

Prentice Hall Mathematics, Course 1 © 2008
Correlated to:
Arizona 2008 Mathematics Standard Articulated by Grade Level, Grade 6

ARIZONA 2008 MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL, GRADE 6	Prentice Hall Mathematics, Course 1 © 2008
Strand 1: Number and Operations	
<p>Number sense is the understanding of numbers and how they relate to each other and how they are used in specific context or real-world application. It includes an awareness of the different ways in which numbers are used, such as counting, measuring, labeling, and locating. It includes an awareness of the different types of numbers such as, whole numbers, integers, fractions, and decimals and the relationships between them and when each is most useful. Number sense includes an understanding of the size of numbers, so that students should be able to recognize that the volume of their room is closer to 1,000 than 10,000 cubic feet.</p> <p>Students develop a sense of what numbers are, i.e., to use numbers and number relationships to acquire basic facts, to solve a wide variety of real-world problems, and to estimate to determine the reasonableness of results.</p>	
Concept 1: Number Sense	
<p>Understand and apply numbers, ways of representing numbers, and the relationships among numbers and different number systems.</p> <p>In Grade 6, students broaden their knowledge of fractions, decimals, percents, and ratios, and the relationships between each. They compare and order integers, fractions, decimals, and percents. They explore the inverse relationships between perfect squares and cubes, and their roots and are introduced to absolute value.</p>	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
<p>PO 1. Convert between expressions for positive rational numbers, including fractions, decimals, percents, and ratios.</p> <p>Connections: M06-S1C1-03, M06-S1C1-04, M06-S1C3-01, M06-S2C2-01, M06-S2C2-02</p>	<p>SE/TE: 4, 23-25, 53, 182-185, 187, 198-200, 201, 205, 210, 218, 228, 233, 266, 267-269, 293-295, 331, 332, 333-334, 341, 343, 352, 355, 422, 423, 436, 474, 482</p>
<p>PO 2. Use prime factorization to</p> <ul style="list-style-type: none"> · express a whole number as a product of its prime factors and · determine the greatest common factor and least common multiple of two whole numbers. <p>Connections: M06-S1C1-06</p>	<p>SE/TE: 167-169, 171, 185, 188, 189, 190, 195, 204</p>
<p>PO 3. Demonstrate an understanding of fractions as rates, division of whole numbers, parts of a whole, parts of a set, and locations on a real number line.</p> <p>Connections: M06-S1C1-01, M06-S1C1-04, M06-S4C4-02, M06-S4C4-03</p>	<p>SE/TE: 175, 176-179, 181, 182-185, 186, 205, 312-315, 354</p>

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<p>PO 4. Compare and order integers; and positive fractions, decimals, and percents.</p> <p>Connections: M06-S1C1-01, M06-S1C1-03, M06-S1C3-01, M06-S1C3-02</p>	<p>SE/TE: 26-30, 53, 58, 108, 156, 191, 192-195, 266, 288, 292, 304, 316, 362, 514, 520-522, 564, 570, 578</p>
<p>PO 5. Express that a number's distance from zero on the number line is its absolute value.</p> <p>Connections: M06-S1C2-01</p>	<p>SE/TE: 517-519, 524, 528, 554</p>
<p>PO 6. Express the inverse relationships between exponents and roots for perfect squares and cubes.</p> <p>Connections: M06-S1C1-02</p>	<p>SE/TE: 586, 587-590, 599</p>
<u>Process Integration</u>	
<p>M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.</p>	<p>SE/TE: 4, 23-25, 178-179, 184-185, 187, 198-200, 201, 205, 210, 218, 228, 233, 266, 267-269, 293-295, 331, 332, 333-334, 341, 343, 352, 355, 422, 423, 436, 474, 482</p>
<p>M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.</p>	<p>SE/TE: 24-25, 178-179, 184-185, 200-201, 210, 269, 294-295, 333-334, 343, 352, 422, 474</p>
<p>M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.</p>	<p>SE/TE: 24-25, 178-179, 184-185, 268-269, 294, 333, 423</p>
<p>Concept 2: Numerical Operations</p> <p>Understand and apply numerical operations and their relationship to one another.</p> <p>In Grade 6, students build upon their prior knowledge of operations with rational numbers by multiplying and dividing fractions and decimals. They extend their computation of decimals to include division of whole numbers and decimals by a decimal. They expand their understanding of the real number system by modeling the concepts of addition and subtraction of integers. Students simplify numerical expressions using order of operations that now include exponents. They continue to apply properties of the real number system to evaluate expressions.</p>	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
<p>PO 1. Apply and interpret the concepts of addition and subtraction with integers using models.</p> <p>Connections: M06-S1C1-05</p>	<p>SE/TE: 523, 524-527, 529-533, 564</p>

