

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
<p><b>Number, Number Sense and Operations Standard</b>                      Students demonstrate number sense, including an understanding of number systems and operations and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.</p>	
<p><b>By the end of the 5-7 program:</b></p>	
<p>A. Represent and compare numbers less than 0 through familiar applications and extending the number line.</p>	<p>SE: pp. 4–11</p>
<p>B. Compare, order and convert among fractions, decimals and percents.</p>	<p>SE: pp. 61, 63–67, 68–71</p>
<p>C. Develop meaning for percents, including percents greater than 100 and less than 1.</p>	<p>SE: pp. 60–71</p>
<p>D. Use models and pictures to relate concepts of ratio, proportion and percent.</p>	<p>SE: pp. 40–43, 48–51, 60–71</p>
<p>E. Use order of operations, including use of parenthesis and exponents to solve multi-step problems, and verify and interpret the results.</p>	<p>SE: pp. 12–15</p>
<p>F. Apply number system properties when performing computations.</p>	<p>SE: pp. 4–39</p>
<p>G. Apply and explain the use of prime factorizations, common factors, and common multiples in problem situations.</p>	
<p>H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers.</p>	
<p>I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.</p>	<p>SE: pp. 12–13, 20, 24, 32–33, 36–38, 41, 49–51, 53, 56–57, 60–61, 63–74</p>

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
<b>Measurement Standard</b> Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.	
<b>By the end of the 5-7 program:</b>	
A. Select appropriate units to measure angles, circumference, surface area, mass and volume, using: <ul style="list-style-type: none"> <li>• U.S. customary units; e.g., degrees, square feet, pounds, and other units as appropriate;</li> <li>• metric units; e.g., square meters, kilograms and other units as appropriate.</li> </ul>	SE: pp. 52–59
B. Convert units of length, area, volume, mass and time within the same measurement system.	SE: pp. 52–59
C. Identify appropriate tools and apply appropriate techniques for measuring angles, perimeter or circumference and area of triangles, quadrilaterals, circles and composite shapes, and surface area and volume of prisms and cylinders.	
D. Select a tool and measure accurately to a specified level of precision.	
E. Use problem solving techniques and technology as needed to solve problems involving length, weight, perimeter, area, volume, time and temperature.	SE: pp. 52–59
F. Analyze and explain what happens to area and perimeter or surface area and volume when the dimensions of an object are changed.	
G. Understand and demonstrate the independence of perimeter and area for two-dimensional shapes and of surface area and volume for three-dimensional shapes.	

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
<p><b>Geometry and Spatial Sense Standard</b>                      Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two- and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects, and transformations to analyze mathematical situations and solve problems.</p>	
<p><b>By the end of the 5-7 program:</b></p>	
A. Identify and label angle parts and the regions defined within the plane where the angle resides.	
B. Draw circles, and identify and determine the relationships among the radius, diameter, center, and circumference.	
C. Specify locations and plot ordered pairs on a coordinate plane.	
D. Identify, describe and classify types of line pairs, angles, two-dimensional figures and three-dimensional objects using their properties.	
E. Use proportions to express relationships among corresponding parts of similar figures.	SE: pp. 48–51
F. Describe and use the concepts of congruence, similarity and symmetry to solve problems.	SE: pp. 52–55
G. Describe and use properties of triangles to solve problems involving angle measures and side lengths of right triangles.	SE: p. 55
H. Predict and describe results (size, position, orientation) of transformations of two-dimensional figures.	
I. Identify and draw three-dimensional objects from different views (top, side, front and perspective).	
J. Apply properties of equality and proportionality to solve problems involving congruent or similar figures; e.g., create a scale drawing.	SE: pp. 52–59

