence. **OH.8-10.G.H** Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.
		Define trigonometric ratios and solve problems involving right triangles	**OH.8-10.G.I** Use right triangle trigonometric relationships to determine lengths and angle measures. **OH.8-10.M.D** Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates. **OH.11-12.G.A** Use trigonometric relationships to verify and determine solutions in problem situations.
		(+) Apply trigonometry to general triangles	**OH.11-12.G.A** Use trigonometric relationships to verify and determine solutions in problem situations.

Common Core State Standards High School			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Geometry	Circles	Understand and apply theorems about circles.	**OH.8-10.G.A** Formally define geometric figures. **OH.8-10.M.A** Solve increasingly complex non-routine measurement problems and check for reasonableness of results. **OH.8-10.M.D** Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.
		Find arc lengths and areas of sectors of circles.	**OH.8-10.G.A** Formally define geometric figures. **OH.8-10.M.D** Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates. **OH.8-10.N.G** Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.
	Expressing Geometric Properties with Equations	Translate between the geometric description and the equation for a conic section.	**OH.8-10.A.G** Solve quadratic equations with real roots by graphing, formula and factoring. **OH.11-12.A.A** Analyze functions by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior. **OH.11-12.P.H** Use formal mathematical language and notation to represent ideas, to demonstrate relationships within and among representation systems, and to formulate generalizations.
		Use coordinates to prove simple geometric theorems algebraically.	**OH.8-10.G.D** Use coordinate geometry to represent and examine the properties of geometric figures. **OH.8-10.G.G** Prove or disprove conjectures and solve problems involving two- and three-dimensional objects represented within a coordinate system. **OH.8-10.G.H** Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.
	Geometric Measurement and Dimension	Explain volume formulas and use them to solve problems.	**OH.8-10.M.B** Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision. **OH.8-10.M.C** Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids. **OH.8-10.M.E** Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision. **OH.11-12.M.C** Estimate and compute areas and volume in increasingly complex problem situations.
		Visualize relationships between 2-dimensional and 3-dimensional objects	**No Aligned Benchmarks**

Common Core State Standards High School			Ohio – 2001 Academic Content Standards
Conceptual Category	**Domain**	**Cluster**	**Benchmark**
Geometry	Modeling with Geometry	Apply geometric concepts in modeling situations.	**OH.11-12.M.D** Solve problem situations involving derived measurements; e.g., density, acceleration. **OH.11-12.P.J** Apply mathematical modeling to workplace and consumer situations, including problem formulation, identification of a mathematical model, interpretation of solution within the model, and validation to original problem situation.
Statistics and Probability	Interpreting Categorical and Quantitative Data	Summarize, represent, and interpret data on a single count or measurement variable.	**OH.5-7.D.A** Read, create and use line graphs, histograms, circle graphs, box-and-whisker plots, stem-and-leaf plots, and other representations when appropriate. **OH.5-7.D.F** Determine and use the range, mean, median and mode to analyze and compare data, and explain what each indicates about the data. **OH.8-10.D.B** Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose. **OH.8-10.D.D** Find, use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.
		Summarize, represent, and interpret data on two categorical and quantitative variables.	**OH.8-10.D.A** Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatterplots, measures of center and variability.
	Making Inferences and Justifying Conclusions	Understand and evaluate random processes underlying statistical experiments.	**OH.8-10.D.G** Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.
		Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	**OH.8-10.D.E** Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collection and analysis. **OH.8-10.D.F** Construct convincing arguments based on analysis of data and interpretation of graphs.
	Conditional Probability and the Rules of Probability	Understand independence and conditional probability and use them to interpret data.	**OH.8-10.D.J** Compute probabilities of compound events, independent events, and simple dependent events. **OH.11-12.D.A** Create and analyze tabular and graphical displays of data using appropriate tools, including spreadsheets and graphing calculators. **OH.11-12.D.C** Design and perform a statistical experiment, simulation or study; collect and interpret data; and use descriptive statistics to communicate and support predictions and conclusions.
		Use the rules of probability to compute probabilities of compound events in a uniform probability model.	**OH.8-10.D.J** Compute probabilities of compound events, independent events, and simple dependent events.
		(+) Use the rules of probability to compute probabilities of compound events in a uniform probability model.	**OH.8-10.D.H** Use counting techniques, such as permutations and combinations, to determine the total number of options and possible outcomes. **OH.8-10.D.J** Compute probabilities of compound events, independent events, and simple dependent events.
	Using Probability to Make Decisions	(+) Calculate expected values and use them to solve problems.	**OH.8-10.D.K** Make predictions based on theoretical probabilities and experimental results. **OH.11-12.D.A** Create and analyze tabular and graphical displays of data using appropriate tools, including spreadsheets and graphing calculators.
		(+) Use probability to evaluate outcomes of decisions.	**OH.8-10.D.I** Design an experiment to test a theoretical probability, and record and explain results.

