

**FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT**

**Math, Course 2B**

**DATE: May 2011**

**SUBJECT AREA: Mathematics**

**PROPOSED GRADE LEVEL(S): 8<sup>th</sup>**

**COURSE LENGTH: One Year**

**GRADING: A-F**

**NUMBER OF CREDITS: NA**

**PREREQUISITES: Completion of Course 2 or Course 2A.**

**COURSE DESCRIPTION:**

This is the second year of a two year course 2. It was designed to give struggling students more time to develop key concepts, to process and practice the seventh grade standards, and to understand how to apply the mathematics mastered. The curriculum includes problem solving, integers, manipulating algebraic expressions, solving equations, graphing, an introduction to geometry, statistics, and probability.

Concepts will be taught at a slower pace to ensure that students have time to master them. Instruction will include a variety of modalities, giving students the opportunity to learn in more ways than just with “pencil and paper.” The instruction also includes learning to write out the steps to solve problems and showing one’s work in standard mathematical forms. By the end of Math, Course 2B, students will be adept at manipulating numbers and equations and understand the principles at work. Students will understand and use properties of exponents. Students will be proficient at changing between fractions, decimals, and percents and know and use the different representations of numbers. They will increase their facility with ratio, proportion, percentages, and probability. Students will use geometric formulas to solve two- and three-dimensional problems. Students will graph linear functions and be introduced to the concept of slope.

**GENERAL GOALS/PURPOSES:**

The goals of this course are to provide the time necessary for eighth grade students to master the California math standards for seventh grade and reinforce basic skills needed for success in math, especially in Algebra 1. Students will be taught the standards that are represented on the Grade 8 General Math state assessment. Content strands addressed in the course include number sense; algebra and functions; measurement and geometry; statistics, data analysis, and probability; and mathematical reasoning.

**STUDENT READING COMPONENT:**

Students will receive instruction on the effective use of their textbook and online resource materials. Correct use of math vocabulary will be stressed so that students understand directions. Math, Course 2B includes many applications where effective reading and analysis are taught as part of the course especially with word problems.

**STUDENT WRITING/ORAL COMPONENT:**

Students will have opportunities to express their understanding of concepts in writing as well as orally presenting work to the class. All written work will follow standard rules of English. Any research projects will follow the MLA style format, which was distributed at all secondary sites.

## **THIS COURSE WILL PREPARE STUDENTS FOR THE CAHSEE AND/OR CST'S:**

There is no required benchmark test.

### **DETAILED UNITS OF INSTRUCTION:**

#### **Chapter 1- Principles of Algebra**

##### **1. Review as Necessary:**

- a. Evaluating Algebraic Expressions
- b. Writing Algebraic Expressions
- c. Integers and Absolute Value
- d. Adding Integers
- e. Subtracting Integers
- f. Multiplying and Dividing Integers

##### **2. Required Instruction:**

- a. Solving Equations by Adding or Subtracting
- b. Solving Equations by Multiplying or Dividing
- c. Solving Two-Step Equations

#### **Chapter 2- Rational Numbers**

##### **1. Review as Necessary:**

- a. Rational Numbers
- b. Comparing and Ordering Rational Numbers
- c. Adding and Subtracting Rational Numbers
- d. Multiplying Rational Numbers
- e. Dividing Rational Numbers
- f. Adding and Subtracting with Unlike Denominators

##### **2. Required Instruction:**

- a. One-Step Equations with Rational Numbers
- b. Two-Step Equations with Rational Numbers

#### **Chapter 3- Multi-Step Equations and Inequalities**

##### **1. Review as Necessary:**

- a. Properties of Rational Numbers

##### **2. Required Instruction:**

- a. Simplifying Algebraic Expressions
- b. Solving Multi-Step Equations
- c. Solving Equations with Variables on Both Sides
- d. Inequalities
- e. Solving Inequalities by Adding or Subtracting
- f. Solving Inequalities by Multiplying or Dividing
- g. Solving Two-Step Inequalities

#### **Chapter 4- Exponents and Roots**

##### **1. Review as Necessary:**

- a. Exponents

##### **2. Required Instruction:**

- a. Integer exponents
- b. Properties of Exponents
- c. Multiplying and Dividing Monomials
- d. Scientific Notation
- e. Squares and Square Roots

- f. Estimating Square Roots
- g. The Real Numbers
- h. The Pythagorean Theorem

## **Chapter 5- Ratios, Proportions, and Similarity**

### **1. Review as Necessary:**

- a. Ratios
- b. Rates and Unit Rates

### **2. Required Instruction:**

- a. Proportions
- b. Dimensional Analysis
- c. Similar Figures
- d. Indirect Measurement
- e. Scale Drawing and Scale Models