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
<b>Patterns, Functions and Algebra Standard</b> Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.	
A. Describe, extend and determine the rule for patterns and relationships occurring in numeric patterns, computation, geometry, graphs and other applications.	SE: pp. 72–75
B. Represent, analyze and generalize a variety of patterns and functions with tables, graphs, words and symbolic rules.	SE: pp. 72–75
C. Use variables to create and solve equations and inequalities representing problem situations.	SE: pp. 16–39
D. Use symbolic algebra to represent and explain mathematical relationships.	SE: pp. 16–39
E. Use rules and variables to describe patterns, functions and other relationships.	SE: pp. 16–39
F. Use representations, such as tables, graphs and equations, to model situations and to solve problems, especially those that involve linear relationships.	SE: pp. 60–63, 65, 71–75
G. Write, simplify and evaluate algebraic expressions.	SE: pp. 12–39
H. Solve linear equations and inequalities symbolically, graphically and numerically.	SE: pp. 20–39, 72–79
I. Explain how inverse operations are used to solve linear equations.	
J. Use formulas in problem-solving situations.	SE: pp. 40–41, 49, 52–53, 56–57, 60–61, 68–69, 73, 77
K. Graph linear equations and inequalities.	SE: pp. 76–79
L. Analyze functional relationships, and explain how a change in one quantity results in a change in the other.	SE: pp. 76–79

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M. Approximate and interpret rates of change from graphical and numerical data.	SE: pp. 44–47
<b>Data Analysis and Probability Standard</b> Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.	
A. Read, create and use line graphs, histograms, circle graphs, box-and-whisker plots, stem-and-leaf plots, and other representations when appropriate.	SE: pp. 76–79
B. Interpret data by looking for patterns and relationships, draw and justify conclusions, and answer related questions.	SE: pp. 76–79
C. Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.	SE: p. 78
D. Compare increasingly complex displays of data, such as multiple sets of data on the same graph.	
E. Collect, organize, display and interpret data for a specific purpose or need.	
F. Determine and use the range, mean, median and mode to analyze and compare data, and explain what each indicates about the data.	
G. Evaluate conjectures and predictions based upon data presented in tables and graphs, and identify misuses of statistical data and displays.	SE: pp. 72–75
H. Find all possible outcomes of simple experiments or problem situations, using methods such as lists, arrays and tree diagrams.	
I. Describe the probability of an event using ratios, including fractional notation.	SE: pp. 48–51
J. Compare experimental and theoretical results for a variety of simple experiments.	

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K. Make and justify predictions based on experimental and theoretical probabilities.	
<b>Mathematical Processes Standard</b> Students use mathematical processes and knowledge to solve problems. Students apply problem-solving and decision-making techniques, and communicate mathematical ideas.	
A. Clarify a problem-solving situation and identify potential solution processes; e.g., consider different strategies and approaches to a problem, restate problem from various perspectives.	SE: pp. 4–79
B. Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine problem situations.	SE: pp. 4–79
C. Use more than one strategy to solve a problem, and recognize there are advantages associated with various methods.	SE: pp. 4–79
D. Recognize whether an estimate or an exact solution is appropriate for a given problem situation.	
E. Use deductive thinking to construct informal arguments to support reasoning and to justify solutions to problems.	SE: pp. 6–7, 11, 15, 23, 26–27, 30–31, 34–35, 38–39, 43, 46–47, 50–51, 54–55, 58–59, 62–63, 66–67, 70–71, 74–75, 78
F. Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures.	SE: pp. 74–75
G. Relate mathematical ideas to one another and to other content areas; e.g., use area models for adding fractions, interpret graphs in reading, science and social studies.	
H. Use representations to organize and communicate mathematical thinking and problem situations.	

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I. Select, apply, and translate among mathematical representations to solve problems; e.g., representing a number as a fraction, decimal or percent as appropriate for a problem.	SE: pp. 60–63
J. Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.	
K. Recognize and use mathematical language and symbols when reading, writing and conversing with others.	

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<p><b>By the end of the 5-7 program:</b></p>	
A. Represent and compare numbers less than 0 through familiar applications and extending the number line.	
B. Compare, order and convert among fractions, decimals and percents.	SE: pp. 60–67
C. Develop meaning for percents, including percents greater than 100 and less than 1.	SE: pp. 60–67
D. Use models and pictures to relate concepts of ratio, proportion and percent.	SE: pp. 40–43, 48–51, 60–67
E. Use order of operations, including use of parenthesis and exponents to solve multi-step problems, and verify and interpret the results.	SE: pp. 8–11
F. Apply number system properties when performing computations.	SE: pp. 8–11
G. Apply and explain the use of prime factorizations, common factors, and common multiples in problem situations.	
H. Use and analyze the steps in standard and non-standard algorithms for computing with fractions, decimals and integers.	
I. Use a variety of strategies, including proportional reasoning, to estimate, compute, solve and explain solutions to problems involving integers, fractions, decimals and percents.	SE: pp. 20–31, 38–41, 44–46, 48–51, 60–67

