

**Pre Algebra
College Prep C
CURRICULUM GUIDE**
(Written August 2009)

Course Number: 309 (Ninth Grade)
314 (Tenth Grade)
Level: College Prep C
Written: August 2009
Text Book: Algebra: Concepts and Applications, Volume 1, Glencoe/McGraw-Hill
Companies 2007.

Course Length: Full Year
Credit: 5 Credits

Midterm Exam Written: January 2010
Final Exam Written: June 2010

Prerequisite:

This course will be mandatory for all incoming ninth grade students who have not had Algebra I in eighth grade and are recommended for the College Prep. C level. The course will also be required for all 10th grade students who have not had Algebra I in the eighth or ninth grade and did not score proficient on the ninth grade screening test.

Course Description:

This is a Pre Algebra course, which prepares students for Algebra 1. The course meets five periods per week. This course is aligned with both the Core Curriculum Content Standards and the Algebra Core Content Standards.

High Point Regional High School's curriculum and instruction are aligned to the State's Core Curriculum Content Standards and address the elimination of discrimination by narrowing the achievement gap, by providing equity in educational programs and by providing opportunities for students to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

Course Objectives:

The student will be able to:

1. Write, simplify, and evaluate algebraic expressions.
2. Collect, organize and display data.
3. Graph, compare, and order integers.
4. Graph points on a coordinate plane.
5. Add, subtract, multiply and divide integers.
6. Compare, order, add, subtract, multiply and divide rational numbers.
7. Find the mean, median, mode, and range of a set of data.
8. Solve addition, subtraction, and absolute value equations.
9. Use tree diagrams and the Fundamental Counting Principle to count outcomes.
10. Solve equations involving multiplication and division, more than one operation, variables on both sides, or grouping symbols.
11. Solve problems involving proportions and percents.
12. Find the probability of mutually exclusive events and inclusive events.
13. Show relations as ordered pairs, tables, and graphs.
14. Solve and graph linear equations.
15. Determine whether a relation is a function.
16. Solve problems involving direct and inverse variation
17. Find the slope of a line.
18. Write linear equations in slope-intercept and point-slope form.
19. Graph and interpret scatter plots.
20. Graph and explore linear equations and families of linear equations.
21. Write equations of parallel and perpendicular lines.

New Jersey Core Curriculum Content Standards Addressed:

- **Standard 4.1: Number and Numerical Operations**

All students will develop number sense and will perform standard numerical operations and estimations on all types of numbers in a variety of ways.

- **Standard 4.3: Patterns and Algebra**

All students will represent and analyze relationships among variable quantities and solve problems involving patterns, functions and algebraic concepts and processes.

- **Standard 4.4: Data Analysis, Probability and Discrete Mathematics**

All students will develop an understanding of the concepts and techniques of data analysis, probability and discrete mathematics and will use them to model situations, solve problems and analyze and draw appropriate inferences from data.

- **Standard 4.5: Mathematical Processes**

All students will develop an understanding of the methods of problem solving. They will be able to communicate their answers in mathematical and make connections between real life applications. They will use reasoning in order to select the best process to solve problems. In addition they will use representations to display their work. The students will incorporate technology throughout the curriculum.

Algebra Core Content Standards Addressed:

O: Operations on Numbers and Expressions

O1. Number Sense and Operations

O1.a Reasoning with real numbers

O1.b Using ratios, rates, and proportions

O1.B1 Using variables in different ways

O1.B2 Using matrices

O1.c Using numerical exponential expressions

O2.a Using algebraic exponential expressions

L: Linear Relationships

L1. Linear Functions

L1.a Representing linear functions in multiple ways

L1.b Analyzing linear functions

L1.c Graphing linear functions involving absolute value

L1.d Using linear models

L2. Linear Equations and Inequalities

L2.a Solving linear equations and inequalities

L2.b Solving equations involving absolute value

L2.c Graphing linear inequalities

L2.d Solving systems of linear equations

L2.e Modeling with single variable linear equations, one-or-two-variable inequalities or systems of equations

D: Data, Statistics, and Probability

D1. Data and Statistical Analysis

D1.a Interpreting linear trends in data

D1.b Comparing data using summary statistics

D1.c Evaluating data-based reports in the media

D2 Probability

D2.a Using the counting principles

D2.b Determining probability

Student Evaluation:

Quizzes will be given about once a week. Major tests will be given at the end of each unit. An exam will be given at the end of each semester, covering all the work of the semester. Homework will be checked on a regular basis. It will usually not be graded, but will be considered satisfactory if the work shown indicates that the student has made a conscientious effort to complete the assignment. All work must be shown neatly to receive credit for assignments. Sometimes homework may be collected and graded. This will be done only when the concepts have been thoroughly discussed and practiced. Class work, including group work, will also be evaluated. The student's participation in the class will also be considered.