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<p>PO 2. Multiply multi-digit decimals through thousandths.</p> <p>Connections: M06-S1C2-05, M06-S1C2-06, M06-S1C2-07, M06-S1C3-02, M06-S3C1-01, M06-S3C3-04, M06-S5C1-01</p>	SE/TE: 37, 38-42, 53, 106, 438, 476
<p>PO 3. Divide multi-digit whole numbers and decimals by decimal divisors with and without remainders.</p> <p>Connections: M06-S1C2-05, M06-S1C2-06, M06-S1C2-07, M06-S1C3-02, M06-S3C1-01, M06-S3C3-04, M06-S5C1-01</p>	SE/TE: 45-47, 53, 106, 156
<p>PO 4. Multiply and divide fractions.</p> <p>Connections: M06-S1C2-05, M06-S1C2-06, M06-S1C2-07, M06-S1C3-02, M06-S3C1-01, M06-S3C3-04, M06-S5C1-01</p>	SE/TE: 260-265, 267, 271-275, 276, 282-285, 292, 298, 299, 304, 309, 329, 474, 500
<p>PO 5. Provide a mathematical argument to explain operations with two or more fractions or decimals.</p> <p>Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-07, M06-S5C1-01</p>	SE/TE: 11, 34, 37, 38, 40, 41, 42, 44-46, 47, 137, 216, 217-219, 221, 222, 260, 261, 263, 266-268, 271, 272-274, 276-278
<p>PO 6. Apply the commutative, associative, distributive, and identity properties to evaluate numerical expressions involving whole numbers.</p> <p>Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-07</p>	SE/TE: 12-15, 52, 126, 134, 138, 139, 144-147, 148, 151, 201, 348
<p>PO 7. Simplify numerical expressions (involving fractions, decimals, and exponents) using the order of operations with or without grouping symbols.</p> <p>Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-05, M06-S1C2-06</p>	SE/TE: 163, 164, 426, 444
<u>Process Integration</u>	
M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	SE/TE: 12-15, 38-42, 45-47, 144-147, 217-219, 260-265, 271-275, 282-285, 524-527, 529-533
M06-S5C2-08. Make and test conjectures based on information collected from explorations and experiments.	SE/TE: 15, 40-41, 46, 146-147, 219, 263, 271, 274, 284, 526, 532

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Concept 3: Estimation	
Use estimation strategies reasonably and fluently while integrating content from each of the other strands.	
In Grade 6, students continue to develop estimation strategies to predict and verify solutions. They use estimation to determine the reasonableness of solutions and continue to use benchmarks for the comparison of rational numbers.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Use benchmarks as meaningful points of comparison for rational numbers. Connections: M06-S1C1-01, M06-S1C1-04	SE/TE: 212, 214, 215, 252
PO 2. Make estimates appropriate to a given situation and verify the reasonableness of the results. Connections: M06-S1C1-04, M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S2C1-03, M06-S2C2-02, M06-S3C3-02, M06-S3C3-04, M06-S3C4-01, M06-S4C4-01, M06-S4C4-02, M06-S4C4-03, M06-S4C4-04, M06-S4C4-05	SE/TE: 32, 33, 36, 39, 41, 44, 49, 53, 91, 92, 142, 143, 168, 184, 228, 235, 244, 267, 277, 286, 346, 396, 397, 400, 404, 442, 445, 446, 496, 505, 532, 584, 589
<u>Process Integration</u>	
M06-S5C2-01. Analyze a problem situation to determine the question(s) to be answered.	SE/TE: 33, 36, 39, 41, 44, 49, 53, 91, 92, 142, 143, 168, 184, 212, 214, 215, 228, 235, 244, 252, 267, 277, 286, 346, 396, 397, 400, 404, 442, 445, 446, 496, 505, 532, 584, 589
M06-S5C2-02. Identify relevant, missing, and extraneous information related to the solution to a problem.	SE/TE: 33, 36, 39, 41, 44, 49, 53, 91, 92, 142, 143, 168, 184, 212, 214, 215, 228, 235, 244, 252, 267, 277, 286, 346, 396, 397, 400, 404, 442, 445, 446, 496, 505, 532, 584, 589
M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	SE/TE: 33, 36, 39, 41, 44, 49, 53, 91, 92, 142, 143, 168, 184, 212, 214, 215, 228, 235, 244, 252, 267, 277, 286, 346, 396, 397, 400, 404, 442, 445, 446, 496, 505, 532, 584, 589

