

<b>Problem Solving Strand</b>		
<b><i>Students will build new mathematical knowledge through problem solving.</i></b>		
7.PS.1	Use a variety of strategies to understand new mathematical content and to develop more efficient methods	Used throughout the text
7.PS.2	Construct appropriate extensions to problem situations	Used throughout the text, specifically in Problem Solving feature
7.PS.3	Understand and demonstrate how written symbols represent mathematical ideas	Used throughout the text
<b><i>Students will solve problems that arise in mathematics and in other contexts.</i></b>		
7.PS.4	Observe patterns and formulate generalizations	Used throughout the text, for example 2.1, 6.7, 11.1
7.PS.5	Make conjectures from generalizations	Used throughout the text, for example 2.6, 6.8, 9.4
7.PS.6	Represent problem situations verbally, numerically, algebraically, and graphically	Used throughout the text
<b><i>Students will apply and adapt a variety of appropriate strategies to solve problems.</i></b>		
7.PS.7	Understand that there is no one right way to solve mathematical problems but that different methods have advantages and disadvantages	Used throughout the text, specifically in Problem Solving feature
7.PS.8	Understand how to break a complex problem into simpler parts or use a similar problem type to solve a problem	Used throughout the text, specifically in Problem Solving feature
7.PS.9	Work backwards from a solution	Used throughout the text, specifically in Problem Solving feature
7.PS.10	Use proportionality to model problems	6.1, 6.2, 6.3
7.PS.11	Work in collaboration with others to solve problems	Used throughout the text, specifically in Math Labs
<b><i>Students will monitor and reflect on the process of mathematical problem solving.</i></b>		
7.PS.12	Interpret solutions within the given constraints of a problem	Used throughout the text, specifically in Cumulative Problem Solving feature
7.PS.13	Set expectations and limits for possible solutions	Used throughout the text, specifically in Cumulative Problem Solving feature
7.PS.14	Determine information required to solve the problem	Used throughout the text, specifically in Cumulative Problem Solving feature
7.PS.15	Choose methods for obtaining required information	Used throughout the text, specifically in Math Labs and Cumulative Problem Solving feature
7.PS.16	Justify solution methods through logical argument	Used throughout the text, specifically in Problem Solving feature and Cumulative Problem Solving feature
7.PS.17	Evaluate the efficiency of different representations of a problem	Used throughout the text, specifically in Problem Solving feature, Math Labs, and Cumulative Problem Solving feature

<b>Reasoning and Proof Strand</b>		
<b><i>Students will recognize reasoning and proof as fundamental aspects of mathematics.</i></b>		
7.RP.1	Recognize that mathematical ideas can be supported by a variety of strategies	Used throughout the text, specifically in Cumulative Problem Solving feature
<b><i>Students will make and investigate mathematical conjectures.</i></b>		
7.RP.2	Use mathematical strategies to reach a conclusion	Used throughout the text, specifically in Problem Solving feature and Cumulative Problem Solving feature
7.RP.3	Evaluate conjectures by distinguishing relevant from irrelevant information to reach a conclusion or make appropriate estimates	Used throughout the text, specifically in Cumulative Problem Solving feature
<b><i>Students will develop and evaluate mathematical arguments and proofs.</i></b>		
7.RP.4	Provide supportive arguments for conjectures	Used throughout the text
7.RP.5	Develop, verify, and explain an argument, using appropriate mathematical ideas and language	Used throughout the text
<b><i>Students will select and use various types of reasoning and methods of proof.</i></b>		
7.RP.6	Support an argument by using a systematic approach to test more than one case	Used throughout the text, specifically in Math Labs
7.RP.7	Devise ways to verify results, or use counterexamples to refute incorrect statements	Used throughout the text, specifically in Math Labs
7.RP.8	Apply inductive reasoning in making and supporting mathematical conjectures	Used throughout the text, specifically in Math Labs, and lesson 11.1

