Alignment of the Iowa Tests Core Content Standards and Benchmarks with National Standards

Core Content Standards and 10-12 Benchmarks Corresponding to the Iowa Tests	NAEP Grade 12 Achievement Level Descriptions	American Diploma Project (Achieve, Inc.) Benchmarks	ACT College Readiness Standards
Reading			
Students can understand stated information they have read.	• Demonstrate an overall understanding of the text. • Demonstrate responses that are thorough, thoughtful and extensive. • Explain the purpose of an article and give the topic of a passage.	• Identify the main ideas of informational text and determine the essential elements that elaborate them. • Demonstrate knowledge of 18th and 19th century foundational works of American literature. • Analyze the ways in which a text's organizational structure supports or confounds its meaning or purpose. • Gather relevant information from a variety of print and electronic sources.	• Recognize a clear intent of an author or narrator in uncomplicated literary narratives. • Locate basic facts (e.g., names, dates, events) clearly stated in a passage. • Determine when (e.g., first, last, before, after) or if an event occurred in uncomplicated passages. • Identify a clear main idea or purpose of straightforward paragraphs in uncomplicated literary narratives. • Locate important details in uncomplicated passages. • Order simple sequences of events in uncomplicated literary narratives. • Identify a clear main idea or purpose of any paragraph or paragraphs in uncomplicated passages. • Summarize basic events and ideas in more challenging passages. • Locate important details in more challenging passages. • Identify clear main ideas or purposes of complex passages or their paragraphs. • Locate and interpret details in complex passages.
Students can determine the literal meaning of specific words.	• Explore events, characters, themes, settings, plot, actions, and the language of literary works by reading novels, short stories, poems, plays, legends, biographies, myths and folktales. • Apply reading for specific information in order to perform a task and accomplish or do something.	• Follow instructions in informational or technical texts to perform specific tasks, answer questions or solve problems. • Use context to determine the meaning of unfamiliar words. • Use roots, affixes, cognates to determine the meaning of unfamiliar words. • Comprehend and communicate quantitative, technical and mathematical information.	• Understand the implication of a familiar word or phrase and of simple descriptive language. • Locate simple details at the sentence and paragraph level in uncomplicated passages.

Students can draw conclusions, make inferences, and deduce meaning.	• Demonstrate an overall understanding of the text, which includes inferential as well as literal understanding. • Make reader/text connections requiring thinking beyond the text, and applying the text to real world situations.	• Distinguish among facts and opinions, evidence and inferences. • Distinguish between a summary and a critique. • Identify interrelationships between and among ideas and concepts within a text, such as cause and effect relationships. • Draw conclusions based on evidence from informational and technical texts. • Make distinctions about the credibility, reliability, consistency, strengths and limitations of resources, including information gathered on Web sites. • Analyze foundational U.S, documents for their historical and literary significance (for example, the Declaration of Independence, the Preamble to the Constitution, Abraham Lincoln's "Gettysburg Address," Martin Luther King's "Letter from Birmingham Jail." • Analyze works of literature for what they suggest about the historical period in which they were written. • Interpret significant works from various forms of literature: poetry, novel, biography, short story, essay, and dramatic literature; use understanding of genre characteristics to make deeper and subtler interpretations of the meaning of the text.	• Draw simple generalizations and conclusions about the main characters in uncomplicated literary narratives. • Recognize a clear function of a part of an uncomplicated passage. • Use context to understand basic figurative language. • Draw simple generalizations and conclusions about people, ideas in uncomplicated passages. • Infer the main idea or purpose of straightforward paragraphs in uncomplicated literary narratives. • Make simple inferences about how details are used in passages. • Draw generalizations and conclusions about people, ideas in uncomplicated passages. • Draw simple generalizations and conclusions using details that support the main points of more challenging passages. • Discern which details, though they may appear in different sections throughout a passage, support important points in more challenging passages. • Infer the main idea or purpose of more challenging passages or their paragraphs. • Use details from different sections of some complex informational passages to support a specific point or argument. • Understand the function of a part of a passage when the function is subtle or complex.
Students can infer traits, feelings, and motives of characters and individuals.	• Extend the ideas of the text by making inferences. • Describe abstract themes and ideas in the overall text. • Link information across part of texts as well as focus on specific information.	• Analyze the moral dilemmas in works of literature, as revealed by characters' motivation and behavior. • Analyze the setting, plot, theme, characterization and narration of classic and contemporary short stories and novels.	• Identify relationships between main characters in uncomplicated literary narratives. • Identify clear relationships between people, ideas in uncomplicated passages. • Understand relationships between people, ideas in uncomplicated passages. • Identify clear relationships between characters, ideas, in more challenging

