

MONROE COUNTY COMMUNITY SCHOOL CORPORATION  
CURRICULUM GUIDE

**ELEMENTARY MATHEMATICS  
KINDERGARTEN**

**PROFICIENCY 1: USE TECHNOLOGY TO PROMOTE MATHEMATICAL UNDERSTANDING**

1.K.1 Recognize and manipulate the numbers on the keypad of a calculator and computer

**PROFICIENCY 2: COMMUNICATE UNDERSTANDING OF MATHEMATICS**

2.K.1 Explain through words or drawings simple problem-solving situations

**PROFICIENCY 3: DEVELOP REASONING SKILLS**

3.K.1 Compare and contrast attributes of objects (size, shape, color)

3.K.2 Create and match simple patterns

3.K.3 Arrange real objects in a symbolic representation of a graph as a means of comparing information

**PROFICIENCY 4: RECOGNIZE AND DEVELOP MATHEMATICAL CONNECTIONS**

4.K.1 Identify and recognize numbers through 21 in environmental print

4.K.2 Identify positional relationships such as under, over, etc.

**PROFICIENCY 5: DEVELOP PROBLEM-SOLVING ABILITIES**

5.K.1 Act out a problem-solving situation

5.K.2 Use manipulatives in problem solving

5.K.3 Look for patterns

**PROFICIENCY 6: DEVELOP AN UNDERSTANDING OF WHOLE NUMBERS AND THEIR RELATIONSHIPS**

6.K.1 Write the numeral for the number of items in a set with less than 21 elements

- 6.K.2 Identify, sequence, and write numerals 0 through 21
- 6.K.3 Count the number of items in a set with less than 21 elements
- 6.K.4 Tell which set has more or fewer elements
- 6.K.5 Count by rote from 1-100 by ones and tens

**PROFICIENCY 7: DEVELOP PLACE-VALUE CONCEPTS FOR WHOLE NUMBERS**

- 7.K.1 Put objects in groups of ones and tens

**PROFICIENCY 8: DEVELOP AN UNDERSTANDING OF FRACTIONS AND DECIMALS**

- 8.K.1 Recognize equal parts of a whole

**PROFICIENCY 9: WHOLE NUMBER COMPUTATION AND ESTIMATION**

- 9.K.1 Use manipulatives to demonstrate simple addition and subtraction problems
- 9.K.2 Write and read numerals and the appropriate symbols for addition, subtraction, and equal sign
- 9.K.3 Use guess-and-check as an estimation strategy

**PROFICIENCY 10: RECOGNIZE, DESCRIBE, DRAW, CLASSIFY, AND COMPARE GEOMETRIC OBJECTS**

- 10.K.1 Recognize and name circles, ellipses (ovals), squares, rectangles, triangles, and rhombuses
- 10.K.2 Sort circles, squares, rectangles, triangles and rhombuses (diamonds)
- 10.K.3 Build 3-dimensional shapes

**PROFICIENCY 11: DEVELOP SPATIAL SENSE**

- 11.K.1 Identify the position of an object or self as being inside, outside, above, under, in front, behind, etc.
- 11.K.2 Create two- and three- dimensional shapes

**PROFICIENCY 12: ESTIMATE AND MEASURE USING CUSTOMARY, METRIC, AND NONSTANDARD**

- 12.K.1 Use manipulatives to determine lengths of objects

12.K.2 Use a calendar, season, and parts of a day to develop time relativity

12.K.3 Compare two objects by specified attributes such as length, weight, volume, and temperature

12.K.4 Identify pennies, quarters, and dollars

**PROFICIENCY 13: USE DATA ANALYSIS AND PROBABILITY TO ANALYZE GIVEN SITUATION AND OUTCOMES OF EXPERIMENTS**

13.K.1 Collect and organize objects

13.K.2 Construct and describe graphs using objects

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**ELEMENTARY MATHEMATICS**  
**GRADE 1**

