
Course Description

Subject: Pre Algebra Grade: 7

Overview:

Seventh grade pre-algebra is primarily a foundation for eighth grade algebra. The Glencoe course 3 mathematics book aim to teach the following standards: geometry, measurement, statistics, probability, and proportional reasoning.

Primary Biblical Integration:

Pre-algebra teaches students to think logically. Students who are able to make algebraic connections are better able to organize, order, balance, and plan their lives.

Unit Description:

CHAPTER ONE: Problem solving and Algebra

CHAPTER TWO: Algebra: Using integers

CHAPTER THREE: Using Proportion and percent

CHAPTER SIX: Exploring Number patterns

CHAPTER SEVEN: Algebra using rational numbers

CHAPTER EIGHT: Applying proportional reasoning

CHAPTER NINE: Algebra: exploring real numbers

CHAPTER TEN: Algebra: graphing functions

CHAPTER ELEVEN: Geometry: using area and volume

Student Materials:

Glencoe Mathematics course 3

Teacher Materials:

See teacher's list of materials

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COURSE OUTLINE

Teacher's Name: Stevens		Subject: Pre-Algebra			# of Quarters: 4
Text (if any): Glencoe Mathmatics			Other Materials:		
Recurring Themes, Principles, Skills or Concepts:	1)Number Sense	2)Algebra and Functions	3)Geometry and Measurements	4)Statistics, Data Analysis and probablity	5) Mathmatical Reasoning
Unit Title & Expected Start Date	Theme	Biblical Application	Key Concepts		
1) Ch 1 Problem solving and algebra	same	solving problems	Problem solving; powers and exponents; variables		
2) Ch 2 Algebra: Using integers	same	Wholeness	integers and absolute value; adding and subtracting integers		
3) Ch 3 Using Proportion and percent	same	Parts of a whole; the Body of Christ	Ratios, rates, percents, decimals		
4) Ch 6 Exploring Number patterns	same	The design in God's work	Prime factorization; GCF; LCM; scientific notation		
5)Ch 7 Algebra using rational numbers	same	Being part of something larger than yourself	Adding, subtractin, multiplying, dividing fractions		
6) Ch 8 Applying proportional reasoning	same	Being part of something larger than yourself	Using percent; simple interest; scale drawings		
7)Ch 9 Algebra: exploring real numbers	same	Wholeness	Square roots; Pythagoean Theorem; irrational numbers		
8)Ch 10 Algebra: graphing functions	same	Relationships between two beings	Function charts, functions, graphing		
9) Ch 11 Geometry: using area and volume	same	Logical Thinking	Areas and volumes		
10)Ch 13 Algebra: Polynomials and Factoring	same	Logical Thinking	Polynomials, monomials, factoring, foiling, combining like terms		

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3		
Unit #: 1	Dates - Starting: 10-Sep	Ending: 12-Oct	Total Instructional Days:			
Unit Title: Ch. 1 Problem solving and algebra						
Theme: same						
Biblical Application: Solving problems						
Key Concepts		Standards/Sub-Strands		Outcomes	Assessment	ESLRs
1) Problem solving 4 step plan		MR 1 + 2		5 min check	quiz, graded homework	2bd, 3abc, 5c
2) Powers and exponents		NS 1, AF 1 + 2		5 min check	quiz, graded homework	2bd, 3abc, 5c
3) Variables, expressions and equations		AF 1 + 2, MR 2		5 min check	quiz, graded homework	2bd, 3abc, 5c
4) Solving 2 step equations		AF 1 + 4; MR 2 + 3		5 min check	quiz, graded homework	2bd, 3abc, 5c
5)						
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions						

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 2	Dates - Starting: 12-Oct	Ending: 7-Nov	Total Instructional Days:		
Unit Title: Ch. 2 Algebra: Using integers					
Theme: same					
Biblical Application: Wholeness					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1)Integers and absolute value	NS 2, MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
2)Comparing and ordering integers	NS 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
3)Adding and subtracting intergers	NS 1 + 2, MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
4)Multiplying and dividing integers	NS 1, AF 1, MR 2 + 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
5)The coordinate system		5 min check	quiz, graded homework	2bd, 3abc, 5c	
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions					

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3		
Unit #: 3	Dates - Starting: 8-Nov	Ending: 5-Dec	Total Instructional Days:			
Unit Title: Ch. 3 Using proportion and percent						
Theme: same						
Biblical Application: Parts of a whole; the Body of Christ						
Key Concepts		Standards/Sub-Strands		Outcomes	Assessment	ESLRs
1) Ratios, rates and percents		NS 1, AF 4, MR 2		5 min check	quiz, graded homework	2bd, 3abc, 5c
2) Solving proportions		AF 4		5 min check	quiz, graded homework	2bd, 3abc, 5c
3) Fractions, decimals and percents		NS 1, MR 1		5 min check	quiz, graded homework	2bd, 3abc, 5c
4) Percent and estimation		NS 1, MG 2, MR 2 + 3		5 min check	quiz, graded homework	2bd, 3abc, 5c
5)						
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions						