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<p>Strand 2: Data Analysis, Probability, and Discrete Mathematics</p>	
<p>This strand requires students to use data collection, data analysis, statistics, probability, systematic listing and counting, and the study of graphs. This prepares students for the study of discrete functions as well as to make valid inferences, decisions, and arguments. Discrete mathematics is a branch of mathematics that is widely used in business and industry. Combinatorics is the mathematics of systematic counting. Vertex-edge graphs are used to model and solve problems involving paths, networks, and relationships among a finite number of objects.</p>	
<p>Concept 1: Data Analysis (Statistics)</p>	
<p>Understand and apply data collection, organization, and representation to analyze and sort data. In Grade 6, students apply their understanding of fractions, decimals, and percents as they construct, analyze, and describe data. They are introduced to data displays and summary statistics to analyze the distribution of data and compare two data sets.</p>	
<p><u>Performance Objectives</u></p>	
<p><i>Students are expected to:</i></p>	
<p>PO 1. Solve problems by selecting, constructing, and interpreting displays of data, including histograms and stem-and-leaf plots.</p> <p>Connections: M06-S2C1-02, M06-S2C1-03, M06-S2C1-04, SC06-S1C3-01, SC06-S1C3-04, SC06-S1C4-01, SC06-S1C4-02, SS06-S1C1-01, SS06-S1C1-02, SS06-S2C1-01, SS06-S2C1-02, SS06-S4C1-01, SS06-S4C1-02</p>	<p>SE/TE: 60-62, 66-68, 70-84, 86-90, 93-97, 104-105, 202, 340-344, 345, 347, 491, 507</p>
<p>PO 2. Formulate and answer questions by interpreting, analyzing, and drawing inferences from displays of data, including histograms and stem-and-leaf plots.</p> <p>Connections: M06-S2C1-01, M06-S2C1-03, M06-S2C1-04, SC06-S1C1-02, SC06-S1C3-04, SC06-S1C3-06, SS06-S1C1-02, SS06-S2C1-02, SS06-S4C1-02</p>	<p>SE/TE: 60, 61-63, 66-69, 70-73, 74-77, 86-89, 91-92</p>
<p>PO 3. Use extreme values, mean, median, mode, and range to analyze and describe the distribution of a given data set.</p> <p>Connections: M06-S1C3-02, M06-S2C1-01, M06-S2C1-02, M06-S2C1-04</p>	<p>SE/TE: 60, 61-64, 66-69, 100-101</p>
<p>PO 4. Compare two or more sets of data by identifying trends.</p> <p>Connections: M06-S2C1-01, M06-S2C1-02, M06-S2C1-03, SC06-S1C3-01</p>	<p>SE/TE: 79</p>

