

**FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT**

**ALGEBRA READINESS**

**Date: May 2009**

**Subject Area: Mathematics**

**Proposed Grade Level(s): 9<sup>th</sup>-10<sup>th</sup>**

**Course Length: 1 Year**

**Grading: A-F**

**Number of Credits: 5 per semester**

**Prerequisite: None**

**COURSE DESCRIPTION:**

This is a one year Algebra 1 preparation course. At the end of this course, students will have learned pre-algebraic skills and concepts which will allow them to enroll in a course that meets or exceeds the rigor of Algebra I. This course covers the 16 Algebra Readiness standards as outlined by the CA Mathematics Framework (Appendix-e). These 16 standards (13 from grade seven and three from Algebra I) are purposefully limited in number to provide teachers the flexibility and time to rebuild foundational skills and concepts that may be missing from earlier grades.

**GENERAL GOALS/PURPOSES:**

The goal of this course is for students to master prerequisite skills and concepts for success in algebra. These skills include: whole numbers and operations, rational numbers, symbolic notation, equations, functions, graphing, and proportional relationships. In addition, a primary focus is to develop a students' mastery of arithmetic. By the end of this course, students will be prepared to complete a course in algebra successfully in the following year.

**STUDENT READING:**

Students will receive instruction on the effective use of their program resources. Algebra Readiness includes applications where effective reading and analysis are taught as part of the course. Also, projects may be used to emphasize reading across the curriculum.

**STUDENT WRITING/ORAL:**

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

**Final Assessment:**

Each semester will have a district approved Final Exam. This exam will meet the standards adopted by the state. The test will be used as an assessment tool for the student and determine the placement of the student the following semester.

## **DETAILED UNITS OF INSTRUCTION:**

### *Semester One*

#### **I. Operations on Rational Numbers**

1. Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers.
2. Convert fractions to decimals and percents and use these representations in estimations, computations, and applications.
3. Know that every rational number is either a terminating or a repeating decimal and be able to convert terminating decimals into reduced fractions.
4. Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base.
5. Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents.

#### **II. Equations and Functions**

1. Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A).
2. Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used.
3. Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results.
4. Solve multistep problems involving rate, average speed, distance, and time or direct variation.

### *Semester Two*

#### **I. The Coordinate Plane**

1. Know and understand the Pythagorean Theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of the other line segments and, in some situations, empirically verify the Pythagorean Theorem by direct measurement.

#### **II. Graphing Proportional Relationships**

1. Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio (“rise over run”) is called the slope of a graph.
2. Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the ratio of the quantities.
3. Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer.

#### **II. Algebra**

1. Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, raising to a fractional power and the use and rules of exponents.
2. Students simplify expressions before solving linear equations and inequalities in one variable, such as  $3(2x-5)+4(x-2)=12$
3. Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.

**TEXT: *Holt Algebra Readiness* Holt Rinehart, and Winston, 2008.**

## **THIS COURSE WILL PREPARE STUDENTS FOR THE CASHEE AND/OR FCUSD EXIT EXAMS:**

### **Math**

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

None

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

Referenced Standards from Foundational Skills and Concepts

**Topic 1 Whole Numbers:** Grade 3-NS: 1.3, 1.5

**Topic 2 Operations on Whole Numbers:** Grade 2-AF: 1.1; Grade 3-AF: 1.5; Grade 4-NS: 3.1, 3.2; Grade 5-AF: 1.3

**Topic 3 Rational Numbers:** Grade 5-NS: 1.4; Grade 6-NS: 1.1

**Topic 4 Operations on Rational Numbers:** Grade 6-NS: 1.4, 2.0, 2.1, 2.2

**Topic 5 Symbolic Notation:** Grade 4-AF: 1.2, 1.3; Grade 5-AF: 1.0; Grade 6-AF: 1.0, 1.1

**Topic 6 Equations and Functions:** Grade 4-AF: 1.5, 2.0, 2.1, 2.2

**Topic 7 The Coordinate Plane:** Grade 4-MG: 2.0, 2.1, 2.2, 2.3; Grade 5-AF: 1.4

16 Targeted Standards for Algebra Readiness:

Grade 7

**Topic 4 Operations on Rational Numbers:** NS: 1.2, 1.3, 1.5, 2.1 AF: 2.1

**Topic 6 Equations and Functions:** AF: 1.1, 1.3, 4.1, 4.2

**Topic 7 The Coordinate Plane:** MG: 3.3

**Topic 8 Graphing Proportional Relationships:** AF: 3.3, 3.4 MG: 1.3

Algebra I

**Topic 9 Algebra:** (Introductory Examples) Algebra I: 2.0, 4.0, 5.0

#### **DISTRICT ESLR's TO BE ADDRESSED**

##### **Students will be:**

- **Self-directed Learners:** who will be able to use notes and a textbook to assist them in continuing their learning outside of the classroom setting.
- **Efficient Communicators:** who can explain mathematical concepts to others and use mathematics to organize and explain data.
- **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.
- **Constructive Thinkers:** who are able to attack problems with organization, logic, and mathematical skills they've developed in a systematic fashion.
- **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.
- **Responsible Citizens:** who accept the consequences of their actions and who demonstrate their understanding of their role in the learning process.