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<p>B. Convert units of length, area, volume, mass and time within the same measurement system.</p>	SE: pp. 52–59
<p>C. Identify appropriate tools and apply appropriate techniques for measuring angles, perimeter or circumference and area of triangles, quadrilaterals, circles and composite shapes, and surface area and volume of prisms and cylinders.</p>	SE: pp. 52–59
<p>D. Select a tool and measure accurately to a specified level of precision.</p>	
<p>E. Use problem solving techniques and technology as needed to solve problems involving length, weight, perimeter, area, volume, time and temperature.</p>	SE: pp. 52–59
<p>F. Analyze and explain what happens to area and perimeter or surface area and volume when the dimensions of an object are changed.</p>	SE: pp. 8–11
<p>G. Understand and demonstrate the independence of perimeter and area for two-dimensional shapes and of surface area and volume for three-dimensional shapes.</p>	SE: pp. 8–11

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<p><b>By the end of the 5-7 program:</b></p>	
A. Identify and label angle parts and the regions defined within the plane where the angle resides.	
B. Draw circles, and identify and determine the relationships among the radius, diameter, center, and circumference.	
C. Specify locations and plot ordered pairs on a coordinate plane.	SE: p. 78
D. Identify, describe and classify types of line pairs, angles, two-dimensional figures and three-dimensional objects using their properties.	
E. Use proportions to express relationships among corresponding parts of similar figures.	SE: pp. 48–51
F. Describe and use the concepts of congruence, similarity and symmetry to solve problems.	SE: pp. 52–55
G. Describe and use properties of triangles to solve problems involving angle measures and side lengths of right triangles.	SE: pp. 52, 54–55
H. Predict and describe results (size, position, orientation) of transformations of two-dimensional figures.	
I. Identify and draw three-dimensional objects from different views (top, side, front and perspective).	
J. Apply properties of equality and proportionality to solve problems involving congruent or similar figures; e.g., create a scale drawing.	SE: pp. 52–59

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B. Represent, analyze and generalize a variety of patterns and functions with tables, graphs, words and symbolic rules.	SE: pp. 72–79
C. Use variables to create and solve equations and inequalities representing problem situations.	SE: pp. 12–15, 16–19, 20–39
D. Use symbolic algebra to represent and explain mathematical relationships.	SE: pp. 12–39
E. Use rules and variables to describe patterns, functions and other relationships.	SE: pp. 72–79
F. Use representations, such as tables, graphs and equations, to model situations and to solve problems, especially those that involve linear relationships.	SE: pp. 72–79
G. Write, simplify and evaluate algebraic expressions.	SE: pp. 12–39
H. Solve linear equations and inequalities symbolically, graphically and numerically.	SE: pp. 12–39
I. Explain how inverse operations are used to solve linear equations.	SE: pp. 28–31
J. Use formulas in problem-solving situations.	SE: pp. 44–47
K. Graph linear equations and inequalities.	
L. Analyze functional relationships, and explain how a change in one quantity results in a change in the other.	SE: pp. 72–79
M. Approximate and interpret rates of change from graphical and numerical data.	SE: pp. 44–47

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C. Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.	
D. Compare increasingly complex displays of data, such as multiple sets of data on the same graph.	
E. Collect, organize, display and interpret data for a specific purpose or need.	SE: pp. 72–79
F. Determine and use the range, mean, median and mode to analyze and compare data, and explain what each indicates about the data.	SE: pp. 36–39
G. Evaluate conjectures and predictions based upon data presented in tables and graphs, and identify misuses of statistical data and displays.	
H. Find all possible outcomes of simple experiments or problem situations, using methods such as lists, arrays and tree diagrams.	
I. Describe the probability of an event using ratios, including fractional notation.	SE: pp. 40–43
J. Compare experimental and theoretical results for a variety of simple experiments.	
K. Make and justify predictions based on experimental and theoretical probabilities.	