**PROFICIENCY 1: USE TECHNOLOGY TO PROMOTE MATHEMATICAL UNDERSTANDING**

- 1.1.1 Use calculators to check answers to pencil/paper computations
- 1.1.2 Use computers to practice math skills

**PROFICIENCY 2: COMMUNICATE UNDERSTANDING OF MATHEMATICS**

- 2.1.1 Illustrate the thought process used to solve a problem
- 2.1.2 Talk about relationships between objects and numbers
- 2.1.3 Draw pictures or use objects to illustrate math concepts

**PROFICIENCY 3: DEVELOP REASONING SKILLS**

- 3.1.1 Design patterns
- 3.1.2 Classify and sort
- 3.1.3 Extend established patterns
- 3.1.4 Interpret graphs
- 3.1.5 Begin to predict probability

**PROFICIENCY 4: RECOGNIZE AND DEVELOP MATHEMATICAL CONNECTIONS**

- 4.1.1 Identify numbers up to 121 in environmental print
- 4.1.2 Explain the placement of objects or numbers using positional relationships such as before, after, between, etc.

**PROFICIENCY 5: DEVELOP PROBLEM-SOLVING ABILITIES**

- 5.1.1 Solve problems by attempting the following strategies

- act out a problem situation
- use manipulations
- look for patterns
- retell the problem
- draw pictures
- choose the correct operation + or -
- begin to formulate problems from everyday situations

**PROFICIENCY 6:        DEVELOP AN UNDERSTANDING OF WHOLE NUMBERS  
AND THEIR RELATIONSHIPS**

- 6.1.1 Write number of set less than 100 elements
- 6.1.2 Write numbers 0-121 and identify sequence
- 6.1.3 Count by rote from 0-100 by ones, twos, fives, and tens
- 6.1.4 Count the number of items in a set with less than 100 elements
- 6.1.5 Compare and contrast sets to determine if they have the same number or are greater or less and how many
- 6.1.6 Match ordinal number names up to ten
- 6.1.7 Tell a number for one more or one less than a given number up to 100

**PROFICIENCY 7:        DEVELOP PLACE-VALUE CONCEPTS FOR WHOLE NUMBERS**

- 7.1.1 Recognize the number 10 as one ten and no ones
- 7.1.2 Put 100 objects into groups of 10 and then tell how many 10's and 1's
- 7.1.3 Identify and write a 2-digit number given a set of objects
- 7.1.4 Identify and write a 2-digit number given an illustration of a place-value model
- 7.1.5 Identify and write a 2-digit number given the number of tens and ones
- 7.1.6 Given a 2-digit number, identify the number of tens and ones
- 7.1.7 Be able to trade 10 ones for 1 tens

**PROFICIENCY 8:        DEVELOP AN UNDERSTANDING OF FRACTIONS AND DECIMALS**

- 8.1.1 Identify congruent parts
- 8.1.2 Divide regions into congruent parts

- 8.1.3 Given a region divided into four or fewer congruent parts, specify a shaded portion as “\_\_\_\_\_out of \_\_\_\_\_” parts and write the fraction
- 8.1.4 Given a set of four or fewer objects, specify a subset as “\_\_\_\_\_out of \_\_\_\_\_” parts and write the fraction. *What fraction of the pencils are red?*
- 8.1.5 Illustrate a given fraction using congruent regions and/or sets

**PROFICIENCY 9: WHOLE NUMBER COMPUTATION AND ESTIMATION**

- 9.1.1 Use manipulatives to develop the concept of addition, as well as addition facts
- 9.1.2 Demonstrate mastery of addition and subtraction facts with answers less than 10
- 9.1.3 Given any situation involving the joining of sets, represent the situation as addition
- 9.1.4 Use manipulatives to develop the concept of subtraction
- 9.1.5 Complete a number pattern using addition
- 9.1.6 Explore the relationship of addition and subtraction through “fact families” (i.e.  $4+2=6$ ,  $6-4=2$ ,  $2+4=6$ ,  $6-2=4$ )
- 9.1.7 Justify and explain addition and subtraction strategies used to get an answer
- 9.1.8 Compute both vertically- and horizontally-written addition and subtraction problems with answers up to 18
- 9.1.9 Add and subtract 2-digit numbers without regrouping
- 9.1.10 Add using 3 addends

