

**PLANNED COURSE CURRICULUM GUIDE
COLLEGE PREP. ALGEBRA I**

I. COURSE DESCRIPTION AND INTENT:

II. INSTRUCTIONAL TIME:

Class Periods:

Length of Class Periods (minutes): 42

Length of Course: 180 days; 120 clock hours

Unit of Credit: 1

Course Weight: 1

A GREAT PLACE TO LEARN!



PINE GROVE AREA SCHOOL DISTRICT
PINE GROVE, PENNSYLVANIA

PINE GROVE AREA SCHOOL DISTRICT
Pine Grove, Pennsylvania 17963

PLANNED COURSE ADAPTATIONS/MODIFICATIONS
Introduction

The instructional adaptations that follow are provided as suggestions to be implemented with all students, particularly with those in need of special education services including the gifted. This listing is in no way intended to be exhaustive. Rather, it is reflective of some major considerations in the area of curriculum adaptations/modifications.

These instructional adaptations will work with any student, but are especially beneficial to those in need of learning support. Some may argue that these modifications are simply *good teaching*. Indeed, modifications of this type do represent good teaching. These principles of good teaching become instructional modifications whenever: (1) certain students in a particular class require such modifications *above and beyond* what is typically required by *most* students in that class and (2) without these modifications, these same students would not succeed.

PREFACE

Users and information seekers should familiarize themselves with the purpose and terminology of this **Planned Course Curriculum Guide (PCCG)**. We suggest that you first read the following:

- **PCCG PURPOSE AND INTENT**
- **PCCG DEFINITIONS**

The PCCG specifies the unit lesson outcome, essential content, standards, activities, resources, and evaluation of student performance. This sector provides the means to initiate the learning activities to attain the program goal as identified in the course description and intent.

The standards and outcomes are minimal expectations; further embellishment of the course is discretionary with the instructor depending upon the capability of the students.

This PCCG is designed as an ACTIVE document capable of technological modification as required.

The instructional delivery of this curriculum is quality controlled through the lesson plan development of the teacher.

Lawrence J. Mussoline, Jr., Ph.D.
Superintendent of Schools

PLANNED COURSE CURRICULUM GUIDE (PCCG) PURPOSE AND INTENT

The Planned Course Curriculum Guide (PCCG) is a multi-purpose document:

- All staff, particularly new teachers, can understand instructional expectations through the WRITTEN curriculum
- A continuing district-wide instructional process and scope and sequence of subject matter are enhanced. The WRITTEN curriculum is delivered through the TAUGHT curriculum (instructional content and learning activities) and is evaluated through the TESTED curriculum (expected levels of student achievement - learning outcomes)
- Priority student-centered outcomes are identified and attained through suggested learning activities and content designed to help insure a balanced and comprehensive basic curriculum
- Essential content and course standards provide an efficient basis for selecting appropriate instructional materials and resources
- Staff development areas for curriculum improvement are provided
- The PCCG conforms with current Pennsylvania Department of Education curriculum regulations and serves the dual feature of providing both an administrative document and an instructional guide
- Content and subject format remain flexible and adaptable to modification - an "active" document
- Special Pennsylvania Department of Education (PDE) legislation is identified
- Parents and students are provided with an overview of the instructional program and each course in particular

PLANNED COURSE CURRICULUM GUIDE (PCCG) DEFINITIONS

- **Course Description and Intent**: a brief overview of the course and program goals
- **Instructional Time**: frequency of class meetings and time/appropriate credit at the secondary level
- **Special Notes**: emphatic features or highlights and identification of Department of Education mandates found in the course
- **Unit Lesson Outcome**: describes the knowledge, skills, attitudes, student performance behaviors and areas of study that have been identified as appropriate to help the student attain the rigorous standards of a quality education
- **Teaching-Learning Activities**: suggested activities designed to help all students achieve the learning outcomes and standards
- **Standards**: statements establishing the minimal knowledge, skills, performance behaviors, and essential learning (content) a student must attain. A standard defines what students should know and be able to do
- **Expected Levels of Achievement (Learning Outcomes)**: what students will be expected to do as a result of the application of teaching-learning activities and content
- **Evaluation Criteria (Actual Level of Attainment)**: student performance level achieved and measured through specified evaluation criteria

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #1: All students use numbers, number systems, and number relationships to represent theoretical and practical situations. Number types (e.g., whole, prime, irrational, and complex) and equivalent forms (e.g., fractions, decimals, and percents) are mastered.