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A. Clarify a problem-solving situation and identify potential solution processes; e.g., consider different strategies and approaches to a problem, restate problem from various perspectives.	SE: pp. 4–79
B. Apply and adapt problem-solving strategies to solve a variety of problems, including unfamiliar and non-routine problem situations.	SE: pp. 4–79
C. Use more than one strategy to solve a problem, and recognize there are advantages associated with various methods.	
D. Recognize whether an estimate or an exact solution is appropriate for a given problem situation.	
E. Use deductive thinking to construct informal arguments to support reasoning and to justify solutions to problems.	SE: pp. 5–79
F. Use inductive thinking to generalize a pattern of observations for particular cases, make conjectures, and provide supporting arguments for conjectures.	SE: pp. 72–75
G. Relate mathematical ideas to one another and to other content areas; e.g., use area models for adding fractions, interpret graphs in reading, science and social studies.	
H. Use representations to organize and communicate mathematical thinking and problem situations.	SE: pp. 6, 8, 10–11, 14–15, 52–59, 68, 70, 77–79
I. Select, apply, and translate among mathematical representations to solve problems; e.g., representing a number as a fraction, decimal or percent as appropriate for a problem.	SE: pp. 60–67
J. Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.	
K. Recognize and use mathematical language and symbols when reading, writing and conversing with others.	

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<p><b>By the end of the 8-10 program:</b></p>	
A. Use scientific notation to express large numbers and numbers less than one.	
B. Identify subsets of the real number system.	
C. Apply properties of operations and the real number system, and justify when they hold for a set of numbers.	
D. Connect physical, verbal and symbolic representations of integers, rational numbers and irrational numbers.	SE: pp. 8–11
E. Compare, order and determine equivalent forms of real numbers.	
F. Explain the effects of operations on the magnitude of quantities.	
G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.	SE: pp. 4–79
H. Find the square root of perfect squares, and approximate the square root of non-perfect squares.	
I. Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.	SE: pp. 24–27
<p><b>Measurement Standard</b>                      Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Solve increasingly complex non-routine measurement problems and check for reasonableness of results.	

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B. Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.	
C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.	SE: pp. 28–31
D. Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.	SE: pp. 40, 42
E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.	SE: pp. 40–43
F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.	SE: pp. 6–10, 13–17, 21–22, 24, 26–27, 30–32, 34–35, 44–51, 67–68, 70–71, 76–79
<p><b>Geometry and Spatial Sense Standard</b>                      Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two- and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects, and transformations to analyze mathematical situations and solve problems.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Formally define geometric figures.	
B. Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence.	
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.	SE: pp. 40–43

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D. Use coordinate geometry to represent and examine the properties of geometric figures.	
E. Draw and construct representations of two- and three-dimensional geometric objects using a variety of tools, such as a straightedge, compass and technology.	
F. Represent and model transformations in a coordinate plane and describe the results.	
G. Prove or disprove conjectures and solve problems involving two and three-dimensional objects represented within a coordinate system.	
H. Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.	
I. Use right triangle trigonometric relationships to determine lengths and angle measures.	
<b>Patterns, Functions and Algebra Standard</b> Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.	
<b>By the end of the 8-10 program:</b>	
A. Generalize and explain patterns and sequences in order to find the next term and the $n$ th term.	SE: pp. 52–55
B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.	SE: pp. 64–71, 76–79
C. Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.	SE: pp. 68–79
D. Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.	SE: pp. 4–79

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E. Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.	SE: pp. 36–39, 64–67
F. Solve and graph linear equations and inequalities.	SE: pp. 64–71, 76–79
G. Solve quadratic equations with real roots by graphing, formula and factoring.	SE: pp. 72–75
H. Solve systems of linear equations involving two variables graphically and symbolically.	SE: pp. 64–67, 76–79
I. Model and solve problem situations involving direct and inverse variation.	
J. Describe and interpret rates of change from graphical and numerical data.	SE: pp. 36–39
<b>Data Analysis and Probability Standard</b> Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.	
<b>By the end of the 8-10 program:</b>	
A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatterplots, measures of center and variability.	SE: pp. 56–79
B. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose.	
C. Compare the characteristics of the mean, median and mode for a given set of data, and explain which measure of center best represents the data.	
D. Find, use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.	