**PROFICIENCY 10: RECOGNIZE, DESCRIBE, DRAW, CLASSIFY, AND COMPARE GEOMETRIC OBJECTS**

- 10.1.1 Draw and name circles, ellipses (oval), square, rectangles, and rhombuses (diamond)
- 10.1.2 Identify cylinders, cones, cubes and spheres
- 10.1.3 Identify and draw lines of symmetry

**PROFICIENCY 11: DEVELOP SPATIAL SENSE**

- 11.1.1 Identify basic congruent figures
- 11.1.2 Copy a simple shape
- 11.1.3 Extend a simple pattern
- 11.1.4 Identify and create shapes as 2- or 3-dimensional

**PROFICIENCY 12: ESTIMATE AND MEASURE USING CUSTOMARY, METRIC, AND NONSTANDARD**

- 12.1.1 Use nonstandard units to measure length, area, weight, and volume
- 12.1.2 Recognize the need for a uniform unit of length
- 12.1.3 Identify and give the value of pennies, nickels, dimes, quarters, and dollars
- 12.1.4 Measure and estimate length to the nearest centimeter and inch
- 12.1.5 Identify days of the week, seasons, and months of year
- 12.1.6 Discuss terminology related to temperature, weight, and length
- 12.1.7 Introduce mass, volume, graphing, and charting
- 12.1.8 Count mixed change using pennies, nickels, and dimes
- 12.1.9 Identify the given time on a clock using hours and  $\frac{1}{2}$  hours
- 12.1.10 Identify hour and minute hand
- 12.1.11 Read and write digital and analog clock times

**PROFICIENCY 13: USE DATA ANALYSIS AND PROBABILITY TO ANALYZE GIVEN SITUATION AND OUTCOMES OF EXPERIMENTS**

- 13.1.1 Collect and organize information
- 13.1.2 Construct, describe, and interpret picture graphs and bar graphs using objects
- 13.1.3 Determine which is most likely to happen from given information
- 13.1.4 Represent data using tally marks

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**ELEMENTARY MATHEMATICS**  
**GRADE 2**

**PROFICIENCY 1: USE TECHNOLOGY TO PROMOTE MATHEMATICAL UNDERSTANDING**

- 1.2.1 Use calculator to skip count
- 1.2.2 Continue to use computers to practice math skills

**PROFICIENCY 2: COMMUNICATE UNDERSTANDING OF MATHEMATICS**

- 2.2.1 Reflect on, analyze, and synthesize mathematical concepts and ideas in both written and oral form
- 2.2.2 Illustrate and label the thought process used to solve a problem
- 2.2.3 Justify in writing the thought process used to solve a problem

**PROFICIENCY 3: DEVELOP REASONING SKILLS**

- 3.2.1 Use addition to complete a numerical pattern
- 3.2.2 Identify and describe what comes next in a pictorial pattern
- 3.2.3 Verify an answer to a problem by using techniques such as classifying and sorting, interpreting graphs, and predicting probability

**PROFICIENCY 4: RECOGNIZE AND DEVELOP MATHEMATICAL CONNECTIONS**

- 4.2.1 Identify three digit numbers in environmental print

**PROFICIENCY 5: DEVELOP PROBLEM-SOLVING ABILITIES**

- 5.2.1 Solve problems by attempting the following strategies
  - act out a problem situation
  - use manipulations
  - look for patterns
  - retell a story problem
  - draw pictures

- choose the correct operation + or -
- begin to formulate problems from everyday situations
- guess and check
- explain a problem situation
- Identify key words or phrases which indicate the appropriate operation