			literary narratives.
			• Understand the dynamics between people, ideas, and so on in more challenging passages.
			• Understand the subtleties in relationships between people, ideas in virtually any passage.
Students can make predictions based on stated information.	• Extend the information from the text by relating it to the reader's experiences, knowledge and to the world. • Evaluate text, applying knowledge gained from other texts.	• Identify and explain the themes found in a single literary work and analyze the ways in which similar themes and ideas are developed in more than one literary work. • Interpret and use information in maps, charts, graphs, timelines, tables, and diagrams. • Summarize informational and technical texts and explain the visual components within the text that support the information.	• Recognize clear cause-effect relationships described within a single sentence in a passage. • Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives. • Identify clear cause-effect relationships in uncomplicated passages. • Order sequence of events in uncomplicated passages. • Identify clear cause-effect relationships in more complicated passages. • Use context to determine the appropriate meaning of virtually every word, phrase, or statement in an uncomplicated passage. • Summarize events and ideas in virtually any passage. • Locate and interpret minor or subtly stated details in more challenging passages. • Order sequence of events in more challenging passages. • Understand subtly stated cause-effect relationships in more challenging passages. • Order sequences of events in complex passages. • Understand implied, subtle, or complex cause-effect relationships in virtually any passage. • Determine, even when the language is richly figurative and the vocabulary is difficult, the appropriate meaning of context-dependent words, phrases, or statements in virtually any passage.
Students can interpret nonliteral language used in a text.	• Make connections between inferences and implicit understandings.	• Recognize the use or abuse of ambiguity, contradiction, paradox, irony, incongruities,	• Use context to determine the appropriate meaning of some figurative and nonfigurative

	• Understand the effect of such features as irony, metaphor and analogy.	overstatement and understatement text and explain their effect on the reader. • Demonstrate knowledge of metrics, rhyme scheme, rhythm, alliteration and other conventions of verse in poetry and how these enhance meaning. • Identify how elements of dramatic literature (dramatic irony, soliloquy, stage direction and dialogue) articulate a playwright's vision.	words, phrases, and statements in uncomplicated passages. • Locate and interpret minor or subtly stated details in uncomplicated passages. • Use context to determine the appropriate meaning of some figurative and nonfigurative words, phrases, and statements in more challenging passages. • Determine the appropriate meaning of words, phrases, or statements from figurative or somewhat technical contexts. • Determine even when the language is richly figurative and the vocabulary is difficult, the appropriate meaning of context-dependent words, phrases, or statements in virtually any passage. • Understand the function of a passage when the function is subtle or complex.
Students can determine the main idea, topic, or theme and make generalizations.	• Draw conclusions and make connections to their own personal experiences and other texts. • Form a global understanding of the text as a whole. • Synthesize the reading and analyze the details. • Reflect on the theme.	• Synthesize information from multiple informational and technical sources. • Evaluate informational and technical texts for their clarity, simplicity and coherence. • Draw conclusions based on evidence from informational and technical texts. • Identify and explain the themes found in a single literary work; analyze the ways in which similar themes and ideas are developed in more than one literary work.	• Infer the main idea or purpose of straightforward paragraphs in more challenging passages. • Draw subtle generalizations and conclusions about characters, ideas in uncomplicated literary narratives. • Draw generalizations and conclusions about people, ideas in more challenging passages. • Use information from one or more sections of a more challenging passage to draw generalizations and conclusions about people, ideas. • Draw complex or subtle generalizations and conclusions about people, ideas , often by synthesizing information from different portions of the passage. • Understand and generalize about portions of a complex literary narrative.
Students can identify the author's views or purposes.	• Develop an understanding of the author's purpose, points of view, and extend initial impressions to a more complete understanding of what was read. • Consider the text objectively, evaluating its quality and appropriateness.	• Distinguish among facts and opinions, evidence and inferences. • Identify false premises. • Evaluate the range and quality of evidence used to support or oppose an argument. • Analyze written communication for false	• Understand the overall approach taken by an author or narrator (e.g., Point of view, kinds of evidence used) in uncomplicated passages. • Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in more challenging passages.