<b>Communication Strand</b>		
<b><i>Students will organize and consolidate their mathematical thinking through communication.</i></b>		
7.CM.1	Provide a correct, complete, coherent, and clear rationale for thought process used in problem solving	Used throughout the text
7.CM.2	Provide an organized argument which explains rationale for strategy selection	Used throughout the text
7.CM.3	Organize and accurately label work	Used throughout the text
<b><i>Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.</i></b>		
7.CM.4	Share organized mathematical ideas through the manipulation of objects, numerical tables, drawings, pictures, charts, graphs, tables, diagrams, models and symbols in written and verbal form	Used throughout the text, specifically in Cumulative Problem Solving feature and Math Labs
7.CM.5	Answer clarifying questions from others	Used throughout the text, specifically in Math Labs
<b><i>Students will analyze and evaluate the mathematical thinking and strategies of others.</i></b>		
7.CM.6	Analyze mathematical solutions shared by others	Used throughout the text, specifically in Math Labs
7.CM.7	Compare strategies used and solutions found by others in relation to their own work	Used throughout the text, specifically in Cumulative Problem Solving feature and Math Labs
7.CM.8	Formulate mathematical questions that elicit, extend, or challenge strategies, solutions, and/or conjectures of others	Used throughout the text, specifically in Cumulative Problem Solving feature and Math Labs
<b><i>Students will use the language of mathematics to express mathematical ideas precisely.</i></b>		
7.CM.9	Increase their use of mathematical vocabulary and language when communicating with others	Used throughout the text, specifically in Think and Discuss in Lesson Assessment
7.CM.10	Use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and rationale	Used throughout the text, specifically in Lesson Assessments and Cumulative Problem Solving feature
7.CM.11	Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing	Used throughout the text, specifically in Lesson Assessments and Cumulative Problem Solving feature

<b>Connections Strand</b>		
<b><i>Students will recognize and use connections among mathematical ideas.</i></b>		
7.CN.1	Understand and make connections among multiple representations of the same mathematical idea	Used throughout the text
7.CN.2	Recognize connections between subsets of mathematical ideas	Used throughout the text, specifically in Cumulative Problem Solving feature
7.CN.3	Connect and apply a variety of strategies to solve problems	Used throughout the text, for example
<b><i>Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.</i></b>		
7.CN.4	Model situations mathematically, using representations to draw conclusions and formulate new situations	Used throughout the text, specifically in Cumulative Problem Solving feature
7.CN.5	Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics	Used throughout the text, specifically in Cumulative Problem Solving feature
<b><i>Students will recognize and apply mathematics in contexts outside of mathematics.</i></b>		
7.CN.6	Recognize and provide examples of the presence of mathematics in their daily lives	Used throughout the text, specifically in Cumulative Problem Solving feature and Math Labs
7.CN.7	Apply mathematical ideas to problem situations that develop outside of mathematics	Used throughout the text, specifically in Cumulative Problem Solving feature and Problem Solving feature
7.CN.8	Investigate the presence of mathematics in careers and areas of interest	Used throughout the text, specifically in Cumulative Problem Solving feature
7.CN.9	Recognize and apply mathematics to other disciplines, areas of interest, and societal issues	Used throughout the text, specifically in Cumulative Problem Solving feature and Problem Solving feature

<b>Representation Strand</b>		
<b><i>Students will create and use representations to organize, record, and communicate mathematical ideas.</i></b>		
7.R.1	Use physical objects, drawings, charts, tables, graphs, symbols, equations, and objects created using technology as representations	Used throughout the text
7.R.2	Explain, describe, and defend mathematical ideas using representations	Used throughout the text
7.R.3	Recognize, compare, and use an array of representational forms	Used throughout the text
7.R.4	Explain how different representations express the same relationship	Used throughout the text
7.R.5	Use standard and non-standard representations with accuracy and detail	Used throughout the text
<b><i>Students will select, apply, and translate among mathematical representations to solve problems.</i></b>		
7.R.6	Use representations to explore problem situations	Used throughout the text, specifically in Problem Solving feature and Cumulative Problem Solving feature
7.R.7	Investigate relationships between different representations and their impact on a given problem	Used throughout the text, specifically in Cumulative Problem Solving feature
7.R.8	Use representation as a tool for exploring and understanding mathematical ideas	Used throughout the text, specifically in Cumulative Problem Solving feature
<b><i>Students will use representations to model and interpret physical, social, and mathematical phenomena.</i></b>		
7.R.9	Use mathematics to show and understand physical phenomena (e.g., make and interpret scale drawings of figures or scale models of objects)	Used throughout the text, specifically in Math Labs and Lesson 11.4
7.R.10	Use mathematics to show and understand social phenomena (e.g., determine profit from sale of yearbooks)	Used throughout the text, specifically in Cumulative Problem Solving feature
7.R.11	Use mathematics to show and understand mathematical phenomena (e.g., use tables, graphs, and equations to show a pattern underlying a function)	Used throughout the text, specifically in Cumulative Problem Solving feature and Math Labs

