



Southern Lehigh School District

High School Syllabus

Math Lab 2014 - 2015

Course Description:

Math Lab is an opportunity for students in ninth grade to strengthen their fundamental understanding of math. Students are using components of the Bridge to Algebra curriculum supported by the Cognitive Tutor software program to enhance both their math and problem-solving skills. Students can work on the software component at their own pace in addition to having access to the software from home. Due to the importance of a solid foundation in mathematics, any student meeting two of the following three criteria will automatically be scheduled for math lab:

1. Scoring below a 79% on the eighth grade diagnostic math test
2. Scoring a 70% average of 1st, 2nd, 3rd marking period and midterm grades
3. Teacher recommendation

A student will attend math lab five days per week for a semester. If a student does not have any study halls, Math lab will be scheduled in place of a semester elective for ninth grade students.

Course Content:

This course content is delivered in a blended course format, with a combination of collaborative, student-centered textbook lessons and adaptive Cognitive Tutor software lessons. Our classroom activities address both mathematical content and process standards. Students develop skills to work cooperatively to solve problems and improve their reasoning and communication skills. The software was developed around an artificial intelligence model that identifies weaknesses in each individual student's mastery of mathematical concepts. It then customizes prompts to focus on areas where the student is struggling, and sends the student to new problems that address those specific concepts. The result is a powerful learning tool with the most precise method of differentiating instruction available.

The following concepts will be covered over one semester:

1. Numbers, Operations, and Fractions
 - Real Number System
 - Least Common Multiple and Greatest Common Factor
 - Prime and composite numbers
 - Prime Factorization
 - Order of Operations
 - Equivalent fractions
 - Simplifying, comparing, and ordering fractions
 - Solving problems with fractions and mixed numbers

2. Decimals
 - Order of Operations
 - Writing decimals as fractions and vice-versa
 - Adding, subtracting, multiplying, and dividing decimals
 - Using estimation with decimals
3. Ratios, Proportions, and Percents
 - Ratios and fractions
 - Solving ratios, rates, and proportions
 - Percents
 - Finding the percent of a number
 - Finding percent of change
4. Integers
 - Graphing on a number line
 - Adding, subtracting, multiplying, and dividing integers
 - Finding the absolute value of a number
 - Finding the additive inverse of a number
 - Expanded form using powers of 10
 - Converting numbers to and from scientific notation
5. Algebraic Problem Solving
 - Developing Algebraic Expressions
 - Solving one-step equations
 - Solving two-step equations
 - Plotting points in the coordinate plane
 - Tables and graphs
 - Solving problems with multiple representations
6. Geometric Figures and Their Properties (Optional Extension)
 - Angles
 - Measuring angles
 - Triangles
 - Quadrilaterals and polygons
 - Solving problems using indirect measurement

Required Textbooks and/or Other Reading/Research Materials

Carnegie Learning Algebra Readiness content is delivered via parishable textbooks that support a collaborative classroom and through the online Cognitive Tutor component.

Bridge to Algebra by Carnegie Learning. Carnegie Learning, 2008.

Course Requirements:

Each student is required to complete all in-class activities, homework and software assignments, pre- and post-tests.

Grade Components/Assessments:

Grades will be based on a point system that will be converted into an overall percentage. The following gives a basic breakdown of the evaluations of student performances in a quarter.

Homework including class participation 20-30%
Tests 30-40%
Computer software assignments 30-40%
Alternative Assessments 20-30%

Each marking period is worth 20% of a student's overall grade. The final is worth 20% of a student's overall average:

Quarter 1	20%
Quarter 2	20%
Quarter 3	20%
Quarter 4	20%
Final	20%

Required Summer Reading/Assignments:

There are no required reading/assignments.