Sequencing Rationale

During this course, students will reinforce the basic math facts in all four operations, by completing math-timed tests, and working with flash cards. As noted in the HSP math text, a student’s ability to answer the basic facts in less than 3 seconds will free up space for the other math skills that need to be learned (Maletsky & McLeod, 2009). Students will track their fluency with the facts throughout the year and continue to use the facts so they don’t lose the facts.

Because this course builds on the math skills learned in the previous grade levels, the sequence for the curriculum is generally logical prerequisite. The subunits of the course build on prior knowledge from the previous units and continue to advance the student through Bloom’s Taxonomy. The first unit, Operations with Decimals, will quickly review the basics of addition and subtraction of numbers, while building on place value skills and decimals. Knowledge of place value will help in naming numbers and writing them in expanded notation. The unit will also build on division of numbers, which will be needed for working with expressions and fractions later on.

The second unit, Building a Basis for Algebra, will allow students to continue utilizing their basic math skills and decimal skills learned in the first unit. The unit will allow them to develop the relationship between the inverse operations. Students will work to identify patterns and understand the order of operations. Students will also formulate basic expressions to represent problem solving situations, such as “It is 27 degrees below zero” = “-27”.

The largest unit for the course is Fractions. Building again on the skills developed in the first two units, students will review addition and subtraction of fractions with like denominators and will work to develop an understanding of equivalent fractions, simplified fractions, and mixed numbers. As the students progress in their skills, students will work with problems involving unlike denominators, as well as multiplication and division of fractions. Having strong basic math fact fluency will allow the students to progress in this unit with much less frustration. Relating the use of fractions in real world situations will allow the students to make connections. Utilizing baking projects and sharing pizza or candy bars will make the unit more concrete for the students. Because measuring and graphing will require the use of fractions, the skills in this unit will lead nicely into the last two units on geometry and measurement.

In the Geometry Unit, student will use the coordinate plane to solve problems. The students will be able to transfer the information from the Fraction Unit to determine distances from one location to another, especially with the use of grid maps. Not only will this skill be valuable in the math, but it will flow into Social Studies as well, especially when discussing latitude and longitude. The unit will focus largely on vocabulary and categorizing the terms based on physical attributes, following Posner and Strike’s categorization scheme (Chiarelott, 2006). Students will work with two-dimensional shapes, learning to differentiate between the shapes based on presented characteristics.

For the unit, Measurement and Data, students will utilize real word situations and problems to continue working with fractions and geometric shapes. Student will be able to convert units of measurement, such as inches to feet and feet to yards. Student will use charts and data to analyze problems and will use operations learned in the first and second units to solve problems based on the data. Volume will be introduced to students in this unit, too. Students will need to have an understanding of rectangular prisms and realize that volume is a 3-dimensional, solid figure concept, rather than an area or perimeter concept that was learned in third and fourth grade.