

Rationale

The need to understand and be able to use mathematics in everyday life and in the workplace has never been greater and will continue to increase. The underpinnings of everyday life are increasingly mathematical and technological. Just as the level of mathematics needed for intelligent citizenship has increased, so too has the level of mathematical thinking and problem solving needed in the workplace. Those who understand and can do mathematics will have significantly enhanced the opportunities and options for sharing their futures. Mathematical competence opens doors to productive futures.

Course Description

This course is designed to prepare the student for further mathematical study by enhancing some previously learned mathematical processes and developing new processes. The student will learn to apply these processes using mathematical reasoning and technology to solve everyday problems that have meaning beyond the classroom. This course gives the student the opportunity to strengthen skills using the basic operations of addition, subtraction, multiplication, and division of whole numbers, decimals, and fractions. The foundations for basic skills in pre-algebra, geometry, measurement, and graphing are introduced as problem solving skills are stressed. In this support model, student IEP goals are addressed in the classroom while following the Mehlville curriculum. Essentials 2 objectives are for the student in their second or third year of the special education math essentials class. Lectures, presentations, assignments, and materials are adapted to create opportunities for student success.

Prerequisites

Prerequisite: IEP team recommendation
Open to: 6, 7, 8

Course Objectives

1. In the area of Number and Operations the student will demonstrate knowledge of the following skills with 80% accuracy.

- describe the relationships between digits in place value including whole numbers to millions
- classify numbers by their characteristics (including odd and even, fractions, decimals and percents)
- describe the effects of adding and subtracting whole numbers as well as the relationship between the two operations
- estimate and justify the results of addition and subtraction of whole numbers
- apply and describe the strategy used to compute up to a 3-digit addition or subtraction problem including whole numbers and decimals
- read, write, compare and order decimals to hundredths and whole numbers up to 6 digits (including money)
- develop fluency with basic number relationships (12X12) of multiplication and division
- represent a given situation involving multiplication
- demonstrate the relationship between multiplication and division
- compute a given multiplication problem (2-digit by 2-digit, multiple of 10, or 2-digit by 1-digit)
- compute a division problem up to a 3-digit by 1-digit (with and without a remainder)
- use models to represent commonly used fractions: halves, thirds, and fourths
- convert improper fractions to mixed numbers
- read, write, compare, and order unit fractions using visual representations
- solve addition and subtraction of fractions with common denominators

Essentials 2 objectives:

- classify and describe numbers by their characteristics including multiples, exponents, and square roots
- applying the distributive, commutative, and associative properties to whole numbers
- solve problems using the order of operations
- apply and describe the strategy used to compute a given multiplication or division problem up to a 3-digit by 2-digit, including decimals
- simply fractions
- develop and apply strategies to solve problems with whole numbers, decimals, and fractions (like and unlike denominators)
- recognize and generate equivalent forms of commonly used fractions, decimals, and percents
- solve problems involving multiplication and division of fractions
- solve problems using ratios and rates
- add, subtract, compare, and order positive and negative numbers

2. In the area of Algebraic Relationships the student will demonstrate knowledge of the following skills with 80% accuracy.

- describe and extend pictorial and numeric patterns to find the next term
- represent a mathematical situation as an expression or number sentence
- apply the commutative property to addition and multiplication of whole numbers

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- represent a mathematical situation as an expression or number sentence using a letter or symbol
- model problem situations and draw conclusions, using representations such as drawings, tables or number sentences

Essentials 2 objectives:

- identify, model, and describe situations with constant or varying rates of change
- use variables to represent unknown quantities in expressions or equations and solve one-step equations
- use commutative, associative and distributive properties to generate equivalent forms for simple algebraic expressions
- model and solve problems using multiple representations, such as graphs, tables, expressions and equations

3. In the area of Geometric and Spatial relationships the student will demonstrate knowledge of the following skills with 80% accuracy.

- identify and describe the attributes of two-dimensional polygons
- describe movement using common language and geometric vocabulary (forward, back, left, right, north, south, east, west)
- identify and use symbols to represent lines, line segments, ray, and points
- identify angles according to their angle measures
- identify triangles according to their sides and angles
- identify or construct a figure with multiple lines of symmetry and identify the lines of symmetry
- predict the results of putting together or taking apart two-dimensional shapes in order to create new shapes
- determine if two objects are congruent
- classify and/or construct geometric shapes and lines
- use a protractor to construct, classify and measure angles (obtuse, acute, right and straight)
- use coordinate geometry to plot and locate points and to construct geometric shapes

Essentials 2 objectives:

- identify and describe the attributes of three-dimensional shapes
- describe the results of sliding/translating, flipping/reflecting, or turning/rotating around the center point of a polygon

4. In the area of Measurement the student will demonstrate knowledge of the following skills with 80% accuracy.

- identify the appropriate unit of measure (linear, time, weight)
- read a thermometer to the nearest degree
- use tools to measure length, both in Customary (to nearest quarter) and Metric (to nearest tenth)
- tell time to the nearest minute
- add and subtract money values to \$10.00 or more
- determine change from \$10.00
- solve perimeter and area problems

Essentials 2 objectives:

- use formulas to find volume
- solve problems involving elapsed time (hour and minute)
- solve problems involving conversions (linear, time, and money)

5. In the area of Data and Probability the student will demonstrate knowledge of the following skills with 80% accuracy.

- read and interpret information from line plots and graphs (bar, line, circle, and pictorial)
- collect data using observations, surveys, and experiments
- create tables or graphs to represent categorical and numerical data
- determine best methods to collect, organize and represent categorical and numerical data
- name ordered pairs on a coordinate grid
- discuss events related to students' experiences as likely or unlikely

Essentials 2 objectives:

- develop and analyze graphs, tables, and charts that display data
- find and display the mean, median, mode, and range of a data set
- given a set of data, make predictions

BOE 7-26-12

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