	• Identify the relationship between the author's stance and elements of the text. • Evaluate the usefulness of the text and apply directions from the text to new situations.	assumptions, errors, loaded terms, caricature, sarcasm, leading questions and faulty reasoning. • Analyze two or more texts addressing the same topic to determine how authors reach similar or different conclusions. • Understand the distinctions between a deductive argument (where if the premises are all true and the argument's form is valid, the conclusions is inescapably true) and the inductive argument (in which the conclusions provides the best or most probable explanation of the truth of the premises, but is not necessarily true.)	• Understand the overall approach taken by an author or narrator (e.g., point of view, kinds of evidence used) in virtually any passage. • Identify clear main ideas or purposes of complex passages or their paragraphs. • Locate and interpret details in complex passages. • Understand the function of a part of a passage when the function is subtle or complex. • Draw complex or subtle generalizations and conclusions about people, ideas often by synthesizing information from different portions of the passage.
Students can distinguish among facts, opinions, and assumptions.	• Critically evaluate, comparing and contrasting the content and structure of text. • Analyze the meaning of the text and support the analysis with specific examples from text. • Read to gain information to understand the aspects of the world from newspapers, magazines, texts, essays, and speeches. • Apply information to new situations and to the process of forming new responses to problems or issues.	• Identify the meaning of common idioms as well as literary, classical and biblical allusions. • Recognizes nuances in the meanings of words. • Recognize common logical fallacies, such as appeal for pity, the appeal to common opinion, and understand why these fallacies do not prove the point being argued.	• Make simple inferences about how details are used in passages. • Draw simple generalizations and conclusions using details that support the main points of more challenging passages. • Understand implied or subtly stated cause-effect relationships in uncomplicated passages. • Draw subtle generalizations and conclusions about people, ideas in more challenging passages. • Understand relationships between people and ideas in uncomplicated passages. • Locate and interpret minor or subtly stated details in uncomplicated passages. • Understand implied or subtly stated cause-effect relationships in more challenging passages. • Understand the overall approach, point of view taken by an author in virtually any passage. • Understand implied, subtle, or complex cause-effect relationship in virtually any passage. • Understand the subtleties in relationships between people and ideas in virtually any passage.

Students can recognize aspects of a passage's style and structure and can recognize literary techniques.	• Analyze the author's use of literary devices. • Analyze the form of the text. • Examine the content and structure and consider why and how the text was developed, considering the content, organization and form.	• Analyze the ways in which a text's organizational structure supports or confounds its meaning or purpose. • Demonstrate knowledge of metrics, rhyme scheme, rhythm, alliteration and other conventions of verse in poetry. • Identify how elements of dramatic literature (for example, dramatic irony, soliloquy, stage direction, and dialogue) articulate a playwright's vision. • Use understanding of genre characteristics to make deeper and subtler interpretations of the meaning of the text. • Define the structure of an argument in text; identify its claims and evidence; evaluate connections among the evidence, inference and claims.	• Determine when first, last, before, after of an event occurred in uncomplicated passages. • Recognize cause-effect relationships described within a single sentence in a passage. • Recognize clear cause-effect relationships within a single paragraph in uncomplicated literary narratives. • Order simple sequences of events in uncomplicated literary narratives. • Identify clear cause-effect relationships in uncomplicated passages. • Order sequence of events in uncomplicated passages. • Identify clear cause-effect relationships in more challenging passages. • Order sequence of events in more challenging passages. • Order sequence of events in complex passages. • Understand implied, subtle, or complex cause-effect relationships in virtually any passage.