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 6	Dates - Starting: 4-Dec	Ending: 7-Jan	Total Instructional Days:		
Unit Title: Ch. 6 Exploring number patterns					
Theme: same					
Biblical Application: The design in God's work					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1) Prime factorization		5 min check	quiz, graded homework	2bd, 3abc, 5c	
2) GCF	MR 2 + 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
3) LCM		5 min check	quiz, graded homework	2bd, 3abc, 5c	
4) Scientific notation	NS 1 + 2, MG 1	5 min check	quiz, graded homework	2bd, 3abc, 5c	
5)					
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions					

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 7	Dates - Starting: 8-Jan	Ending: 8-Feb	Total Instructional Days:		
Unit Title: Ch. 7 Using rational numbers					
Theme: same					
Biblical Application: Being part of something larger than yourself					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1) Adding and subtracting fractions	NS 1 + 2, MG 2, MR 2 + 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
2) Multiplying and dividing fractions	NS 1 + 2, AF 1 + 2, MG 1, MR 2 + 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
3) Areas of triangles and trapezoids	NS 1, MG 2 + 3, MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
4) Circles and circumference	NS 1, MG 1, 2 + 3, MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
5) Solving equations and inequalities	NS 1, AF 1 + 4, MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions					

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 8	Dates - Starting: 11-Feb	Ending: 3-Mar	Total Instructional Days:		
Unit Title: Chapter 11 Geometry: Using Area and Volume					
Theme: same					
Biblical Application: Wholeness					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1)1)Area of circles	MG 2; MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
2)Volume of prisms, cylinders, pyramids and cones	MG 2 + 3; MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
3)Surface area of prisms and cylinders	MG 1, 2 +3, MR 2 + 3; AF 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
4)					
5)					
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions					

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 9	Dates - Starting: 5-Mar	Ending: 18-Mar	Total Instructional Days:		
Unit Title: Chapter 9 Algebra: Exploring Real Numbers					
Theme: same					
Biblical Application: Reality and Truth					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1) Square roots	NS 2; AF 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
2) Pythagorean Theorem	MG 3; MR 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
3) Using the Pythagorean theorem	MG 3; MR 2+3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
4) Distance on the coordinate plane	AF 3; MG 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
5)					
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions					

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 10	Dates - Starting: 19-Mar	Ending: 9-Apr	Total Instructional Days:		
Unit Title: Chapter 10 Algebra: Graphing Functions					
Theme: same					
Biblical Application: Being part of the whole					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1) Functions	AF 4	5 min check	quiz, graded homework	2bd, 3abc, 5c	
2) Using tables to graph functions	AF 3	5 min check	quiz, graded homework	2bd, 3abc, 5c	
3) Graphing quadratic functions	AF 3; MR 2	5 min check	quiz, graded homework	2bd, 3abc, 5c	
4)					
5)					
Key Activities and Methods: Whiteboard exercises and examples; review games and competitions					

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UNIT PLANNER

Teacher's Name: Stevens		Subject: PRE ALGEBRA		Period(s): 1,2,3	
Unit #: 11	Dates - Starting: 11-Apr	Ending: 8-May	Total Instructional Days:		
Unit Title: Ch11: Geometry: using area and volume					
Theme: same					
Biblical Application: Logical Thinking					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1) Areas and Circumferences of a circle	MG 2	5-min check	quiz, homework	2bd, 3abc, 5c	
2) Volume of prisms, cylinders, cones, and pyramids	MG 2; MR 3	5-min check	quiz, homework	2bd, 3abc, 5c	
3) Surface Areas of prisms	MG 2	5-min check	quiz, homework	2bd, 3abc, 5c	
4)					
5)					
Key Activities and Methods					

HEIGHTS CHRISTIAN JUNIOR HIGH SCHOOL

UNIT PLANNER

Teacher's Name:	Stevens	Subject:	PRE ALGEBRA	Period(s):	1,2,3
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Unit #:	13	Dates - Starting:	9-May	Ending:	6-Jun	Total Instructional Days:	
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Unit Title: Ch 13: Algebra: Polynomials and Factoring