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<u>Process Integration</u>	
M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	SE/TE: 60-62, 68-69, 70-84, 86-90, 93-97, 104-105, 202, 340-344, 345, 347, 491, 507
M06-S5C2-01. Analyze a problem situation to determine the question(s) to be answered.	SE/TE: 63, 66-69, 72-73, 76-77, 78, 79, 81-83, 88-90, 91-92, 95-96, 104-105, 340, 342-344
M06-S5C2-02. Identify relevant, missing, and extraneous information related to the solution to a problem.	SE/TE: 63, 68-69, 72-73, 76-77, 78, 79, 81-83, 88-90, 91-92, 95-96, 104-105, 340, 342-344
M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	SE/TE: 60, 64, 66-69, 70-84, 86-90, 93-97, 104-105, 202, 340-344, 345, 347, 491, 507
Concept 2: Probability	
Understand and apply the basic concepts of probability. In Grade 6, students begin to make and test conjectures about theoretical probability by predicting outcomes of experiments, performing experiments, comparing experimental outcomes to a prediction, and replicating experiments for the comparison of results. They determine possible outcomes using a variety of systematic approaches.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Use data collected from multiple trials of a single event to form a conjecture about the theoretical probability. Connections: M06-S1C1-01, M06-S2C2-02, M06-S2C2-03	SE/TE: 492, 494-497
PO 2. Use theoretical probability to <ul style="list-style-type: none"> · predict experimental outcomes, · compare the outcome of the experiment to the prediction, and · replicate the experiment and compare results. Connections: M06-S1C1-01, M06-S1C3-02, M06-S2C2-01, M06-S2C2-03	SE/TE: 492, 494-497
PO 3. Determine all possible outcomes (sample space) of a given situation using a systematic approach. Connections: M06-S2C2-01, M06-S2C2-02, M06-S2C3-01	SE/TE: 476-479, 481

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<u>Process Integration</u>	
M06-S5C2-08. Make and test conjectures based on information collected from explorations and experiments.	SE/TE: 476-479, 492, 494-497
M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	SE/TE: 478, 479, 481, 496
Concept 3: Systematic Listing and Counting	
Understand and demonstrate the systematic listing and counting of possible outcomes. In Grade 6, students explore three attribute counting problems using Venn diagrams to build on prior learning about different counting problems. They learn to create and analyze tree diagrams where data repeats and expand their prior learning of the multiplication principle of counting.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Build and explore tree diagrams where items repeat. Connections: M06-S2C2-03	SE/TE: 476-479, 481
PO 2. Explore counting problems with Venn diagrams using three attributes. Connections: M06-S5C2-07	SE/TE: Related content: 476-479, 508
Concept 4: Vertex-Edge Graphs	
Understand and apply vertex-edge graphs. In Grade 6, students learn about Hamilton paths and circuits in comparison to prior learning of Euler paths and circuits in fifth grade. They learn to solve real-world problems related to Hamilton paths and circuits.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Investigate properties of vertex-edge graphs <ul style="list-style-type: none"> · Hamilton paths, · Hamilton circuits, and · shortest route. Connections: M06-S2C4-02	SE/TE: Related content: 327, 328, 363, 549, 550, 551
PO 2. Solve problems related to Hamilton paths and circuits. Connections: M06-S2C4-01	SE/TE: Related content: 327, 328, 363, 549, 550, 551

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Strand 3: Patterns, Algebra, and Functions	
Patterns occur everywhere in nature. Algebraic methods are used to explore, model and describe patterns, relationships, and functions involving numbers, shapes, iteration, recursion, and graphs within a variety of real-world problem solving situations. Iteration and recursion are used to model sequential, step-by-step change. Algebra emphasizes relationships among quantities, including functions, ways of representing mathematical relationships, and the analysis of change.	
Concept 1: Patterns	
Identify patterns and apply pattern recognition to reason mathematically while integrating content from each of the other strands.	
In Grade 6, students expand prior knowledge about sequences involving whole numbers, fractions, and decimals to include sequences that use the four basic operations.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Recognize, describe, create, and analyze a numerical sequence involving fractions and decimals using all four basic operations.	SE/TE: 108-111, 112, 123
Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S3C2-01	
<u>Process Integration</u>	
M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	SE/TE: 108, 112, 123
Concept 2: Functions and Relationships	
Describe and model functions and their relationships.	
In Grade 6, students examine the relationship between two sets of numbers represented by a chart, graph, table, written language, or an expression.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Recognize and describe a relationship between two quantities, given by a chart, table, or graph, using words and expressions.	SE/TE: 558-562
Connections: M06-S3C1-01, M06-S3C3-03, M06-S3C4-01, SC06-S1C3-01, SC06-S1C3-04, SS06-S2C1-01, SS06-S2C1-02, SS06-S4C1-02	
<u>Process Integration</u>	
M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	SE/TE: 560

