Integrated Math 2

UC/CSU "c" approved/NCAA approved
Grade Level: 9
Estimated Work Outside of Class: 2-3 hrs per week

Course Description:
The purpose of Integrated Math 2 is to develop students' ability to think mathematically and develop their conceptual understanding of mathematics and procedural fluency in mathematics. Integrated Math 2 will extend the mathematics students learned in Integrated 1 and begin the development of concepts in Number and Quantity, Algebra, Functions, Modeling, Geometry, and Statistics and Probability needed for higher-level mathematics courses. Extensive use of models/real-world situations, manipulative, graphs, and diagrams will help students see the connections between different topics which will promote students' view that mathematics is a set of related topics as opposed to a set of discrete topics. In addition, students will learn to solve problems graphically, numerically, algebraically, and verbally and make connections between these representations. Students in this course will learn to use mathematical models to understand real world events and situations, and use algebraic reasoning to manipulate these models for deeper learning.

Prerequisite:
Completion of Integrated Math 1 at previous school with a grade of "C" or higher and qualifying math scores on the placement exam.

Recommended Prerequisite Skills:
Students entering Integrated Math 2 should already have a good understanding of the following concepts:

- Solving linear equations as well as graphing linear equations in all forms of a linear equation.
- Using both graphical and algebraic relationships to analyze and solve systems of linear equations in two variables.
- Understanding the connection between proportional relationships, lines, and linear equations.
- Understanding triangle congruence and transformational geometry.

Course Grade Categories:

- Independent Practice 25%
- Quizzes 25%
- Test/Final 50%

Major Assessments/Units/Topics:
Unit 1: (2 quizzes, 1 Test)

- Solving Linear Inequalities and graphing solutions-
  Students will use inverse operations, order of operations, and other basic mathematical properties to solve inequalities. Students will translate verbal phrases and sentences into inequalities and solve them.
- Introduction to linear functions-

Students will be able to use a variety of methods to graph a linear equation. Students will also learn about domain and range and how to tell the difference.

- Absolute Value Equations and inequalities-
  Students will be able to solve absolute value equations and inequalities.
- Parallel and Perpendicular Lines-
  Students will Identify Parallel, Perpendicular, and Skew Lines. In addition, students will Identify the angle pairs formed by two lines and a transversal and find the measures of those angles. Students will use the converse theorems to prove that lines are parallel. Students will use Slopes to determine when lines are parallel or perpendicular and write the equations of perpendicular and parallel lines

Unit 2: (2 quizzes, 1 test)

- **Triangle Congruence-**
  Students will draw and identify transformations in the coordinate plane and determine whether transformations produce congruent figures. Students will also classify triangles by the measures of their angles and the lengths of their sides and find the measures of angles in isosceles and equilateral triangles. Students will use the triangle sum theorem and exterior angle theorem to determine the measures of angles of a triangle. Student will prove that triangles are congruent using five methods: SSS, SAS, ASA, AAS, and HL and use them to prove that corresponding parts of congruent triangles are congruent.
- Polynomials-
  Adding and subtracting polynomials- Students will be able to classify polynomials and write polynomial expressions in standard form. Students will be able to add and subtract polynomial expressions. Students will use their knowledge regarding polynomials to solve word problems.

Unit 3: (2 quizzes, 1 test)

- **Perimeter, Circumference, and Area**
  Students will develop area formulas for triangles, quadrilaterals, and composite figures and calculate areas, given appropriate Measurements. In addition, they will calculate the circumference and area of a circle and the area of a regular polygon estimate the area of an irregularly shaped figure. In addition, describe the effect on area caused by a proportional change in dimension and the effect on dimension caused by a change in area.
- **Exponents**
  Students will be able to apply the laws of exponents to simplify expressions.
- **Polynomials**
  Students will be multiplying polynomial expressions.

Unit 4: (2 quizzes, 1 test)

- **Properties and Attributes of Triangles**
  Students will use the angle-side relationships of a triangle to order side lengths and angle measures. In addition, they will prove and use the pythagorean theorem to determine the side lengths of a triangle and classify triangles. Finally, they will use the 45-45-90 Triangle Theorem and the 30-60-90 Triangle Theorem to Find the Sides of a Triangle

- **Right Triangles and Trigonometry**

  Students will find the geometric mean between two numbers and use the corollaries to find the lengths of altitudes and legs. Also they will find and use trigonometric ratios by hand and by calculator to find lengths and angles, solve right triangles and real-world problems. Then students will find distances using angles of elevation and depression. students will write radicals in simplified form.
- **Factoring polynomials-**

  Students will be able to factor polynomials using multiple different methods. Students will also be able to solve area problems using their skills and knowledge of factoring polynomials.

Unit 5: (3 quizzes, 1 tests)

- **Solving and graphing quadratic equations-**

  Students will be able graph quadratic equations and be able to describe the different characteristics of quadratic equations. Students will also use a number of methods to solve quadratic equations. Students will apply their knowledge of solving quadratic equations to solve word problems.
- **Spatial Reasoning**

  Students will classify three-dimensional geometric figures and describe nets and cross sections of three-dimensional geometric figures. In addition, they will calculate volumes and surface areas of the geometric solids and describe the effects on volume and surface area caused by changes in dimension.

Unit 6: (1 Quiz, 1 Test)

- **Circles**

  Students will Identify, construct, measure and find lengths of chords, arcs, secants, and tangents of a circle. Students will also use the tangency theorems to find lengths. They will find the measures of arcs and chords and calculate arc lengths sector and segment Areas. In addition they will find the measures of arcs, inscribed angles and angles formed by secants and tangents and chords to a circle and inscribed quadrilaterals as well as finding arc measures. Students will write the equation of a circle in the coordinate plane by finding the center and radius of a circle and graph the circle.