Mathematics

• Students can understand and apply number properties and operations. • Students can understand and apply concepts and procedures of standard rounding, order of magnitude, and number sense.	• Recognize relationships presented in verbal, algebraic, tabular, and graphical forms. • Understand and use elements of the function concept in symbolic, graphical, and tabular form. • Use estimation to verify solutions and determine the reasonableness of results as applied to real-world problems. • Formulate generalizations and create models through probing examples and counterexamples.	• Compute with rational numbers fluently and accurately without a calculator. • Recognize and apply magnitude (absolute value) and ordering of real numbers. • Understand that to solve certain problems and equations, number systems need to be extended from whole numbers to the set of all integers (positive, negative and zero), from integers to rational numbers, from rational numbers to real numbers (rational and irrational numbers) and from real numbers to complex numbers; define and give examples of each of these types of numbers. • Understand the capabilities and the limitations of calculators and computers in solving problems.	• Perform one-operation computation with whole numbers and decimals. • Perform common conversions (e.g., inches to feet or hours to minutes). • Calculate the average of a list of positive whole numbers. • Perform a single computation using information from a table or chart. • Recognize equivalent fractions and fractions in lowest terms. • Recognize one-digit factors of a number. • Identify a digit's place value. • Substitute whole numbers for unknown quantities to evaluate expressions. • Exhibit knowledge of elementary number concepts including rounding, the order of decimals, pattern identification, absolute value,

			primes, and greatest common factor.
			• Find and use the least common multiple.
			• Order fractions.
			• Work with numerical factors.
			• Work with scientific notation.
			• Work with squares and square roots of numbers.
			• Work problems involving positive integer exponents.
			• Work with cubes and cube roots of numbers.
			• Apply number properties involving prime factorization.
			• Apply number properties involving even/odd numbers and factors/multiples.
			• Apply number properties involving positive/negative numbers.
			• Apply rules of exponents.
			• Multiply two complex numbers.
			• Apply properties of complex numbers.
			• Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent.
			• Solve some routine two-step arithmetic problems.
			• Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average.
			• Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour).
			• Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts form pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings).
			• Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers.
			• Analyze and draw conclusions based on

			information from figures, tables, and graphs.
• Students can understand and apply concepts and procedures of algebra.	• Recognize relationships presented in verbal, algebraic, tabular, and graphical forms. • Generalize from patterns and examples in the areas of algebra, geometry, and statistics. • Understand the function concept, and be able to compare and apply the numeric, algebraic, and graphical properties of functions. • Understand and use elements of the function concept in symbolic, graphical, and tabular form. • Make conjectures, defend ideas, and give supporting examples. • Apply their knowledge of algebra, geometry, and statistics to solve problems in more advanced areas of continuous and discrete mathematics. • Formulate generalizations and create models through probing examples and counterexamples.	• Perform basic operations on algebraic expressions fluently and accurately. • Understand functions, their representations and their properties. • Apply basic algebraic operations to solve equations and inequalities. • Graph a variety of equations and inequalities in two variables, demonstrate understanding of the relationships between the algebraic properties of an equation and the geometric properties of its graph, and interpret a graph. • Solve problems by converting the verbal information given into an appropriate mathematical model involving equations or systems of equations; apply appropriate mathematical techniques to analyze these mathematical models; and interpret the solution obtained in written form using appropriate units of measurement. • Understand the binomial theorem and its connections to combinatorics, Pascal's triangle and probability.	• Exhibit knowledge of basic expressions (e.g., identify an expression for a total as b + g). • Solve equations in the form x + a = b, where a and b are whole numbers or decimals. • Combine like terms (e.g., 2x + 5x). • Evaluate algebraic expressions by substituting integers for unknown quantities. • Add and subtract simple algebraic expressions. • Solve routine first-degree equations. • Perform straightforward word-to-symbol translations. • Multiply two binomials. • Exhibit knowledge of slope. • Evaluate quadratic functions, expressed in function notation, at integer values. • Determine when an expression is undefined. • Exhibit some knowledge of the complex numbers. • Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions). • Identify solutions to simple quadratic equations. • Add, subtract, and multiply polynomials. • Factor simple quadratics (e.g., the difference of squares and perfect square trinomials). • Identify the graph of a linear inequality on the number line. • Determine the slope of a line from points or equations. • Match linear graphs with their equations. • Evaluate polynomial functions, expressed in function notation, at integer values. • Manipulate expressions and equations. • Write expressions, equations, and inequalities for common algebra settings. • Find solutions to systems of linear equations. • Interpret and use information from graphs in