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E. Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collection and analysis.	
F. Construct convincing arguments based on analysis of data and interpretation of graphs.	
G. Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.	
H. Use counting techniques, such as permutations and combinations, to determine the total number of options and possible outcomes.	
I. Design an experiment to test a theoretical probability, and record and explain results.	
J. Compute probabilities of compound events, independent events, and simple dependent events.	
K. Make predictions based on theoretical probabilities and experimental results.	
<b>Mathematical Processes Standard</b> Students use mathematical processes and knowledge to solve problems. Students apply problem-solving and decision-making techniques, and communicate mathematical ideas.	
<b>By the end of the 8-10 program:</b>	
A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem, choose method for obtaining this information, and set limits for acceptable solution.	SE: pp. 4–79
B. Apply mathematical knowledge and skills routinely in other content areas and practical situations.	

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C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the $x$ -intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.	SE: pp. 36–39
D. Apply reasoning processes and skills to construct logical verifications or counter-examples to test conjectures and to justify and defend algorithms and solutions.	SE: pp. 4–79
E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.	SE: pp. 4–79
F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.	SE: pp. 4–79
G. Write clearly and coherently about mathematical thinking and ideas.	SE: pp. 4–79
H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.	SE: pp. 4–79

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A. Use scientific notation to express large numbers and numbers less than one.	
B. Identify subsets of the real number system.	
C. Apply properties of operations and the real number system, and justify when they hold for a set of numbers.	
D. Connect physical, verbal and symbolic representations of integers, rational numbers and irrational numbers.	
E. Compare, order and determine equivalent forms of real numbers.	
F. Explain the effects of operations on the magnitude of quantities.	
G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.	SE: pp. 4–79
H. Find the square root of perfect squares, and approximate the square root of non-perfect squares.	SE: pp. 60–63, 68–71
I. Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.	SE: pp. 60–63, 68–71
<p><b>Measurement Standard</b>                      Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Solve increasingly complex non-routine measurement problems and check for reasonableness of results.	

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B. Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.	
C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.	
D. Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.	
E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.	
F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.	SE: pp. 4, 6–7, 11–12, 14–15, 20, 22, 24, 27, 30, 33–35, 38–39, 48, 50, 53–55, 58–59, 72, 77, 79
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B. Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence.	
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.	

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D. Use coordinate geometry to represent and examine the properties of geometric figures.	
E. Draw and construct representations of two- and three-dimensional geometric objects using a variety of tools, such as a straightedge, compass and technology.	
F. Represent and model transformations in a coordinate plane and describe the results.	
G. Prove or disprove conjectures and solve problems involving two and three-dimensional objects represented within a coordinate system.	
H. Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.	
I. Use right triangle trigonometric relationships to determine lengths and angle measures.	
<b>Patterns, Functions and Algebra Standard</b> Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.	
<b>By the end of the 8-10 program:</b>	
A. Generalize and explain patterns and sequences in order to find the next term and the $n$ th term.	
B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.	SE: pp. 24–27, 32–35, 48–59
C. Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.	SE: pp. 24–27, 36–43, 48–51, 64–67
D. Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.	SE: pp. 4–79

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
E. Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.	SE: pp. 40–43, 64–67
F. Solve and graph linear equations and inequalities.	SE: pp. 20–27, 32–35, 48–59
G. Solve quadratic equations with real roots by graphing, formula and factoring.	SE: pp. 60–67
H. Solve systems of linear equations involving two variables graphically and symbolically.	SE: pp. 24–27, 32–35, 52–55
I. Model and solve problem situations involving direct and inverse variation.	SE: pp. 72–75
J. Describe and interpret rates of change from graphical and numerical data.	
<p><b>Data Analysis and Probability Standard</b>                      Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatterplots, measures of center and variability.	SE: pp. 24–51, 56–59, 64–67, 71
B. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose.	
C. Compare the characteristics of the mean, median and mode for a given set of data, and explain which measure of center best represents the data.	
D. Find, use and interpret measures of center and spread, such as mean and quartiles, and use those measures to compare and draw conclusions about sets of data.	

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
E. Evaluate the validity of claims and predictions that are based on data by examining the appropriateness of the data collection and analysis.	
F. Construct convincing arguments based on analysis of data and interpretation of graphs.	
G. Describe sampling methods and analyze the effects of method chosen on how well the resulting sample represents the population.	
H. Use counting techniques, such as permutations and combinations, to determine the total number of options and possible outcomes.	
I. Design an experiment to test a theoretical probability, and record and explain results.	
J. Compute probabilities of compound events, independent events, and simple dependent events.	
K. Make predictions based on theoretical probabilities and experimental results.	
<b>Mathematical Processes Standard</b> Students use mathematical processes and knowledge to solve problems. Students apply problem-solving and decision-making techniques, and communicate mathematical ideas.	
<b>By the end of the 8-10 program:</b>	
A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem, choose method for obtaining this information, and set limits for acceptable solution.	
B. Apply mathematical knowledge and skills routinely in other content areas and practical situations.	