Theme: same

Biblical Application: Logical Thinking

Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs
1) Modeling, adding, subtracting Polynomials	AF 2	5-min check	quiz, homework	2bd, 3abc, 5c
2) Multiplying Monomials and Polynomials	MR2; MR3; NS2; AF2	5-min check	quiz, homework	2bd, 3abc, 5c
3) Factoring Polynomials	AF2	5-min check	quiz, homework	2bd, 3abc, 5c
4)				
5)				

Key Activities and Methods

PACING GUIDE

 Subject: Pre-Algebra

 Grade: 7

 Total number of standards: 13

Quarter	Units Taught	Standards Taught	Standards Assessed
1	CHAPTERS 1, 2	MR 1, 2, 3; NS 1, 2 AF 1, 2, 4; MG 2, 3	AF 1; MR 1 Date Tested: November 1st
2	CHAPTERS 3, 6	MR 1, 2, 3; NS: 1, 2 AF 4; MG 1	NS 1; NS 2 Date Tested: January 15
3	CHAPTERS 7, 8, 9	MR 1, 2, 3; NS 1, 2 AF 1, 2, 3, 4; MG 1, 2, 3	MR2; MG3; NS2; AF4 Date Tested: February 22 & March 4
4	CHAPTERS 10, 11, 13	MR 2, 3; NS 1 AF1, 3, 4; MG 1, 2, 3	AF 3; MG 2 Date Tested: May 27
Omitted Standards and why	Ch 4 & 5, not enough time Not enough testing materials	SDA 1	AF2; MG 1; MR3; SDA 1

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Mission Statement

"Our mission is to educate students to know Christ personally, excel academically, think biblically, and positively impact their community for Christ."

Expected Schoolwide Learning Results (ESLRs)

1. Biblical World View

Graduates of HCJH are expected to be individuals who . . .

- a) know how to study the Bible.
- b) recognize that all people are created in the image of the one true God.
- c) acknowledge the Bible as the infallible Word of God.
- d) use God's Word to discern truth.

2. Effective Communicators

Graduates of HCJH are expected to be effective communicators who . . .

- a) listen objectively and critically.
- b) understand and follow directions.
- c) write and speak clearly and accurately.
- d) express and support opinions using objective evidence.
- e) utilize various modalities effectively.
- f) can demonstrate a personal relationship with Jesus Christ verbally and in writing.

3. Proficient Learners

Graduates of HCJH are expected to be proficient learners who . . .

- a) demonstrate grade appropriate skills in reading, writing, and mathematics.
- b) have effective work habits and study skills.
- c) are self-directed and able to produce cooperatively and independently.
- d) can utilize technology.
- e) have a firm grasp of scripture and are able to apply it to life situations.

4. Personal Responsibility

Graduates of HCJH are expected to be responsible individuals who . . .

- a) show patriotism through respect for flag, country, leaders and laws.
- b) demonstrate self-control based on biblical standards.
- c) exhibit respect for others.
- d) accept the consequences and benefits of their actions.
- e) are aware of career opportunities.
- f) practice goal setting with a biblical perspective.
- g) are involved in serving the community.
- h) have a personal relationship with Jesus Christ.
- i) have the tools to share their faith.
- j) demonstrate an urgency to share their faith.

5. Problem Solvers

Graduates of HCJH are expected to be perceptive thinkers and problem solvers who . . .

- a) evaluate current topics using a biblical perspective.
- b) use available technology to obtain, access and integrate relevant information.
- c) think analytically and creatively.
- d) are well-informed and open-minded.
- e) apply academic learning to life.

6. Well-Rounded

Graduates of HCJH are expected to be well-rounded individuals who . . .

- a) have been exposed to a variety of elective opportunities and experiences.
- b) are challenged beyond academics through a variety of extracurricular activities.
- c) lead lives that are balanced intellectually, spiritually, physically and emotionally.
- d) develop an appreciation for teamwork during school activities.
- e) understand God's involvement in every area of their lives.

Grade Seven**Number Sense****1.0 Students know the properties of, and compute with, rational numbers expressed in a variety of forms:**

- 1.1 Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation.
- 1.2 Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
- 1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.
- 1.4 Differentiate between rational and irrational numbers.
- 1.5 Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions.
- 1.6 Calculate the percentage of increases and decreases of a quantity.
- 1.7 Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest.

2.0 Students use exponents, powers, and roots and use exponents in working with fractions:

- 2.1 Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.
- 2.2 Add and subtract fractions by using factoring to find common denominators.
- 2.3 Multiply, divide, and simplify rational numbers by using exponent rules.
- 2.4 Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why.
- 2.5 Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers.

Algebra and Functions**1.0 Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:**

- 1.1 Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).
- 1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$.
- 1.3 Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.
- 1.4 Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly.
- 1.5 Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph.