			coordinate plane.
			• Match number line graphs with solution sets of linear inequalities.
			• Evaluate composite functions at integer values.
			• Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers.
			• Exhibit knowledge of logarithms and geometric sequences.
			• Write expressions that require planning and/or manipulating to accurately model a situation.
			• Write equations and inequalities that require planning, manipulating, and/or solving.
			• Match number line graphs with solution sets of simple quadratic inequalities.
			• Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$.
			• Write and expression for the composite of two simple functions.
			• Solve problems in one or two steps using whole numbers.
			• Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals.
			• Solve one-step equations having integer or decimal answers.
			• Solve routine first-degree equations.
			• Solve real-world problems using first-degree equations.
			• Solve first-degree inequalities that do not require reversing the inequality sign.
			• Solve word problems containing several rates, proportions, or percentages.
			• Solve linear inequalities that require reversing the inequality sign.
			• Solve absolute value equations.
			• Solve quadratic equations.
			• Solve simple absolute value inequalities.
			• Solve problems integrating multiple algebraic and/or geometric concepts.
			• Analyze and draw conclusions based on

			information from figures, tables, and graphs.
• Students can understand and apply concepts of geometry and measurement.	• Demonstrate knowledge of geometric relationships and corresponding measurement skills. • Generalize from patterns and examples in the areas of algebra, geometry, and statistics. • Make conjectures, defend ideas, and give supporting examples. • Apply their knowledge of algebra, geometry, and statistics to solve problems in more advanced areas of continuous and discrete mathematics. • Formulate generalizations and create models through probing examples and counterexamples.	• Understand the different roles played by axioms, definitions and theorems in the logical structure of mathematics, especially in geometry. • Identify and apply the definitions related to lines and angles and use them to prove theorems in (Euclidean) geometry, solve problems, and perform basic geometric constructions using a straight edge and compass. • Know the basic theorems about congruent and similar triangles and use them to prove additional theorems and solve problems. • Know the definitions and basic properties of a circle and use them to prove basic theorems and solve problems. • Apply the Pythagorean theorem, its converse and properties of special right triangles to solve problems. • Use rigid motions (compositions of reflections, translations and rotations) to determine whether two geometric figures are congruent and to create and analyze geometric designs. • Know about the similarity of figures and use the scale factor to solve problems. • Know that geometric measurements (length, area, perimeter, volume) depend on the choice of a unit and that measurements made on physical objects are approximations; calculate the measurements of common plane and solid geometric figures. • Visualize solids and surfaces in three-dimensional space when given two-dimensional representations (e.g., nets, multiple views) and create two-dimensional representations for the surfaces of three-dimensional objects. • Represent geometric objects and figures algebraically using coordinates; use algebra to solve geometric problems. • Understand basic right-triangle trigonometry and apply it to solve problems.	• Identify the location of a point with a positive coordinate on the number line. • Locate points on the number line and in the first quadrant. • Exhibit some knowledge of the angles associated with parallel lines. • Compute the perimeter of polygons when all side lengths are given. • Compute the area of rectangles when whole number dimensions are given. • Locate points in the coordinate plane. • Comprehend the concept of length on the number line. • Exhibit knowledge of slope. • Find the measure of an angle using properties of parallel lines. • Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°). • Compute the area and perimeter of triangles and rectangles in simple problems. • Use geometric formulas when all necessary information is given. • Find the midpoint of a line segment. • Use several angle properties to find an unknown angle measure. • Recognize Pythagorean triples. • Use properties of isosceles triangles. • Compute the area of triangles and rectangles when one or more additional simple steps are required. • Compute the area and circumference of circles after identifying necessary information. • Compute the perimeter of simple composite geometric figures with unknown side lengths. • Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths. • Interpret and use information from graphs in coordinate plane.

		• Know how the trigonometric functions can be extended to periodic functions on the real line, derive basic formulas involving these functions, and use these functions and formulas to solve problems.	• Use the distance formula. • Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point. • Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center of radius of a circle). • Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles. • Use the Pythagorean theorem. • Use relationships involving area, perimeter, and volume of geometric figures to compute another measure. • Apply basic trigonometric ratios to solve right triangle problems. • Distinguish between mean, median, and mode for a list of numbers. • Analyze and draw conclusions based on information from figures, tables, and graphs. • Exhibit knowledge of conditional and joint probability. • Analyze and draw conclusions based on information from graphs in the coordinate plane. • Draw conclusions based on a set of conditions. • Use relationships among angles, arcs, and distances in a circle. • Use scale factors to determine the magnitude of a size change. • Compute the area of composite geometric figures when planning or visualization is required. • Exhibit knowledge of unit circle trigonometry. • Match graphs of basic trigonometric functions with their equations. • Estimate or calculate the length of a line segment based on other lengths given a geometric figure. • Solve problems integrating multiple algebraic and/or geometric concepts. • Solve multistep geometry problems that involve integrating concepts, planning, visualization,