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Concept 3: Algebraic Representations	
Represent and analyze mathematical situations and structures using algebraic representations. In Grade 6, students write and use algebraic expressions and equations containing fractions and decimals to represent and solve contextual problems. They extend this skill to create and solve two-step equations containing positive rational coefficients. They use mathematical terminology and symbols to translate between written and verbal mathematical expressions and equations that have the four basic operations.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Use an algebraic expression to represent a quantity in a given context. Connections: M06-S3C3-02, M06-S4C1-02	SE/TE: 113-115, 118-123, 150, 250, 274
PO 2. Create and solve two-step equations that can be solved using inverse properties with fractions and decimals. Connections: M06-S1C3-02, M06-S3C3-01, M06-S4C1-02	SE/TE: 572-576, 598
PO 3. Translate both ways between a verbal description and an algebraic expression or equation. Connections: M06-S3C2-01, M06-S3C3-01	SE/TE: 118-123, 132, 136, 142-143, 250, 284, 424
PO 4. Evaluate an expression involving the four basic operations by substituting given fractions and decimals for the variable. Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C3-02, M06-S4C4-04, M06-S4C4-05	SE/TE: 114, 118, 165, 264, 270, 274, 275, 344, 497, 558
<u>Process Integration</u>	
M06-S5C2-06. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	SE/TE: 113-115, 118-123, 132, 136, 142-143, 150, 165, 572-576
M06-S5C2-05. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	SE/TE: 113, 114, 117, 118-123, 132, 136, 137, 142-143, 250, 284, 424

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<p>Concept 4: Analysis of Change Analyze how changing the values of one quantity corresponds to change in the values of another quantity. In Grade 6, students extend prior learning about patterns of change to predict missing values on line graphs or scatterplots.</p>	
<p><u>Performance Objectives</u></p>	
<p><i>Students are expected to:</i></p>	
<p>PO 1. Determine a pattern to predict missing values on a line graph or scatterplot. Connections: M06-S1C3-02, M06-S3C2-01, SC06-S1C3-01</p>	<p>SE/TE: 558-562</p>
<p>Strand 4: Geometry and Measurement Geometry is a natural place for the development of students' reasoning, higher thinking, and justification skills culminating in work with proofs. Geometric modeling and spatial reasoning offer ways to interpret and describe physical environments and can be important tools in problem solving. Students use geometric methods, properties and relationships, transformations, and coordinate geometry as a means to recognize, draw, describe, connect, analyze, and measure shapes and representations in the physical world. Measurement is the assignment of a numerical value to an attribute of an object, such as the length of a pencil. At more sophisticated levels, measurement involves assigning a number to a characteristic of a situation, as is done by the consumer price index. A major emphasis in this strand is becoming familiar with the units and processes that are used in measuring attributes.</p>	
<p>Concept 1: Geometric Properties Analyze the attributes and properties of 2- and 3- dimensional figures and develop mathematical arguments about their relationships. In Grade 6, students extend their exploration of 2-dimensional figures to include circles. They investigate the relationship between the radius, diameter and circumference of a circle to define π. Students investigate and solve problems with angle relationships by applying the properties of supplementary, complementary, and vertical angles.</p>	
<p><u>Performance Objectives</u></p>	
<p><i>Students are expected to:</i></p>	
<p>PO 1. Define π as the ratio between the circumference and diameter of a circle and explain the relationship among the diameter, radius, and circumference.</p>	<p>SE/TE: 438-441, 469</p>
<p>PO 2. Solve problems using properties of supplementary, complementary, and vertical angles. Connections: M06-S3C3-01, M06-S3C3-02</p>	<p>SE/TE: 374-377, 409, 419, 542</p>

