

**New York State Learning Standards  
correlated to  
Merit Software Math Programs**

This revised edition (March 1996) of the *Learning Standards for Math, Science, and Technology* incorporates changes to the content standards and performance indicators based on extensive review by the public. It should be considered a working document; as educational practice improves, these standards will continually be revised.

Merit's Math programs address the following New York State Standards:

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Grades 3-5

Subhead	Standard	Key Ideas	Performance Indicators	Merit Software
Mathematical Analysis	Standard 1: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.	1. Abstraction and symbolic representation are used to communicate mathematically.	• use special mathematical notation and symbolism to communicate in mathematics and compare and describe quantities, express relationships, and relate mathematics to their immediate environments.	Word Problem Shape-Up Set 1, 2, 3
Mathematical Analysis	Standard 1: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.	3. Critical thinking skills are used in the solution of mathematical problems.	• explore and solve problems generated from school, home, and community situations, using concrete objects or manipulative materials when possible.	Word Problem Shape-Up Set 1, 2, 3

Mathematical Reasoning	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	1. Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.	• use models, facts, and relationships to draw conclusions about mathematics and explain their thinking.	Word Problem Shape-Up Set 1, 2, 3
Mathematical Reasoning	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	1. Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.	• use patterns and relationships to analyze mathematical situations.	Word Problem Shape-Up Set 1, 2, 3
Mathematical Reasoning	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	1. Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.	• justify their answers and solution processes.	Word Problem Shape-Up Set 1, 2, 3
Mathematical Reasoning	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	1. Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.	• use logical reasoning to reach simple conclusions.	Word Problem Shape-Up Set 1, 2, 3

Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• use whole numbers and fractions to identify locations, quantify groups of objects, and measure distances.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Fraction Shape-Up
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• use concrete materials to model numbers and number relationships for whole numbers and common fractions, including decimal fractions.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Fraction Shape-Up
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• relate counting to grouping and to place-value.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Fraction Shape-Up
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• recognize the order of whole numbers and commonly used fractions and decimals.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Fraction Shape-Up

Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• demonstrate the concept of percent through problems related to actual situations.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Fraction Shape-Up
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• add, subtract, multiply, and divide whole numbers.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• develop strategies for selecting the appropriate computational and operational method in problem-solving situations.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• know single digit addition, subtraction, multiplication, and division facts.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3

Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use concrete materials to model spatial relationships.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Fraction Shape-Up
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• construct tables, charts, and graphs to display and analyze real-world data.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use multiple representations (simulations, manipulative materials, pictures, and diagrams) as tools to explain the operation of everyday procedures.</li> </ul>	Word Problem Shape-Up Set 1
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use variables such as height, weight, and hand size to predict changes over time.</li> </ul>	Word Problem Shape-Up Set 1

Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use physical materials, pictures, and diagrams to explain mathematical ideas and processes and to demonstrate geometric concepts.</li> </ul>	Word Problem Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>• understand that measurement is approximate, never exact.</li> </ul>	Word Problem Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>• select appropriate standard and nonstandard measurement tools in measurement activities.</li> </ul>	Word Problem Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>• understand the attributes of area, length, capacity, weight, volume, time, temperature, and angle.</li> </ul>	Word Problem Shape-Up Set 1

Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>estimate and find measures such as length, perimeter, area, and volume using both nonstandard and standard units.</li> </ul>	Word Problem Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>collect and display data.</li> </ul>	Word Problem Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>use statistical methods such as graphs, tables, and charts to interpret data.</li> </ul>	Word Problem Shape-Up Set 1
Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>recognize, describe, extend, and create a wide variety of patterns.</li> </ul>	Word Problem Shape-Up Set 1

Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• represent and describe mathematical relationships.</li> </ul>	Word Problem Shape-Up Set 1
Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• explore and express relationships using variables and open sentences.</li> </ul>	Word Problem Shape-Up Set 1
Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• solve for an unknown using manipulative materials.</li> </ul>	Word Problem Shape-Up Set 1
Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• use a variety of manipulative materials and technologies to explore patterns.</li> </ul>	Word Problem Shape-Up Set 1

Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	• interpret graphs.	Word Problem Shape-Up Set 1, 2, 3
Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	• explore and develop relationships among two- and three-dimensional geometric shapes.	Word Problem Shape-Up Set 1, 2, 3
Patterns/Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	• discover patterns in nature, art, music, and literature.	Word Problem Shape-Up Set 1, 2, 3
Models	Standard 6— Interconnectedness: Common Themes	2. Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	• analyze, construct, and operate models in order to discover attributes of the real thing.	Word Problem Shape-Up Set 1, 2, 3

Models	Standard 6— Interconnectedness: Common Themes	2. Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	• discover that a model of something is different from the real thing but can be used to study the real thing.	Word Problem Shape-Up Set 1, 2, 3
Models	Standard 6— Interconnectedness: Common Themes	2. Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	• use different types of models, such as graphs, sketches, diagrams, and maps, to represent various aspects of the real world.	Word Problem Shape-Up Set 1, 2, 3
Connections	Standard 7— Interdisciplinary Problem Solving: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.	1. The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision-making, design, and inquiry into phenomena.	• design solutions to problems involving a familiar and real context, investigate related science concepts to inform the solution, and use mathematics to model, quantify, measure, and compute.	Word Problem Shape-Up Set 1, 2, 3
Connections	Standard 7— Interdisciplinary Problem Solving: Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.	1. The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision-making, design, and inquiry into phenomena.	• observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions.	Word Problem Shape-Up Set 1, 2, 3