			• and/or making connections with other content areas. • Use trigonometric concepts and basic identities to solve problems. • Analyze and draw conclusions based on information from figures, tables, and graphs.
• Students can understand and apply concepts in probability and statistics. • Students can make inferences based on data presented in a variety of ways. • Students can interpret data from a variety of sources.	• Generalize from patterns and examples in the areas of algebra, geometry, and statistics. • Apply their knowledge of algebra, geometry, and statistics to solve problems in more advanced areas of continuous and discrete mathematics. • Formulate generalizations and create models through probing examples and counterexamples. • Apply statistical reasoning in the organization and display of data and in reading tables and graphs. • Analyze and interpret data in tabular and graphical form.	• Explain and apply quantitative information: • Explain and critique alternative ways of presenting and using information. • Explain the use of data and statistical thinking to draw inferences, make predictions and justify conclusions. • Explain and apply probability concepts and calculate simple probabilities.	• Calculate the average of a list of numbers. • Calculate the average, given the number of data values and the sum of the data values. • Read tables and graphs. • Perform computations on data from tables and graphs. • Use the relationships between the probability of an event and the probability of its complement. • Calculate the missing data value, given the average and all data values but one. • Translate one representation of data to another (e.g., a bar graph to a circle graph). • Determine the probability of a simple event. • Exhibit knowledge of simple counting techniques. • Calculate the average, given the frequency counts of all the data values. • Manipulate data from tables and graphs. • Compute straightforward probabilities for common situations. • Use Venn diagrams in counting. • Calculate or use a weighted average. • Interpret and use information from figures, tables, and graphs. • Apply counting techniques. • Compute a probability when the event and/or sample space are not given or obvious. • Analyze and draw conclusions based on information from figures, tables, and graphs.
• Students can solve math problems requiring multiple steps and operations. • Students can reason quantitatively.	• Apply their knowledge of algebra, geometry, and statistics to solve problems in more advanced areas of continuous and discrete mathematics. • Use correct mathematical language and	• Understand that to solve certain problems and equations, number systems need to be extended from whole numbers to the set of all integers (positive, negative and zero), from integers to rational numbers, from rational	• Solve problems in one or two steps using whole numbers. • Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent.

	symbols to communicate mathematical relationships and reasoning processes, and use calculators appropriately to solve problems. Make conjectures, defend ideas, and give supporting examples. • Perform algebraic operations involving polynomials, justify geometric relationships, and judge and defend the reasonableness of answers as applied to real-world situations. • Communicate their mathematical reasoning through the clear, concise, and correct use of mathematical symbolism and logical thinking. • Formulate generalizations and create models through probing examples and counterexamples.	numbers to real numbers (rational and irrational numbers) and from real numbers to complex numbers; define and give examples of each of these types of numbers. • Understand the capabilities and the limitations of calculators and computers in solving problems. • Apply basic algebraic operations to solve equations and inequalities. • Solve problems by converting the verbal information given into an appropriate mathematical model involving equations or systems of equations; apply appropriate mathematical techniques to analyze these mathematical models; and interpret the solution obtained in written form using appropriate units of measurement. • Know the basic theorems about congruent and similar triangles and use them to prove additional theorems and solve problems. • Know the definitions and basic properties of a circle and use them to prove basic theorems and solve problems. • Apply the Pythagorean theorem, its converse and properties of special right triangles to solve problems. • Know about the similarity of figures and use the scale factor to solve problems. • Represent geometric objects and figures algebraically using coordinates; use algebra to solve geometric problems. • Understand basic right-triangle trigonometry and apply it to solve problems. • Know how the trigonometric functions can be extended to periodic functions on the real line, derive basic formulas involving these functions, and use these functions and formulas to solve problems. • Explain and apply quantitative information. • Explain and critique alternative ways of presenting and using information.	• Solve some routine two-step arithmetic problems. • Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average.. • Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour). • Solve real-world problems using first-degree equations. • Solve word problems containing several rates, proportions, or percentages. • Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts form pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings). • Solve problems integrating multiple algebraic and/or geometric concepts. • Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas. • Use trigonometric concepts and basic identities to solve problems. • Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers. • Draw conclusions based on a set of conditions. • Analyze and draw conclusions based on information from figures, tables, and graphs.

