
Course Description

Subject: Algebra 1 HP C

Grade: 8

Overview: Algebra 1 HP C is a core academic course that meets everyday day for one semester. It is the third and final semester in a series of honors Algebra 1 for 7th and 8th grade students. The focus is on problem solving, evaluating equations and functions, and real life connections to math. Instruction includes daily warm-up activities, class notes and examples, daily homework, quizzes and tests. Emphasis is placed on recognizing the order of God's world which can be seen through math.

Primary Biblical Integration: The order of the world created by God can be seen in mathematics. We also come to understand the absoluteness of God through the consistency of mathematics. 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 10 Quadratic and Exponential Functions

Chapter 11 Radical Expressions and Triangles

Chapter 12 Rational Expressions and Equations

Student Materials:

Algebra I; Glencoe, California edition; ISBN: 0-07-825083-8

Teacher Materials:

Algebra I Teacher's Edition; Glencoe, California edition; ISBN: 0-07-866496-9

HEIGHTS CHRISTIAN JUNIOR HIGH SCHOOL

UNIT PLANNER

Teacher's Name: Lehman		Subject: Algebra 1 HP C		Period(s): 5		
Unit #: 1	Dates - Starting:		Ending:	Total Instructional Days:		
Unit Title: Class intro						
Theme: Expectations, organization, orientation and discipline						
Biblical Application: Col. 3:17 Do <u>all</u> for the glory of God; Romans 13:1 Submit/respect for authority						
Key Concepts		Standards/Sub-Strands		Outcomes	Assessment	ESLRs
1)Rules				Talons	Discussion; citizenship grade	2b; 4d
2)Organizer					classroom checks	3b
3)Classroom and school policies				Grade on parent signed regarding classroom policies	Discussion; citizenship and work habit grades	2b
4)Treatment of others				Talons	Verbal encouragment and challenge; citizenship grade	4bc
5)Care of textbook					Homework grade for covering it	4d
Key Activities and Methods: Discussion, graded homework, mimio examples						

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UNIT PLANNER

Teacher's Name: Lehman		Subject: Algebra 1 HP C		Period(s): 5		
Unit #: 2	Dates - Starting: Ending:		Total Instructional Days:			
Unit Title: Chapter 10 Quadratic and Exponential Functions						
Theme: same						
Biblical Application: Going beyond; maturing						
Key Concepts		Standards/Sub-Strands		Outcomes	Assessment	ESLRs
1) Geometric sequences				Notes and homework	Worksheets, homework, quizzes	3a
2) Graphing quadratics		21		Notes and homework	Worksheets, homework, quizzes	2b, 3a
3) Solving quadratics by completing the square		19		Notes and homework	Worksheets, homework, quizzes	2b, 3a
4) Solving quadratics by using the Quadratic Formula		23		Notes and homework	Worksheets, homework, quizzes	2b, 3a
5)						
Key Activities and Methods: Discussion, graded homework, mimio examples						

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UNIT PLANNER

Teacher's Name: Lehman		Subject: Algebra 1 HP C		Period(s): 5	
Unit #: 3	Dates - Starting: Ending:		Total Instructional Days:		
Unit Title: Chapter 11 Radical Expressions and Triangles					
Theme: same					
Biblical Application: God is a God of justice <u>and</u> mercy					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1)Pythagorean theorem		Notes and homework	Worksheets, homework, quizzes	3a	
2)Distance formula		Notes and homework	Worksheets, homework, quizzes	2b, 3a	
3)Trigonometric ratios		Notes and homework	Worksheets, homework, quizzes	2b, 3a	
4)Solving radical equations		Notes and homework	Worksheets, homework, quizzes	2b, 3a	
5)					
Key Activities and Methods: Discussion, graded homework, mimio examples					

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UNIT PLANNER

Teacher's Name: Lehman		Subject: Algebra 1 HP C		Period(s): 5	
Unit #: 4	Dates - Starting: Ending:		Total Instructional Days:		
Unit Title: Chapter 12 Rational Expressions and Equations					
Theme: same					
Biblical Application: God makes sense					
Key Concepts	Standards/Sub-Strands	Outcomes	Assessment	ESLRs	
1) Adding and subtracting rational expressions		13 Notes and homework	Worksheets, homework, quizzes	3a	
2) Multiplying and dividing rational expressions		13 Notes and homework	Worksheets, homework, quizzes	2b, 3a	
3) Solving rational expressions		12 Notes and homework	Worksheets, homework, quizzes	2b, 3a	
4) Complex fractions		12 Notes and homework	Worksheets, homework, quizzes	2b, 3a	
5)					
Key Activities and Methods: Discussion, graded homework, mimio examples					

HEIGHTS CHRISTIAN JUNIOR HIGH SCHOOL

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 Eight
Algebra 1
Mathematics Content Standards**

Symbolic reasoning and calculations with symbols are central in algebra. Through the study of algebra, a student develops an understanding of the symbolic language of mathematics and the sciences. In addition, algebraic skills and concepts are developed and used in a wide variety of problem-solving situations.

1.0 Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable:

1.1 Students use properties of numbers to demonstrate whether assertions are true or false.

2.0 Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.

3.0 Students solve equations and inequalities involving absolute values.

4.0 Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.

5.0 Students solve multi step problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.

6.0 Students graph a linear equation and compute the x- and y- intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).

7.0 Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula.

8.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.

9.0 Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.

10.0 Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques.

11.0 Students apply basic factoring techniques to second-and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.

12.0 Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.

13.0 Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.

14.0 Students solve a quadratic equation by factoring or completing the square.

15.0 Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

17.0 Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.

**Advanced II
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, symbols, and geometric 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.

18.0 Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.

19.0 Students know the quadratic formula and are familiar with its proof by completing the square.

20.0 Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.

21.0 Students graph quadratic functions and know that their roots are the x- intercepts.

22.0 Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.

23.0 Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.

24.0 Students use and know simple aspects of a logical argument:

24.1 Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.

24.2 Students identify the hypothesis and conclusion in logical deduction. 24.3 Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.

25.0 Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements:

25.1 Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.

25.2 Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.

25.3 Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.

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 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.