

**PLANNED COURSE CURRICULUM GUIDE
PRE-ALGEBRA**

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 a power, finding roots) to solve equations and inequalities.</p>	<p>77. Graph integers, absolute values, and inequalities on a real number line.</p> <p>78. Simplify expressions using the order of operations and the rules for absolute value and for exponents. Solve equations and inequalities.</p> <p><u>Correctives</u> – Individual instruction.</p> <p><u>Extensions</u> – Internet research.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

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>72. Perform calculations by applying rules for exponents and roots.</p> <p>73. Develop and use computation concepts, operations, and procedures on real numbers in problem solving situations.</p> <p>78. Demonstrate skills for using computer spreadsheets and scientific and/or graphing calculators.</p>	<p>71. Write values in scientific notation.</p> <p>72. Use positive and negative exponents in expressions and equations.</p> <p>73. Solve linear equations and inequalities involving several steps.</p> <p>78. Solve and graph functions using graphing calculators.</p> <p><u>Correctives</u> – Individual instruction.</p> <p><u>Extensions</u> – Internet research.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

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>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>61. Find the relationship between perimeter and area and how changing one of these measures affects the others.</p> <p><u>Correctives</u> – Individual instruction.</p> <p><u>Extensions</u> – Internet research.</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 • 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 #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, proofs, (inductive or deductive), and mathematical rules and properties of logic in problem solving situations.</p>	<p>33. Describe a systematic approach and arrive at a solution for various word problems.</p> <p>34. Compare and contrast different methods of solving the same problem.</p> <p>38. Use inductive and deductive reasoning to draw conclusions.</p> <p><u>Correctives</u> – Individual instruction.</p> <p><u>Extensions</u> – Internet research.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

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>34. Explain the components of mathematical modeling: problem formulation, mathematical model, solution with the model, and validation in real-world situations.</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. Describe a systematic approach and arrive at a solution for various word problems.</p> <p>34. Model the distributive property using algebra tiles; model fractions; model polynomials.</p> <p>35. Apply appropriate mathematical concepts and techniques to solve and create complex problems.</p> <p>36. Describe a systematic approach and arrive at a solution for various word problems. Present the process and solution both orally and in writing using correct mathematical</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

language and procedures.

Correctives – Individual instruction.

Extensions – Internet research.

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

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 6</p> <p>41. Select an appropriate data display for a data set and recognize when a graph does not give an accurate picture of a data set.</p> <p>42. Compare and contrast different data distributions using summary statistics.</p>	<p>41. Display data in frequency tables and on line and bar graphs.</p> <p>42. Describe data sets using mean, median and mode.</p> <p><u>Correctives:</u> Individual Instruction <u>Extensions:</u> Use the Internet to explore related topics.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

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 #7: All students make predictions based upon the collection, organization, analyzing, and interpretation of statistical data and the application of probability.

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 7</p> <p>39. Define, calculate, and compare the probability and odds of an event.</p>	<p>39. Calculate the probability and odds that a simple event will occur.</p> <p><u>Correctives</u> – Individual instruction.</p> <p><u>Extension</u> – Use the Internet to research related topics and applications.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

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 #8: All students understand, demonstrate, and apply basic concepts of algebra 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 8</p> <p>56. Simplify calculations, rewrite expressions, and combine like terms using the distributive property.</p> <p>65. Use patterns, sequences, series, tables, and variable expressions to solve routine and non-routine problems algebraically and/or graphically.</p> <p>66. Formulate expressions, equations, inequalities, systems of equations, and systems of inequalities to model routine and non-routine problem situations.</p> <p>69. Solve linear, quadratic, and/or exponential equations both symbolically and graphically.</p>	<p>56. Simplify numerical and literal expressions using the distributive property.</p> <p>65. Solve routine and non-routine problems by various methods, both algebraically and graphically using the graphing calculator.</p> <p>66. Solve various word problems by writing and solving equations and inequalities.</p> <p>69. Solve linear equations algebraically and graphically.</p>	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books

	<u>Correctives</u> – Individual instruction. <u>Extensions</u> – Internet use.		
--	---	--	--

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 #11: All students understand, demonstrate, and apply basic concepts of calculus 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
STANDARD 11 45. Create, write, and solve real world application problems that demonstrate an understanding of arithmetic and geometric sequences and series.	45. Recognize, extend, and represent algebraically arithmetic and geometric sequences. <u>Correctives</u> – Individual instruction. <u>Extensions</u> – Internet use.	<ul style="list-style-type: none"> • Teacher-made/commercial tests, quizzes, and activities • Homework assignments • Oral presentations • Cooperative activities and presentations • Classroom work 	<ul style="list-style-type: none"> • Textbook • Calculators • Graph paper • Measuring devices • Computers with the Internet • Teacher resource books