Grades will be calculated according the school grading policy and the following guidelines:

A. Marking Period		
Tests, Quizzes and Projects		70% - 80%
Homework, Class Work and Participation		20% - 30%
B. Final Grade		
Each Marking Period		20 %
Midterm Exam		10 %
Final Exam		10 %

District Policy: ACADEMIC INTEGRITY

Pupils are expected to be honest in all of their academic work. This means that they will not engage in any of the following acts:

- Cheating on examinations or other school assignments, including but not limited to, the non-authorized use of books or notes, the use of crib sheets, copying from other students' papers, exchanging information with other students orally, in writing, or by signals, obtaining copies of the examination illegally and other similar activities. Cheating through the use of technology to exchange information on any school assignment, examination, etc. is prohibited. Technology is defined as, but not limited to, computers, telephones, text messaging, palm pilots, calculators, cameras or any other hand held device.
- Plagiarism is not permitted in term papers, themes, essays, reports, images, take-home examinations, and other academic work. Plagiarism is defined as stealing or use without acknowledgment of the ideas, words, formulas, textual materials, on-line services, computer programs, etc. of another person, or in any way presenting the work of another person as one's own.

- Falsifications, including forging signatures, altering answers after they have been graded, inserting answers after the fact, erasing of grader's markings, and other acts that allow for falsely taking credit.

A pupil found guilty of academic dishonesty may be subjected to a full range of penalties including, but not limited to reprimand and loss of credit for all of the work that is plagiarized. Disciplinary action may also be a consequence of such behavior. Additional consequences may apply as defined in specific department policies and guidelines.

A teacher who believes that a pupil has been academically dishonest in his/her class should resolve the matter in the following manner:

- Reprimand the student orally and/or in writing. The teacher is also authorized to withhold credit in the work due to academic dishonesty.
- If warranted, the teacher shall file a written complaint against the student with the Administration, requesting a more stringent form of discipline. The complaint must describe in detail the academic dishonesty that is alleged to have taken place, and must request that the matter be reviewed by the Administration.
- The Administration will determine if further discipline of the pupil is appropriate, and will determine the nature of the discipline on a case-by-case basis.
- If the pupil is not in agreement with the disciplinary action of the Administration, he/she may appeal the action first to the Principal and secondly to the Superintendent. If the pupil is dissatisfied with the Superintendent's disposition of the case, he/she may grieve the action in accordance with Policy No. 5710, Pupil Grievance.

Unit 1: Preparation for Algebra (Prerequisite Concepts)

Time: 13 days

At the conclusion of this unit the students will be able to:

1. Read and interpret charts and graphs. (4.4.A.1)
2. Add and subtract mixed numbers. (4.1.A.1)
3. Multiply and divide mixed numbers. (4.1.A.1)
4. Find the probability of a simple event. (4.4.B.1)
5. Find the average of a set of data. (4.4.A.1)
6. Identify and draw models of basic geometric figures. (4.2.A.1)
7. Calculate the area and perimeter of squares, rectangles, triangles, trapezoids, and circles. (4.2.E.1)
8. Find the surface area and volume of prisms. (4.2.E.1)

Resources:

Text Book p. A3 – A30
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet
Smart Board
Calculator
Overhead Projector

Unit 2: The Language of Algebra

Time: 21 days

At the conclusion of this unit the students will be able to:

1. Translate words into algebraic expressions and equations. (4.3.D.3)
2. Follow the order of operations to evaluate expressions. (4.3.D.3)
3. Understand and apply properties of equality (substitution, reflexive, symmetric, and transitive), as well as properties of expressions (Identity of addition and multiplication, and multiplication property of zero). (4.3.D.4)
4. Identify and apply the commutative and associative properties to simplify expressions. (4.3.D.4)
5. Use the distributive property to evaluate expressions. (4.3.D.4)
6. Use a four-step plan to solve problems. (4.5)
7. Collect and organize data using sampling and frequency tables. (4.4.A.1)
8. Construct and interpret line graphs, histograms, and stem-and-leaf plots. (4.4.A.1)

Resources:

Text Book Chapter 1
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet

Smart Board
Calculator
Overhead Projector

Unit 3: Integers

Time: 19 days

At the conclusion of this unit the students will be able to:

1. Graph integers, as well as compare and order integers. (4.1.A.2)
2. Graph points on a coordinate plane. (4.2.C.1)
3. Add integers without the use of a calculator. (4.1.B.1)
4. Subtract integers without the use of a calculator. (4.1.B.1)
5. Create, add and subtract matrices. (4.1.B.3)
6. Multiply integers without the use of a calculator. (4.1.B.1)
7. Divide integers without the use of a calculator. (4.1.B.1)