Subhead	Standard	Key Ideas	Performance Indicators	Merit Software
Mathematical Analysis	Standard 1—Analysis, Inquiry, and Design: Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.	3. Critical thinking skills are used in the solution of mathematical problems.	• apply mathematical knowledge to solve real-world problems and problems that arise from the investigation of mathematical ideas, using representations such as pictures, charts, and tables.	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	• understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, expanded and scientific notation).	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	• understand and apply ratios, proportions, and percents through a wide variety of hands-on explorations.	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	2. Students use number sense and numeration to develop an understanding of the multiple uses of numbers in the real world, the use of numbers to communicate mathematically, and the use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• recognize order relations for decimals, integers, and rational numbers.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• add, subtract, multiply, and divide fractions, decimals, and integers.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• apply the associative, commutative, distributive, inverse, and identity properties.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• demonstrate an understanding of operational algorithms (procedures for adding, subtracting, etc.).</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• develop appropriate proficiency with facts and algorithms.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	3. Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• apply concepts of ratio and proportion to solve problems.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use the coordinate plane to explore geometric ideas.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	4. Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use variables to represent relationships.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>estimate, make, and use measurements in real-world situations.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>select appropriate standard and nonstandard measurement units and tools to measure to a desired degree of accuracy.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>develop measurement skills and informally derive and apply formulas in direct measurement activities.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	5. Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>use statistical methods and measures of central tendencies to display, describe, and compare data.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1

Ideas of Uncertainty	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	6. Students use ideas of Ideas of Uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.	<ul style="list-style-type: none"> <li>• use estimation to check the reasonableness of results obtained by computation, algorithms, or the use of technology.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Ideas of Uncertainty	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	6. Students use ideas of Ideas of Uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.	<ul style="list-style-type: none"> <li>• use estimation to solve problems for which exact answers are inappropriate.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Ideas of Uncertainty	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	6. Students use ideas of Ideas of Uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.	<ul style="list-style-type: none"> <li>• estimate the probability of events.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Basic Algebra Shape-Up Set 1
Ideas of Uncertainty	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	6. Students use ideas of Ideas of Uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.	<ul style="list-style-type: none"> <li>• determine probabilities of independent and mutually exclusive events.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Basic Algebra Shape-Up Set 1

Patterns and Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• recognize, describe, and generalize a wide variety of patterns and functions.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Patterns and Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• describe and represent patterns and functional relationships using tables, charts and graphs, algebraic expressions, rules, and verbal descriptions.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1
Patterns and Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	7. Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• use patterns and functions to represent and solve problems.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Optimization	Standard 6— Interconnectedness: Common Themes	6. In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.	<ul style="list-style-type: none"> <li>• use graphs of information for a decision making problem to determine the optimum solution.</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1

Subhead	Standard	Key Ideas	Performance Indicators	Merit Software
Mathematical Reasoning	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.	<ul style="list-style-type: none"> <li>• follow and judge the validity of logical arguments</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Mathematical Reasoning	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical reasoning to analyze mathematical situations, make conjectures, gather evidence, and construct an argument.	<ul style="list-style-type: none"> <li>• use symbolic logic in the construction of valid arguments</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use number sense and numeration to develop an understanding of multiple uses of numbers in the real world, use of numbers to communicate mathematically, and use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• understand and use rational and irrational numbers</li> </ul>	Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use number sense and numeration to develop an understanding of multiple uses of numbers in the real world, use of numbers to communicate mathematically, and use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• recognize the order of real numbers</li> </ul>	Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Number and Numeration	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use number sense and numeration to develop an understanding of multiple uses of numbers in the real world, use of numbers to communicate mathematically, and use of numbers in the development of mathematical ideas.	<ul style="list-style-type: none"> <li>• apply the properties of the real numbers to various subsets of numbers</li> </ul>	Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Operations	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical operations and relationships among them to understand mathematics.	<ul style="list-style-type: none"> <li>• use addition, subtraction, multiplication, division, and exponentiation with real numbers and algebraic expressions</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• represent problem situations symbolically by using algebraic expressions, sequences, tree diagrams, geometric figures, and graphs</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• choose appropriate representations to facilitate the solving of a problem</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• use learning technologies to make and verify geometric conjectures</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Modeling/Multiple Representation	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use mathematical modeling/multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships.	<ul style="list-style-type: none"> <li>• model real-world problems with systems of equations and inequalities</li> </ul>	Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>• derive and apply formulas to find measures such as length, area, volume, weight, time, and angle in real-world contexts</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2
Measurement	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use measurement in both metric and English measure to provide a major link between the abstractions of mathematics and the real world in order to describe and compare objects and data.	<ul style="list-style-type: none"> <li>• use statistical methods including measures of central tendency to describe and compare data</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2

Ideas of Uncertainty	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use ideas of uncertainty to illustrate that mathematics involves more than exactness when dealing with everyday situations.	<ul style="list-style-type: none"> <li>• judge the reasonableness of results obtained from applications in algebra, geometry, trigonometry, probability, and statistics</li> </ul>	Word Problem Shape-Up Set 1, 2, 3; Basic Algebra Shape-Up Set 1 & 2
Patterns and Functions	Standard 3: Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.	Students use patterns and functions to develop mathematical power, appreciate the true beauty of mathematics, and construct generalizations that describe patterns simply and efficiently.	<ul style="list-style-type: none"> <li>• apply linear, exponential, and quadratic functions in the solution of problems</li> </ul>	Pre-Algebra Shape-Up; Basic Algebra Shape-Up Set 1 & 2