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<u>Process Integration</u>	
M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	SE/TE: 374-377, 438-441, 419, 542
<p>Concept 2: Transformation of Shapes</p> <p>Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations.</p> <p>In Grade 6, students build on their knowledge of translations and reflections to perform transformations in all four quadrants of the coordinate plane. They differentiate between vertical and horizontal lines of reflection to reflect polygons in all four quadrants.</p>	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
<p>PO 1. Identify a simple translation or reflection and model its effect on a 2-dimensional figure on a coordinate plane using all four quadrants.</p> <p>Connections: M06-S4C2-02</p>	SE/TE: 553
<p>PO 2. Draw a reflection of a polygon in the coordinate plane using a horizontal or vertical line of reflection.</p> <p>Connections: M06-S4C2-01, M06-S4C3-01, M06-S4C3-02</p>	SE/TE: 553
<p>Concept 3: Coordinate Geometry</p> <p>Specify and describe spatial relationships using rectangular and other coordinate systems while integrating content from each of the other strands.</p> <p>In Grade 6, students expand their understanding of graphing ordered pairs to all four quadrants. They use their understanding of geometric properties to justify the location of a missing coordinate in a figure.</p>	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
<p>PO 1. Graph ordered pairs in any quadrant of the coordinate plane.</p> <p>Connections: M06-S4C2-02, M06-S4C3-02</p>	SE/TE: 547, 548-551, 565
<p>PO 2. State the missing coordinate of a given figure on the coordinate plane using geometric properties to justify the solution.</p> <p>Connections: M06-S4C2-02, M06-S4C3-01</p>	SE/TE: 551, 553

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<u>Process Integration</u>	
M06-S5C2-04. Apply a previously used problem-solving strategy in a new context.	SE/TE: 547, 548-549, 553
<p>Concept 4: Measurement</p> <p>Understand and apply appropriate units of measure, measurement techniques, and formulas to determine measurements.</p> <p>In Grade 6, students build upon their prior knowledge of measurement to determine the appropriate unit of measure, tool, and necessary precision to solve problems. They convert within systems of measurement to solve problems. They use scale drawings to estimate the measure of an object. Students also apply formulas for area and perimeter to solve problems and explore the relationship between volume and area.</p>	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
<p>PO 1. Determine the appropriate unit of measure for a given context and the appropriate tool to measure to the needed precision (including length, capacity, angles, time, and mass).</p> <p>Connections: M06-S1C3-02, SC06-S1C2-04</p>	SE/TE: 246, 288-290, 299, 367-371, 416-419, 647
<p>PO 2. Solve problems involving conversion within the U.S. Customary and within the metric system.</p> <p>Connections: M06-S1C1-03, M06-S1C3-02</p>	SE/TE: 292-295, 414, 421-424, 436
<p>PO 3. Estimate the measure of objects using a scale drawing or map.</p> <p>Connections: M06-S1C1-03, M06-S1C3-02, SS06-S4C1-03</p>	SE/TE: 326-329
<p>PO 4. Solve problems involving the area of simple polygons using formulas for rectangles and triangles.</p> <p>Connections: M06-S1C3-02, M06-S3C3-04, M06-S5C1-02</p>	SE/TE: 426-430, 431, 433, 468
<p>PO 5. Solve problems involving area and perimeter of regular and irregular polygons.</p> <p>Connections: M06-S1C3-02, M06-S3C3-04, M06-S5C1-02</p>	SE/TE: 433-435, 442-443
<p>PO 6. Describe the relationship between the volume of a figure and the area of its base.</p>	SE/TE: 458-460, 461, 464-466, 469

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<u>Process Integration</u>	
M06-S5C2-01. Analyze a problem situation to determine the question(s) to be answered.	SE/TE: 246, 288-290, 292-295, 299, 367-371, 416-419, 421-424, 426-430, 433-435, 442-443, 458-460, 461, 464-466, 469, 647
M06-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	SE/TE: 294-295, 369, 418, 423, 428, 431, 442-443, 460, 464
M06-S5C2-02. Identify relevant, missing, and extraneous information related to the solution to a problem.	SE/TE: 290, 370, 418, 423, 429, 430, 434, 442, 459, 465
Strand 5: Structure and Logic	
This strand emphasizes the core processes of problem solving. Students draw from the content of the other four strands to devise algorithms and analyze algorithmic thinking. Strand One and Strand Three provide the conceptual and computational basis for these algorithms. Logical reasoning and proof draws its substance from the study of geometry, patterns, and analysis to connect remaining strands. Students use algorithms, algorithmic thinking, and logical reasoning (both inductive and deductive) as they make conjectures and test the validity of arguments and proofs. Concept two develops the core processes as students evaluate situations, select problem solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.	
Concept 1: Algorithms and Algorithmic Thinking	
Use reasoning to solve mathematical problems. In Grade 6, students expand their understanding of algorithms to analyzing algorithms for multiplying and dividing fractions and decimals using properties of the real number system. They use their knowledge of parallelograms and triangles to create and defend algorithms for calculating the area of compound figures.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Analyze algorithms for multiplying and dividing fractions and decimals using the associative, commutative, and distributive properties Connections: M06-S1C2-02, M06-S1C2-03, M06-S1C2-04, M06-S1C2-05	SE/TE: 37, 46, 260, 261-263, 265, 271, 272-275, 276-279
PO 2. Create and justify an algorithm to determine the area of a given compound figure using parallelograms and triangles. Connections: M06S4C4-04, M06S4C4-05	SE/TE: 427, 433-435
<u>Process Integration</u>	
M06-S5C2-07. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	SE/TE: 37, 46, 260, 262, 265, 271, 272, 276, 279, 427, 433-435