Resources:

Text Book Chapter 2
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet
Smart Board
Calculator
Overhead Projector

Unit 4: Addition and Subtraction Equations

Time: 21 days

At the conclusion of this unit the students will be able to:

1. Compare and order rational numbers. (4.1.A.2)
2. Add and subtract rational numbers. (4.1.B.1)
3. Calculate the mean, median, mode, and range of a set of data. (4.4.A.1)
4. Determine if given numbers are solutions to equations. (4.3.B.1)
5. Solve addition equations. (4.3.B.1) (4.3.D.2)
6. Solve subtraction equations. (4.3.B.1) (4.3.D.2)
7. Solve equations involving absolute value. (4.1.A.1) (4.3.B.1) (4.3.D.2)

Resources:

Text Book Chapter 3
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet
Smart Board
Calculator
Overhead Projector

Unit 5: Multiplication and Division Equations

Time: 21 days

At the conclusion of this unit the students will be able to:

1. Multiply rational numbers. (4.1.B.1)
2. Use tree diagrams and the Fundamental Counting Principle to count outcomes. (4.4.B.2)
3. Use permutations and combinations to determine arrangements. (4.4.B.3)
4. Divide rational numbers. (4.1.B.1)
5. Solve equations by using multiplication. (4.3.B.1) (4.3.D.2)
6. Solve equations by using division. (4.3.B.1) (4.3.D.2)
7. Solve multi-step equations. (4.3.B.1) (4.3.D.2)
8. Solve equations with variables on both sides. (4.3.B.1) (4.3.D.2)
9. Solve equations by grouping and simplifying. (4.3.B.1) (4.3.D.2)

Resources:

Text Book Chapter 4
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet
Smart Board
Calculator (Graphing or Casio)
Overhead Projector

Unit 6: Powers and Roots

Time: 21 days

At the conclusion of this unit the students will be able to:

1. Write and evaluate powers in expressions. (4.1.B.2)
2. Simplify expressions with powers through multiplication. (4.1.B.2)
3. Simplify expressions with powers through division. (4.1.B.2)
4. Simplify expressions containing negative exponents. (4.1.B.3)
5. Express numbers in scientific notation and standard form. (4.1.A.1)
6. Estimate square roots. (4.1.A.1) (4.1.B.3) (4.1.C.1)
7. Find the square root by simplifying radicals. (4.1.A.1) (4.1.B.3)
8. Apply the Pythagorean Theorem to solve problems. (4.2.A.2)

Resources:

Text Book Chapter 5
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet
Smart Board
Calculator

Overhead Projector

Unit 7: Proportional Reasoning and Probability

Time: 21 days

At the conclusion of this unit the students will be able to:

1. Solve proportions and calculate unit rate. (4.1.B.4)
2. Solve problems involving scale drawings and models. (4.2.A.4)
3. Use percents and proportions to solve problems. (4.1.B.4)
4. Create and interpret box-and-whisker plots. (4.4.A.1)
5. Calculate the percent increase and decrease. (4.1.B.1)
6. Find the probability and odds of a simple event. (4.4.B.1)
7. Calculate the probability of compound events. (4.4.B.2)

Resources:

Text Book p. Chapter 6
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet
Smart Board
Calculator
Overhead Projector

Unit 8: Functions and Graphs

Time: 19 days

At the conclusion of this unit the students will be able to:

1. Show relations as ordered pairs, in tables, or as graphs identifying the domain and range. (4.3.B.1) (4.3.C.2)
2. Solve linear equations for a given domain. (4.3.B.1) (4.3.D.2)
3. Graph linear equations. (4.3.B.1)
4. Determine whether a given relation is a function. (4.3.B.1)
5. Solve problems using direct variation. (4.3.C.1)
6. Solve problems using inverse variations. (4.3.C.1)
- 7.

Resources:

Text Book Chapter 7
Student and Teacher Extra Resources accompanying text.
Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet Smart Board
Calculator Overhead Projector

Unit 9: Linear Equations (As Time Allows)

Time: 21 days

At the conclusion of this unit the students will be able to:

1. Find the slope of a line when given the coordinates of two points. (4.2.C.1)
2. Write linear equations in slope intercept form. (4.2.C.1) (4.3.C.1)
3. Graph and interpret points on a scatter plot. (4.4.A.1)
4. Make predictions using best fit lines. (4.4.A.2) (4.4.A.3)
5. Graph equations using the intercepts or the slope and y-intercept. (4.2.C.1)
6. Write equations for parallel and perpendicular lines. (4.2.C.1)

Resources:

Text Book Chapter 8

Student and Teacher Extra Resources accompanying text.

Teacher prepared worksheets.

Technology: May include, but not limited to:

Internet

Smart Board

Calculator

Overhead Projector