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept; e.g., zero of a function and the $x$ -intercept of the graph of the function, apply proportional thinking when measuring, describing functions, and comparing probabilities.	SE: pp. 24–27
D. Apply reasoning processes and skills to construct logical verifications or counter-examples to test conjectures and to justify and defend algorithms and solutions.	SE: pp. 4–79
E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.	SE: pp. 4–79
F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.	SE: pp. 4–79
G. Write clearly and coherently about mathematical thinking and ideas.	SE: pp. 4–79
H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.	SE: pp. 4–79

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
<p><b>Number, Number Sense and Operations Standard</b>                      Students demonstrate number sense, including an understanding of number systems and operations and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Use scientific notation to express large numbers and numbers less than one.	
B. Identify subsets of the real number system.	
C. Apply properties of operations and the real number system, and justify when they hold for a set of numbers.	SE: pp. 4–7
D. Connect physical, verbal and symbolic representations of integers, rational numbers and irrational numbers.	
E. Compare, order and determine equivalent forms of real numbers.	
F. Explain the effects of operations on the magnitude of quantities.	
G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.	SE: pp. 4–79
H. Find the square root of perfect squares, and approximate the square root of non-perfect squares.	
I. Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.	
<p><b>Measurement Standard</b>                      Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Solve increasingly complex non-routine measurement problems and check for reasonableness of results.	

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
B. Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.	
C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.	SE: pp. 68–69
D. Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.	
E. Estimate and compute various attributes, including length, angle measure, area, surface area and volume, to a specified level of precision.	
F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.	SE: pp. 4, 8–11, 15, 18–20, 22–24, 30, 34–35, 39–40, 42, 49, 55–56, 59, 75
<p><b>Geometry and Spatial Sense Standard</b>                      Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two- and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects, and transformations to analyze mathematical situations and solve problems.</p>	
<p><b>By the end of the 8-10 program:</b></p>	
A. Formally define geometric figures.	
B. Describe and apply the properties of similar and congruent figures; and justify conjectures involving similarity and congruence.	
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.	

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
D. Use coordinate geometry to represent and examine the properties of geometric figures.	SE: pp. 68–71
E. Draw and construct representations of two- and three-dimensional geometric objects using a variety of tools, such as a straightedge, compass and technology.	
F. Represent and model transformations in a coordinate plane and describe the results.	
G. Prove or disprove conjectures and solve problems involving two and three-dimensional objects represented within a coordinate system.	SE: pp. 68–71
H. Establish the validity of conjectures about geometric objects, their properties and relationships by counter-example, inductive and deductive reasoning, and critiquing arguments made by others.	
I. Use right triangle trigonometric relationships to determine lengths and angle measures.	
<b>Patterns, Functions and Algebra Standard</b> Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.	
<b>By the end of the 8-10 program:</b>	
A. Generalize and explain patterns and sequences in order to find the next term and the $n$ th term.	
B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.	SE: pp. 20–23, 40–43, 52–59
C. Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.	SE: pp. 40–43, 56–59
D. Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.	SE: pp. 4–79

Mathematics Content Standards	<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
E. Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.	SE: pp. 44–47, 64–67
F. Solve and graph linear equations and inequalities.	SE: pp. 16–19, 20–23, 40–43, 52–59
G. Solve quadratic equations with real roots by graphing, formula and factoring.	SE: pp. 60–67
H. Solve systems of linear equations involving two variables graphically and symbolically.	SE: pp. 20–23, 52–55
I. Model and solve problem situations involving direct and inverse variation.	SE: pp. 72–75
J. Describe and interpret rates of change from graphical and numerical data.	
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<b>By the end of the 8-10 program:</b>	
A. Create, interpret and use graphical displays and statistical measures to describe data; e.g., box-and-whisker plots, histograms, scatterplots, measures of center and variability.	SE: pp. 16–31, 40–51, 56–59, 64–71
B. Evaluate different graphical representations of the same data to determine which is the most appropriate representation for an identified purpose.	
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H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.	SE: pp. 4–79