<b>Number Sense and Operations Strand</b>		
<b>Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems.</b>		
<i>Number Systems</i>		
7.N.1	Distinguish between the various subsets of real numbers (counting/natural numbers, whole numbers, integers, rational numbers, and irrational numbers)	10.5
7.N.2	Recognize the difference between rational and irrational numbers (e.g., explore different approximations of $\pi$ )	10.5
7.N.3	Place rational and irrational numbers (approximations) on a number line and justify the placement of the numbers	10.5
7.N.4	Develop the laws of exponents for multiplication and division	10.1, 10.2
7.N.5	Write numbers in scientific notation	10.3
7.N.6	Translate numbers from scientific notation into standard form	10.3
7.N.7	Compare numbers written in scientific notation	10.3
<i>Number Theory</i>		
7.N.8	Find the common factors and greatest common factor of two or more numbers	5.1, 5.Lab 1
7.N.9	Determine multiples and least common multiple of two or more numbers	5.3
7.N.10	Determine the prime factorization of a given number and write in exponential form	5.Lab 1
<b>Students will understand meanings of operations and procedures, and how they relate to one another.</b>		
<i>Operations</i>		
7.N.11	Simplify expressions using order of operations <i>Note: Expressions may include absolute value and/or integral exponents greater than 0.</i>	1.3
7.N.12	Add, subtract, multiply, and divide integers	3.3, 3.4, 3.5, 3.6, 3.7
7.N.13	Add and subtract two integers (with and without the use of a number line)	3.3, 3.4, 3.5
7.N.14	Develop a conceptual understanding of negative and zero exponents with a base of ten and relate to fractions and decimals (e.g., $10^{-2} = .01 = 1/100$ )	10.2
7.N.15	Recognize and state the value of the square root of a perfect square (up to 225)	10.5
7.N.16	Determine the square root of non-perfect squares using a calculator	10.5
7.N.17	Classify irrational numbers as non-repeating/non-terminating decimals	10.5
<b>Students will compute accurately and make reasonable estimates.</b>		
<i>Estimation</i>		
7.N.18	Identify the two consecutive whole numbers between which the square root of a non-perfect square whole number less than 225 lies (with and without the use of a number line)	10.5
7.N.19	Justify the reasonableness of answers using estimation	1.5, 1.7

<b>Algebra Strand</b>		
<b>Students will represent and analyze algebraically a wide variety of problem solving situations.</b>		
<i>Variables and Expressions</i>		
7.A.1	Translate two-step verbal expressions into algebraic expressions	1.3
<b>Students will perform algebraic procedures accurately.</b>		
<i>Variables and Expressions</i>		
7.A.2	Add and subtract monomials with exponents of one	4.4
7.A.3	Identify a polynomial as an algebraic expression containing one or more terms	Not covered
7.A.4	Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation	4.3, 4.5
7.A.5	Solve one-step inequalities (positive coefficients only) (See 7.G.10)	5.7, 5.8
7.A.6	Evaluate formulas for given input values (surface area, rate, and density problems)	4.6
<b>Students will recognize, use, and represent algebraically patterns, relations, and functions.</b>		
<i>Patterns, Relations and Functions</i>		
7.A.7	Draw the graphic representation of a pattern from an equation or from a table of data	8.2, 8.3, 8.4, 8.5
7.A.8	Create algebraic patterns using charts/tables, graphs, equations, and expressions	8.2, 8.3, 8.4, 8.7
7.A.9	Build a pattern to develop a rule for determining the sum of the interior angles of polygons	9.4
7.A.10	Write an equation to represent a function from a table of values	8.7

