Karen Berg

May 13, 2011

Curriculum Design – EDTL 7100

**Outcomes/Objectives**

**Basic Math Computations: Addition, Subtraction, Multiplication, & Division**

* Students will read and write numbers.
* Students will represent numbers by place value using expanded form.
* Students will write and solve addition problems in expanded form.
* Students will find the sums of three-digit numbers using expanded addition.
* Students will find sums using expanded and traditional addition.
* Students will solve addition problems that require three-digit regrouping.
* Students will estimate using a number line.
* Students will estimate the sum of two- and three-digit numbers.
* Students will find sums using horizontal expanded addition.
* Students will add three-digit numbers using horizontal expanded addition.
* Students will identify and explain the relationship between addition and subtraction.
* Students will solve word problems using addition and subtraction.
* Students will write and solve expanded subtraction problems.
* Students will use expanded subtraction to solve problems that require more than one regrouping.
* Students will solve subtraction problems using traditional subtraction.
* Students will estimate differences.
* Students will check answers by estimating
* Students will check their answers to word problems by estimating
* Students will use estimation to solve problems.
* Students will use estimation to check the accuracy of a bill.
* Students will identify and fix common errors in subtraction.
* Students will use addition to check that subtraction problems are solved correctly
* Students will calculate profit using information about income and expenses.
* Students will use expanded subtraction and regrouping to avoid errors in subtraction problems with zeros.
* Students will solve word problems to determine if spending is over or under budget.
* Students will explain their thinking in writing about different subtraction methods.
* Students will apply the commutative property to multiplication.
* Students will create extended multiplication facts from basic facts.
* Students will factor out a 10 and powers of 10 from numbers.
* Students will solve problems using expanded multiplication.
* Students will multiply 3 and 4-digit numbers by a single digit using expanded multiplication.
* Students will multiply two multi-digit numbers using expanded multiplication.
* Students will compare traditional multiplication and expanded multiplication.
* Students will identify errors in multiplication problems
* Students will estimate the product of two multi-digit numbers to check for errors.
* Students will estimate products by rounding factors to create extended facts.
* Students will estimate products to problems with two multi-digit factors.
* Students will use fact families to understand the relationship between multiplication and division.
* Students will use a number line to learn the concept of division.
* Students will use number lines to show partitioning in extended division facts.
* Students will solve problems with remainders.
* Students will estimate using rounding strategies in division.
* Students will use near facts to predict quotients in division problems.
* Students will solve division word problems.
* Students will solve long division problems by looking at place value.
* Students will solve real-world problems.
* Students will interpret remainders in word problems.
* Students will use place value to solve long division problems with regrouping.
* Students will write division word problems.
* Students will use traditional long division to solve problems.
* Students will examine common errors made when computing division problems.
* Students will examine the application of multiplication and division operations in architecture and building design.

**Working with Data & Graphs**

* Students will identify what a word problem is asking.
* Students will identify important information to solve word problems.
* Students will answer questions about bar graphs.
* Students will create bar graphs.
* Students will answer questions about data in bar graphs.
* Students will analyze data in a table.
* Students will construct a bar graph from a table of data.
* Students will pose questions about data from a graph.
* Students will round numbers on a graph to estimate sums.
* Students will read and create horizontal bar graphs.
* Students will create a graph from survey data.
* Students will create pictographs using data in a table.
* Students will analyze data in bar graphs.
* Students will locate info in tables that contain more than one type of data.
* Students will display data from a bar graph in a table.
* Students will estimate differences using data from maps.
* Students will write problems using data from tables.
* Students will solve division problems with two-digit divisors.

**Measurement**

* Students will estimate distance using nonstandard units of measurement.
* Students will estimate distances by selecting appropriate nonstandard units of measurement.
* Students will choose an appropriate measuring device.
* Students will create and use a ruler correctly.
* Students will measure using a metric ruler.
* Students will estimate lengths of common objects using referents for metric units.
* Students will estimate measurements accurately.
* Students will measure the elements of an advertisement.
* Students will measure a logo accurately.
* Students will use measurement to create a web page.
* Students will use specifications to complete the design a logo.
* Students will measure the dimensions of a scale drawing.
* Students will estimate the product of two multi-digit numbers to check for errors.

**Measuring Two-Dimensional Objects, Perimeter, & Area**

* Students will estimate area by counting square units inside a shape.
* Students will solve informal measurement problems in which shapes are measured by counting squares.
* Students will solve informal measurement problems in which shapes are measured by counting squares.
* Students will count squares to find area.
* Students will estimate population with square units based on a map.
* Students will apply measurement concepts to the field of architecture.
* Students will design a floor plan.
* Students will use the triangular unit for measurement and informal computation of area.
* Students will estimate the area of irregular shapes using areas of regular shapes.
* Students will apply a formula to find the area of squares and rectangles.
* Students will apply a formula to calculate the area of triangles and parallelograms.
* Students will apply area formulas to irregular shapes.
* Students will find the perimeter of shapes.
* Students will apply concepts about perimeter to shapes other than rectangles.
* Students will identify the relationship between area and perimeter.
* Students will identify the difference between area and perimeter.
* Students will identify and apply concrete rules about the comparison of area and perimeter.
* Students will find the area of irregular shapes.
* Students will find the area of shapes within other shapes.
* Students will recognize patterns when solving problems.