## **Chapter 6- Percents**

### **1. Review as Necessary:**

- a. Relating Fractions, Decimals, and Percents
- b. Estimating with Percents

### **2. Required Instruction:**

- a. Finding Percents
- b. Finding a Number When the Percent is Known
- c. Applying Percent of Increase and Decrease
- d. Commission, Sales Tax, and Profit
- e. Applying Simple and Compound Interest

## **Chapter 7- Graphs and Functions**

### **1. Required Instruction:**

- a. The Coordinate Plane
- b. Functions
- c. Graphing Linear Functions
- d. Graphing Quadratic Functions
- e. Cubic Functions
- f. Rate of Change and Slope
- g. Finding Slope of a Line
- h. Interpreting Graphs
- i. Direct Variation

## **Chapter 8- Foundations of Geometry**

*This chapter was taught in detail in Math, Course 2A; the content will be reviewed in Math, Course 2B where necessary to support Chapters 9 and 10.*

## **Chapter 9- Two-Dimensional Geometry**

### **1. Review as Necessary:**

- a. Perimeter and Area of Parallelograms
- b. Perimeter and Area of Triangles and Trapezoids

### **2. Required Instruction:**

- a. Circles
- b. Circumference and Area
- c. Area of Composite Figures
- d. Area of Irregular Figures

## **Chapter 10- Three-Dimensional Geometry**

### **1. Required Instruction:**

- a. Three-Dimensional Figures
- b. Volume of Prisms and Cylinders
- c. Volume of Pyramids and Cones
- d. Surface Area of Prisms and Cylinders
- e. Surface Area of Pyramids and Cones
- f. Spheres
- g. Scaling Three-Dimensional Figures

## **Chapter 11- Data, statistics, and Probability**

### **1. Review as Necessary:**

- a. Line Plots and Stem-and-Leaf Plots
- b. Mean, Median, Mode, and Range
- c. Box-and-Whisker Plots
- d. Scatter Plots

### **2. Required Instruction:**

- a. Probability
- b. Experimental Probability
- c. Theoretical Probability
- d. Independent and Dependent Events

## **Chapter 12- Polynomials**

### **Introduction to Topics from Algebra 1:**

- a. Polynomials
- b. Simplifying Polynomials
- c. Adding Polynomials
- d. Subtracting Polynomials
- e. Multiplying Polynomials by Monomials
- f. Multiplying Binomials

## **LAB FEE, IF REQUIRED:**

None

## **SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:**

### **Chapter 1:**

AF 1.1, 1.2, 1.3, 1.4, 4.0, 4.1; NS 1.1, 1.2, 2.5

### **Chapter 2:**

NS 1.1, 1.2, 1.3, 1.5, 2.2; AF 1.3, 4.0, 4.1

### **Chapter 3:**

AF 1.1, 1.3, 4.1, 4.1

### **Chapter 4:**

AF 1.2, 1.3, 2.1, 2.2; NS 1.1, 1.4, 2.1, 2.3, 2.4; MG 3.3

### **Chapter 5:**

AF 4.2; MG 1.1, 1.2, 1.3

### **Chapter 6:**

NS 1.3, 1.6, 1.7

### **Chapter 7:**

AF 1.1, 1.5, 3.1, 3.3, 3.4, 4.2

**Chapter 8:**

MG 3.1, 3.2, 3.3, 3.4, 3.6; AF 3.3

**Chapter 9:**

MG 2.1, 2.2, 2.4, 3.1, 3.2

**Chapter 10:**

MG 2.1, 2.2, 2.3, 2.4, 3.5

**Chapter 11:**

SDAP 1.0, 1.1, 1.2, 1.3

**Chapter 12:**

1A10.0

**DISTRICT ESLRs TO BE ADDRESSED:**

When students exit a secondary mathematics course, they will be:

1. **Self-directed Learners** - who will be able to use notes, textbooks, and online resources to assist them in continuing their learning outside of the classroom setting.
2. **Efficient Communicators** - who can explain mathematical concepts to others and use mathematics to organize and explain data.
3. **Quality Producers** - who understand the importance of neat, organized work that demonstrates their thinking and understanding of the solution they've formed to solve a problem.
4. **Constructive Thinkers** - who are able to attack problems with organization, logic, and mathematical skills they've developed in a systematic fashion.
5. **Collaborative Workers** - who can work in a variety of settings in culturally diverse groups. They will be able to form and use study groups to strengthen their own understanding in addition to providing the same service for classmates.
6. **Responsible Citizens** - who accept the consequences of their actions and who demonstrate their understanding of their role in the learning process.