Standards for Mathematical Practice	Ohio – 2001 Academic Content Standards
Practice	**Benchmark**
Reason abstractly and quantitatively.	**OH.3-4.P.G** Use an organized approach and appropriate strategies to solve multi-step problems. **OH.3-4.P.J** Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language **OH.5-7.P.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. **OH.5-7.P.B** Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine situations. **OH.5-7.P.C** Recognize whether an estimate or an exact solution is appropriate for a given problem situation. **OH.5-7.P.F** Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures. **OH.5-7.P.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. **OH.8-10.P.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. **OH.8-10.P.E** Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas. **OH.11-12.P.C** Assess the adequacy and reliability of information available to solve a problem.
Construct viable arguments and critique the reasoning of others.	**OH.3-4.P.H** Recognize basic valid and invalid arguments, and use examples, models, number relationships, and logic to support or refute. **OH.3-4.P.J** Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language. **OH.3-4.P.K** Use mathematical language to explain and justify mathematical ideas, strategies and solutions. **OH.5-7.P.E** Use deductive thinking to construct informal arguments to support reasoning and to justify solutions to problems. **OH.5-7.P.F** Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures. **OH.5-7.P.G** Relate mathematical ideas to one another and to other content areas; e.g., use area models for adding fractions, interpret graphs in reading and science and social studies. **OH.8-10.P.F** Use precise mathematical language and notations to represent problem situations and mathematical ideas. **OH.8-10.P.G** Write clearly and coherently about mathematical thinking and ideas. **OH.8-10.P.H** Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner. **OH.8-10.P.D** Apply reasoning processes and skills to construct logical verifications of counter-examples to test conjectures and to justify and defend algorithms and solutions. **OH.11-12.P.D** Select and use various types of reasoning and methods of proof. **OH.11-12.P.E** Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas. **OH.11-12.P.F** Use precise mathematical language and notations to represent problem situations and mathematical ideas.

Standards for Mathematical Practice	Ohio – 2001 Academic Content Standards
Practice	**Benchmark**
Model with mathematics.	**OH.K-2.P.A** Use a variety of strategies to understand problem situations; e.g., discussing with peers, stating problems in own words modeling problems with diagrams or physical materials, identifying a pattern**.** **OH.K-2.P.C** Generate alternative strategies to solve problems. **OH.K-2.P.F** Draw pictures and use physical models to represent problem situations and solutions. **OH.K-2.P.G** Use invented and conventional symbols and common language to describe a problem situation and solution. **OH.3-4.P.A** Apply and justify the use of a variety of problem solving strategies; e.g., make an organized list, guess and check. **OH.3-4.P.B** Use an organized approach and appropriate strategies to solve multi-step problems. **OH.3-4.P.D** Use mathematical strategies to solve problems that relate to other curriculum areas and the real world; e.g., use a timeline to sequence events; use symmetry in artwork. **OH.3-4.P.F** Recognize relationships among different topics within mathematics; e.g., the length of an object can be represented by a number. **OH.3-4.P.I** Represent problem situations in a variety of forms (physical model, diagram, in words or symbols), and recognize when some says of representing a problem may be more helpful than others. **OH.5-7.P.B** Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine situations. **OH.5-7.P.C** Recognize whether an estimate or an exact solution is appropriate for a given problem situation. **OH.5-7.P.H** Use representations to organize and communicate mathematical thinking and problem solutions. **OH.5-7.P.K** Recognize and use mathematical language and symbols when reading, writing and conversing with others. **OH.11-12.P.J** Apply mathematical modeling to workplace and consumer situations, including problem formulations, identification of a mathematical model, interpretation of solution within the model, and validation to original problem situation.
Use appropriate tools strategically.	**OH.K-2.P.B** Identify and restate in own words the question or problem and the information needed to solve the problem. **OH.K-2.P.D** Evaluate the reasonableness of predictions, estimations and solutions. **OH.3-4.P.A** Apply and justify the use of a variety of problem solving strategies; e.g., make an organized list, guess and check.

Standards for Mathematical Practice	Ohio – 2001 Academic Content Standards
Practice	**Benchmark**
Attend to precision.	**OH.K-2.P.G** Use invented and conventional symbols and common language to describe a problem situation and solution. **OH.K-2.P.H** Recognize the mathematical meaning of common words and phrases, and relate everyday language to mathematical language and symbols **OH.K-2.P.I** Communicate mathematical thinking by using everyday language and appropriate mathematical language. **OH.3-4.P.C** Interpret results in the context of the problem being solved; e.g., the solution must be a whole number of buses when determining the number of buses necessary to transport students. **OH.3-4.P.J** Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language. **OH.5-7.P.D** Recognize whether an estimate or an exact solution is appropriate for a given problem situation. **OH.5-7.P.H** Use representations to organize and communicate mathematical thinking and problem solutions. **OH.5-7.P.J** Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others. **OH.5-7.P.K** Recognize and use mathematical language and symbols when reading, writing and conversing with others. **OH.8-10.P.F** Use precise mathematical language and notations to represent problem situations and mathematical ideas. **OH.8-10.P.G** Write clearly and coherently about mathematical thinking and ideas. **OH.11-12.P.F** Use precise mathematical language and notations to represent problem situations and mathematical ideas **OH.11-12.P.H** Use formal mathematical language and notation to represent ideas, to demonstrate representations systems, and to formulate generalizations. **OH.11-12.P.I** Communicate mathematical ideas orally and in writing with a clear purpose and appropriate for a specific audience.
Look for and make use of structure.	**OH.3-4.P.E** Link concepts to procedures and to symbolic notation; e.g., model 3 x 4 with a geometric array, represent one-third by dividing an object into three equal parts. **OH.5-7.P.F** Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures. **OH.5-7.P.G** Relate mathematical ideas to one another and to other content areas; e.g., use area models for adding fractions, interpret graphs in reading and science and social studies. **OH.11-12.P.G** Understand the difference between a statement that is verified by mathematical proof, such as a theorem, and one that is verified empirically using examples or data.
Look for and express regularity in repeated reasoning.	**OH.5-7.P.F** Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures. **OH.5-7.P.G** Relate mathematical ideas to one another and to other content areas; e.g., use area models for adding fractions, interpret graphs in reading and science and social studies. **OH.11-12.P.A** Construct algorithms for multi-step and non-routine problems. **OH.11-12.P.B** Construct logical verifications or counter-examples to test conjectures and to justify or refute algorithms and solutions to problems.