<b>Geometry Strand</b>		
<b><i>Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.</i></b>		
<i>Shapes</i>		
7.G.1	Calculate the radius or diameter, given the circumference or area of a circle	8.Lab 1
7.G.2	Calculate the volume of prisms and cylinders, using a given formula and a calculator	12.4
7.G.3	Identify the two-dimensional shapes that make up the faces and bases of three-dimensional shapes (prisms, cylinders, cones, and pyramids)	12.1, 12.2, 12.3, 12.5
7.G.4	Determine the surface area of prisms and cylinders, using a calculator and a variety of methods	12.2, 12.3
<b><i>Students will identify and justify geometric relationships, formally and informally.</i></b>		
<i>Geometric Relationships</i>		
7.G.5	Identify the right angle, hypotenuse, and legs of a right triangle	10.6
7.G.6	Explore the relationship between the lengths of the three sides of a right triangle to develop the Pythagorean Theorem	10.6
7.G.7	Find a missing angle when given angles of a quadrilateral	9.4
7.G.8	Use the Pythagorean Theorem to determine the unknown length of a side of a right triangle	10.6
7.G.9	Determine whether a given triangle is a right triangle by applying the Pythagorean Theorem and using a calculator	10.6
<b><i>Students will apply coordinate geometry to analyze problem solving situations.</i></b>		
<i>Coordinate Geometry</i>		
7.G.10	Graph the solution set of an inequality (positive coefficients only) on a number line (See 7.A.5)	5.7, 5.8

<b>Measurement Strand</b>		
<b>Students will determine what can be measured and how, using appropriate methods and formulas.</b>		
<i>Units of Measurement</i>		
7.M.1	Calculate distance using a map scale	11.4
7.M.2	Convert capacities and volumes within a given system	6.2
7.M.3	Identify customary and metric units of mass	Not covered
7.M.4	Convert mass within a given system	6.2
7.M.5	Calculate unit price using proportions	6.1, 6.2, 6.3
7.M.6	Compare unit prices	6.2
7.M.7	Convert money between different currencies with the use of an exchange rate table and a calculator	6.3
7.M.8	Draw central angles in a given circle using a protractor (circle graphs)	Not covered
<i>Tools and Methods</i>		
7.M.9	Determine the tool and technique to measure with an appropriate level of precision: mass	Not covered
<b>Students will develop strategies for estimating measurements.</b>		
<i>Estimation</i>		
7.M.10	Identify the relationships between relative error and magnitude when dealing with large numbers (e.g., money, population)	Not covered
7.M.11	Estimate surface area	12.2, 12.3
7.M.12	Determine personal references for customary /metric units of mass	Not covered
7.M.13	Justify the reasonableness of the mass of an object	Not covered

<b>Statistics and Probability Strand</b>		
<b>Students will collect, organize, display, and analyze data.</b>		
<i>Collection of Data</i>		
7.S.1	Identify and collect data using a variety of methods	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7
<i>Organization and Display of Data</i>		
7.S.2	Display data in a circle graph	Not covered
7.S.3	Convert raw data into double bar graphs and double line graphs	Not covered
<i>Analysis of Data</i>		
7.S.4	Calculate the range for a given set of data	2.2
7.S.5	Select the appropriate measure of central tendency	2.1
7.S.6	Read and interpret data represented graphically (pictograph, bar graph, histogram, line graph, double line/bar graphs or circle graph)	2.2, 2.3, 2.4, 2.5, 2.6
<b>Students will make predictions that are based upon data analysis.</b>		
<i>Predictions from Data</i>		
7.S.7	Identify and explain misleading statistics and graphs	2.7
<b>Students will understand and apply concepts of probability.</b>		
<i>Probability</i>		
7.S.8	Interpret data to provide the basis for predictions and to establish experimental probabilities	6.7
7.S.9	Determine the validity of sampling methods to predict outcomes	6.8
7.S.10	Predict the outcome of an experiment	6.4, 6.5, 6.6
7.S.11	Design and conduct an experiment to test predictions	6.7
7.S.12	Compare actual results to predicted results	6.7