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS <i>(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful) ☺</i>	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
<p>STANDARD 1</p> <p>77. Describe number line graphs and represent them using inequalities and absolute values.</p> <p>78. Describe and apply inverse operations (reciprocal, absolute value, raising to power, finding roots) to solve equations and inequalities.</p>	<p>77. Given a number line graph, represent it by writing an inequality or absolute value equation or inequality.</p> <p>78. Solve a variety of linear equations and inequalities and graph the solutions. The basic steps to follow are:</p> <ol style="list-style-type: none"> 1. Simplify both sides by removing parenthesis and combining like terms. 2. Undo any addition or subtraction so that all the variables are on one side and all the constants are on the other. 3. Undo any multiplication or division so that you solve for a positive one as the coefficient of the variable. 	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet

79. Order and describe verbally, graphically, and using set notation subsets of real numbers.

4. If you multiply or divide by a negative number, then change the direction of the inequality sign.

79. Define and describe the relationship between the following sets: whole numbers, integers, rational numbers, and irrational numbers.

Correctives – Review worksheets and supplemental problems at the end of every chapter and in the back section of the book.

Extensions – Solve compound inequalities.

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #2: All students use computation and estimation skills to solve theoretical and practical problems using appropriate tools including modern technology such as calculators and computers.

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS <i>(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful) ☺</i>	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
<p>STANDARD 2</p> <p>71. Estimate using scientific notation.</p> <p>73. Develop and use computational concepts, operations, and procedures on real numbers in problem solving situations.</p>	<p>71. Use scientific notation to estimate the result of a real life problem.</p> <p>73. Simplify expression without a calculator using the order of operations as follows:</p> <ol style="list-style-type: none"> 1. Grouping – parentheses, brackets, fraction bars (vinculum), and absolute value notation. 2. Exponents. 3. Multiplication or division in the order it appears from left to right. 4. Addition and subtraction. Check solutions with a calculator. <p><u>Correctives</u> – Review worksheet and supplemental problems. <u>Extensions</u> – Simplify expressions found in an Algebra II book.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #3: All students use measurement and estimation skills to solve theoretical and practical problems.

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS <i>(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful) ☺</i>	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
<p>STANDARD 3</p> <p>57. Describe and give examples of the need for precision and significant digits as they relate to measurement and how units indicate precision.</p> <p>61. Determine relationships between linear, square, and cubic measures, describe how changes in one of the measures of the figure affect the others, and apply to real world problems.</p> <p>63. Select and use appropriate units and tools to collect and apply data with appropriate levels of precision.</p>	<p>57. Determine the correct number of significant digits for the precision of the instrument.</p> <p>61. Find distances on a map with a ruler and by applying the appropriate scale.</p> <p>63. Find volume of objects by appropriate measurements and by applying appropriate formulas.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet

Correctives – Use simplified version of a map to get understanding of measurement and of the use of a scale.

Extensions – Use a vernier caliper to measure dimensions. Use Archimedes method of displaced fluid in a graduated cylinder to find volume.

LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #4: All students use mathematical reasoning and make mathematical connections.