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Concept 2: Logic, Reasoning, Problem Solving, and Proof	
Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.	
In Grade 6, students continue to use a variety of problem-solving strategies, and analyze them for efficiency and appropriateness for contextual situations. They communicate their thinking using multiple representations, synthesize and organize information from multiple sources to make inferences, draw conclusions, and justify their reasoning. Students begin to solve simple logic problems using conditional statements.	
<u>Performance Objectives</u>	
<i>Students are expected to:</i>	
PO 1. Analyze a problem situation to determine the question(s) to be answered. Connections: SC06-S1C1-02	SE/TE: 63, 284, 396-397, 442-443, 505-506, 538-539, 595-596
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.	SE/TE: xxxii-xli, 49, 91, 142, 196, 224, 286, 346, 396, 442, 505, 538, 595
PO 3. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	SE/TE: 28, 88, 120, 189, 234, 268, 322, 369, 428, 478, 560, 574
PO 4. Apply a previously used problem-solving strategy in a new context.	SE/TE: xxxii-xli, 49, 68, 88, 91, 108-111, 114, 121, 125, 127, 131, 132, 136, 140, 142-143, 149, 178, 197, 214, 219, 221, 230, 242, 249, 262, 263, 269, 271, 274, 286, 294, 323, 330, 333, 343, 346, 347, 353, 370, 389, 396, 407, 429, 457, 492, 542, 586
PO 5. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution. Connections: SC06-S1C4-02	SE/TE: 12-15, 28, 62, 67, 88, 93, 94, 120, 137, 174, 189, 191, 202, 209, 227, 234, 265, 268, 319, 322, 323, 330, 369, 428, 429, 431, 478, 518, 546, 560, 574
PO 6. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language. Connections: SC06-S1C4-03	SE/TE: Representative pages: 40, 135, 196, 324, 379, 429, 434, 482, 486, 532
PO 7. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning. Connections: M06-S2C3-02, SC06-S1C3-02, SS06-S1C1-07, SS06-S2C1-07, SS06-S4C4-03	SE/TE: 12-15, 42, 62, 67, 93, 94, 108, 112, 122, 1137, 150, 161, 165, 174, 181, 191, 195, 202, 209, 216, 227, 265, 319, 323, 330, 379, 385, 429, 430, 431, 437, 446, 457, 518, 537, 546, 547, 603

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PO 8. Make and test conjectures based on information collected from explorations and experiments.	SE/TE: 483-486, 489-491, 494-497, 502-503
PO 9. Solve simple logic problems, including conditional statements, and justify solution methods and reasoning.	SE/TE: 47, 96, 112, 147, 148, 181, 196, 230, 248, 310, 325, 339, 342, 365, 370, 377, 379, 394, 401, 434, 542, 583, 590
<u>Process Integration</u>	
Some of the Strand 5 Concept 2 performance objectives are listed throughout the grade level document in the Process Integration Column (2nd column). Since these performance objectives are connected to the other content strands, the process integration column is not used in this section next to those performance objectives.	
M07-S5C2-03. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	SE/TE: 28, 88, 120, 189, 234, 268, 322, 369, 428, 478, 560, 574