Advanced I**Mathematics Problem Solving****Number Sense and Operations**

- Demonstrate understanding of the meaning and use of numbers, the various representations of numbers, number systems, and the relationships between and among numbers.
- Demonstrate understanding of the meaning of operations, the relationship between operations, and the practical settings in which a specific operation or set of operations is appropriate.

Patterns, Relationships, and Algebra

- Describe, complete, continue, and demonstrate understanding of patterns involving numbers and figures.
- Patterns with numbers include those found in lists, function tables, ratios and proportions, and matrices.
- Demonstrate understanding of algebraic principles through interaction with expressions, equations, algebraic notation, and other representations of mathematical relationships.

Data, Statistics, and Probability

- Describe, interpret, and make predictions based on the analysis of data presented in a variety of ways, including graphs, plots, tables, and lists.
- Demonstrate an understanding of probability concepts through interaction with simple events, compound events, and experimental probability.

Geometry and Measurement

- Demonstrate understanding of the characteristics and properties of plane and solid figures, coordinate geometry, and spatial reasoning.
- Demonstrate understanding of the meaning and use of various measurement systems, the tools of measurement, and the integral role of estimation in measurement.

2.0 Students interpret and evaluate expressions involving integer powers and simple roots:

2.1 Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.

2.2 Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent.

3.0 Students graph and interpret linear and some nonlinear functions:

3.1 Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems.

3.2 Plot the values from the volumes of three-dimensional shapes for various values of the edge lengths (e.g., cubes with varying edge lengths or a triangle prism with a fixed height and an equilateral triangle base of varying lengths).

3.3 Graph linear functions, noting that the vertical change (change in y -value) per unit of horizontal change (change in x -value) is always the same and know that the ratio ("rise over run") is called the slope of a graph.

3.4 Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities.

4.0 Students solve simple linear equations and inequalities over the rational numbers:

4.1 Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.

4.2 Solve multistep problems involving rate, average speed, distance, and time or a direct variation.

Measurement and Geometry**1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:**

1.1 Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters).

1.2 Construct and read drawings and models made to scale.

1.3 Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.

2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale:

2.1 Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders.

2.2 Estimate and compute the area of more complex or irregular two-and three-dimensional figures by breaking the figures down into more basic geometric objects.

2.3 Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor.

2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square

Process**Communication and Representation**

- Demonstrate an understanding of the symbols and terms utilized in mathematics, and correctly interpret alternative representations of numbers, expressions, and data.

Estimation

- Apply estimation strategies in problem solving and determine the reasonableness of results.

Mathematical Connections

- Demonstrate an understanding of the interrelatedness of mathematical concepts, procedures, and processes both among different mathematical topics and with other content areas.

Reasoning and Problem Solving

- Demonstrate the ability to apply inductive, deductive, or spatial reasoning and to make valid inferences and draw valid conclusions.
- Demonstrate the ability to apply strategies to solve conventional and nonroutine problems.

Mathematics Procedures**Computation with Whole Numbers****Computation with Decimals****Computation with Fractions****Computation with Integers****Process****Computation in Context**

- Demonstrate the ability to solve everyday problems requiring addition, subtraction, multiplication, and division.

Computation with Symbolic Notation

- Demonstrate the ability to solve addition, subtraction, multiplication, and division problems represented by the symbols and notation of arithmetic.

inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$, 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$).

3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:

- 3.1 Identify and construct basic elements of geometric figures (e.g., altitudes, mid-points, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge.
- 3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections.
- 3.3 Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement.
- 3.4 Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures.
- 3.5 Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, and cones.
- 3.6 Identify elements of three-dimensional geometric objects (e.g., diagonals of rectangular solids) and describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect).

Statistics, Data Analysis, and Probability

1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:

- 1.1 Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data.
- 1.2 Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level).
- 1.3 Understand the meaning of, and be able to compute, the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set.

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

- 1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
- 1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.
- 1.3 Determine when and how to break a problem into simpler parts.

2.0 Students use strategies, skills, and concepts in finding solutions:

- 2.1 Use estimation to verify the reasonableness of calculated results.
- 2.2 Apply strategies and results from simpler problems to more complex problems.
- 2.3 Estimate unknown quantities graphically and solve for them by using logical reasoning and

arithmetic and algebraic techniques.

2.4 Make and test conjectures by using both inductive and deductive reasoning.

2.5 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.

2.6 Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.

2.7 Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.

2.8 Make precise calculations and check the validity of the results from the context of the problem.

3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:

3.1 Evaluate the reasonableness of the solution in the context of the original situation.

3.2 Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.

3.3 Develop generalizations of the results obtained and the strategies used and apply them to new problem situations.