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS <i>(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful) ©</i>	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
<p>STANDARD 4</p> <p>33. Construct algorithms for multi-step and real-world problems.</p> <p>34. Describe connections between equivalent representations and corresponding procedures of the same problem situation or mathematical concept.</p> <p>38. Apply appropriate arguments,</p>	<p>33. Solve various word problems using the following:</p> <ol style="list-style-type: none"> I. Read – for complete understanding. II. Plan – choose for a variable and write everything in terms of that same variable. III. Do – write an equation, then solve it. IV. Check - does the answer make sense? <p>34. Solve various word problems using charts or tables, pictorial representations, and algebraic equations or inequalities.</p> <p>38. Solve various word problems using</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet

<p>inductive or deductive proofs, and mathematical rules and properties of logic in problem solving situations.</p>	<p>appropriate rules and properties of mathematics.</p> <p><u>Correctives</u> – Review worksheets, CCC program on computer, and supplemental problems.</p> <p><u>Extensions</u> – SAT review in text and on worksheets and CCC program on computer and on Internet.</p>		
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LEARNING STANDARDS AND CONTENT ACTIVITIES

Statement of student learning expectations achieved through suggested teaching-learning activities and selected content to help reach standards and graduation requirements.

Academic Content Standard #5: All students formulate and solve problems, communicate the mathematical process used, and the reasons for using them.

ESSENTIAL CONTENT PERFORMANCE STANDARD	CONTENT & INSTRUCTIONAL ACTIVITIES/STRATEGIES WITH CORRECTIVES AND EXTENSIONS <i>(individually created teaching activities may be used to achieve the standards; however, listed below are activities which may be helpful) ☺</i>	ACTUAL LEVEL OF ATTAINMENT (EVALUATION CRITERIA) ASSESSMENT	RESOURCES AND MATERIALS
<p>STANDARD 5</p> <p>33. Construct algorithms for solving multi-step and non-routine real world problems.</p> <p>35. Create and solve complex problems using appropriate mathematical concepts and techniques.</p> <p>36. Communicate, both in writing and orally, mathematical concepts, problems, procedures, and solutions using appropriate mathematical language.</p>	<p>33. Solve various real world problems using appropriate pictures, charts, tables, and algebraic equations and inequalities.</p> <p>35. Solve and explain in detail various word problems from an SAT review book. Create your own word problem that requires a linear equation in its solution.</p> <p>36. Use appropriate mathematical language to present a problem, the procedure used to solve the problem, and the final solution, both orally and in writing.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet

	<p><u>Correctives</u> – Review worksheet, CCC program on computer, and supplemental problem.</p>		
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	<p><u>Extensions</u> – SAT problems and Internet problems.</p>		
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LEARNING STANDARDS AND CONTENT ACTIVITIES

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Academic Content Standard #6: All students make decisions based upon the collection, organization, analysis, and interpretation of statistical data.

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<p>STANDARD 6</p> <p>39. Describe methods of data collection (e.g. census, sample survey, observational study.)</p> <p>42. Compare and contrast different data distributions using summary statistics.</p>	<p>39. Collect and organize data for calculating the volume of various objects. Display data in an organized fashion.</p> <p>42. Find the mean, median, and mode for a data set.</p> <p><u>Correctives</u> – Study various survey results on Internet.</p> <p><u>Extensions</u> – Develop your own experiment that requires collecting data and organizing it on a spreadsheet.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet

LEARNING STANDARDS AND CONTENT ACTIVITIES

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Academic Content Standard #8: All students understand, demonstrate, and apply basic concepts of algebra to solve theoretical and practical problems.

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<p>STANDARD 8</p> <p>56. Simplify calculations, rewrite expressions, and combine like terms using the distributive property.</p>	<p>56. Simplify expressions using the distributive property.</p> <p><u>Correctives</u> – Review worksheet and supplemental problems.</p> <p><u>Extensions</u> – SAT and Internet problems.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests • Board work complete with oral explanation • Student notebooks 	<ul style="list-style-type: none"> • Textbook – <u>Algebra I</u> • Maps and various scale drawings • Various resource books • Various models and manipulation for finding volume • Computer software, especially CCC program • Internet