Science

Students can understand and apply skills used in scientific inquiry. • Students can understand and apply the processes and skills of scientific literacy. • Students can analyze and interpret scientific information.	• Demonstrate the knowledge and reasoning abilities required for understanding of the Earth, physical, and life sciences. • Demonstrate knowledge of the themes of science (models, systems, patterns of change). • Demonstrate knowledge of the themes of science required for understanding how these themes illustrate essential relationships among the Earth, physical, and life science. • Analyze data and apply scientific principles to everyday situations.		• Understand a simple experimental design. • Understand basic scientific terminology. • Find basic information in a brief body of text. • Understand precision and accuracy issues. • Identify a control in an experiment. • Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models. • Determine whether given information supports or contradicts a simply hypothesis or conclusion, and why. • Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model. • Determine how the value of one variable changes as the value of another variable changes in a simple data presentation. • Identify key issues or assumptions in a model. • Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram)
Students can understand concepts and relationships in biological science. • Students can make inferences and predictions from data. • Students can analyze scientific investigations. • Students can analyze and evaluate the adequacy and accuracy of information.	• Demonstrate the knowledge and reasoning abilities required for understanding of the Earth, physical, and life sciences. • Demonstrate knowledge of the themes of science required for understanding how these themes illustrate essential relationships among the Earth, physical, and life science. • Analyze data and apply scientific principles to everyday situations. • Correlate structure to function for the parts of a system that they can identify. • Apply scientific concepts and principles to practical applications and solutions for problems in the real world and show developmental understanding or technology, its uses, and its applications.		• Understand a simple experimental design. • Understand basic scientific terminology. • Find basic information in a brief body of text. • Understand precision and accuracy issues. • Identify a control in an experiment. • Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models. • Determine whether given information supports or contradicts a simply hypothesis or conclusion, and why. • Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model. • Determine how the value of one variable changes as the value of another variable changes in a simple data presentation. • Identify key issues or assumptions in a

			• model.

Students can understand concepts and relationships of Earth/space sciences.
   • Students can make inferences and predictions from data.
   • Students can analyze scientific investigations.
   • Students can analyze and evaluate the adequacy and accuracy of information.
	• Demonstrate the knowledge and reasoning abilities required for understanding of the Earth, physical, and life sciences.
	• Demonstrate knowledge of the themes of science required for understanding how these themes illustrate essential relationships among the Earth, physical, and life science.
	• Recognize some inputs and outputs, causes and effects, and interactions of a system.
	• Apply scientific concepts and principles to practical applications and solutions for problems in the real world and show developmental understanding of technology, its uses, and its applications.
			• Understand a simple experimental design.
			• Understand basic scientific terminology.
			• Find basic information in a brief body of text.
			• Understand precision and accuracy issues.
			• Identify a control in an experiment.
			• Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models.
			• Determine whether given information supports or contradicts a simply hypothesis or conclusion, and why.
			• Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model.
			• Determine how the value of one variable changes as the value of another variable changes in a simple data presentation.
			• Identify key issues or assumptions in a model.

Students can understand concepts and relationships in physical science.
   • Students can make inferences and predictions from data.
   • Students can analyze scientific investigations.
   • Students can analyze and evaluate the adequacy and accuracy of information.
	• Demonstrate the knowledge and reasoning abilities required for understanding of the Earth, physical, and life sciences.
	• Demonstrate knowledge of the themes of science required for understanding how these themes illustrate essential relationships among the Earth, physical, and life science.
	• Analyze data and apply scientific principals to everyday situations.
	• Recognize some inputs and outputs, causes and effects, and interactions of a system.
	• Able to apply scientific concepts and principles to practical applications and solutions for problems in the real world and show developmental understanding of technology, its uses, and its applications.
			• Understand a simple experimental design.
			• Understand basic scientific terminology.
			• Find basic information in a brief body of text.
			• Understand precision and accuracy issues.
			• Identify a control in an experiment.
			• Select a simple hypothesis, prediction, or conclusion that is supported by two or more data presentations or models.
			• Determine whether given information supports or contradicts a simply hypothesis or conclusion, and why.
			• Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model.
			• Determine how the value of one variable changes as the value of another variable changes in a simple data presentation.
			• Identify key issues or assumptions in a model.

			• Select data from a complex data presentation (e.g., a table or graph with more than three variables; a phase diagram)