**PROFICIENCY 6: DEVELOP AN UNDERSTANDING OF WHOLE NUMBERS AND THEIR RELATIONSHIPS**

- 6.2.1 Count by ones, twos, fives, and tens the number of items in a set with less than 1000 elements
- 6.2.2 Identify even and odd numbers up to 100
- 6.2.3 Arrange a set of numbers (0-99) from smallest to largest
- 6.2.4 Tell the number and write the numeral immediately before or after a 2-digit number
- 6.2.5 Tell the number and write the numeral that is ten units before or ten units after any 2-digit number
- 6.2.6 Compare and contrast any set of two-digit numbers to determine which is greater or lesser using appropriate symbols ( $<$   $=$   $>$ )
- 6.2.7 Identify ordinal number names 1-20

**PROFICIENCY 7: DEVELOP PLACE-VALUE CONCEPTS FOR WHOLE NUMBERS**

The concept of place-value is one on which all computational skills are built and a solid understanding is imperative.

- 7.2.1 Use a place-value model to represent numbers up to three places
- 7.2.2 Identify and write any 2-digit number in various combinations of tens and ones (i.e. 32 is 3 tens and 2 ones, or 2 tens and 12 ones, etc.)
- 7.2.3 Given a 2-digit number and using a model such as a number line, identify the nearest ten
- 7.2.4 Identify the pattern of the numbers in each of the decades, tens through nineties using a hundreds chart (i.e. 32, 42, 52)
- 7.2.5 Identify and write the number 100 in various formats - as one hundred and no tens and no ones, as tens, or as a combination of tens and ones

**PROFICIENCY 8: DEVELOP AN UNDERSTANDING OF FRACTIONS AND DECIMALS**

- 8.2.1 Given a region divided into 8 or fewer congruent parts, name (using the correct vocabulary, such as, one-half, three-fourths, etc.) and write a fraction to represent an indicated portion

- 8.2.2 Given a set of 8 or fewer objects, name (using the correct vocabulary such as, one-half, three-fourths, etc.) and write a fraction to represent a subset
- 8.2.3 Illustrate a given fraction using congruent regions and/or sets

**PROFICIENCY 9: WHOLE NUMBER COMPUTATION AND ESTIMATION**

- 9.2.1 Use manipulatives to develop 2-digit addition algorithms
- 9.2.2 Add or subtract any 2-digit numbers with and without regrouping
- 9.2.3 Use manipulatives to develop the concept of subtraction as well as specific subtraction facts
- 9.2.4 Given any situation involving the separation of sets, comparison of sets, or missing addend, represent the situation as subtraction
- 9.2.5 Demonstrate mastery of addition and subtraction facts using numbers up to 18
- 9.2.6 Determine the reasonableness of answers in addition and subtraction problems
- 9.2.7 Use estimation and mental computation to solve problems where exact answers are not required
- 9.2.8 Complete number patterns using addition or subtraction
- 9.2.9 Understand the relationship between addition and subtraction (number families)
- 9.2.10 Add using 3 or more addends that are 1 and/or 2 digit numbers
- 9.2.11 Add and subtract 3-digit numbers using \$ sign and decimal point without regrouping
- 9.2.12 Understand the relationship between addition and multiplication

**PROFICIENCY 10: RECOGNIZE, DESCRIBE, DRAW, CLASSIFY, AND COMPARE GEOMETRIC OBJECTS**

- 10.2.1 Draw and make squares, ellipses (ovals), triangles, rectangles, circles, and rhombuses (diamonds)
- 10.2.2 Make and describe cylinders, cones, and cubes, and spheres
- 10.2.3 Identify and draw lines of symmetry

**PROFICIENCY 11: DEVELOP SPATIAL SENSE**

- 11.2.1 Extend a pattern composed of three or more simple shapes
- 11.2.2 Recognize and make shapes which can be created from a set of two shapes

11.2.3 Identify simple congruent figures in different positions

11.2.4 Sketch the reflection (mirror image) of a shape

**PROFICIENCY 12: ESTIMATE AND MEASURE USING CUSTOMARY, METRIC, AND NONSTANDARD**

12.2.1 Read a thermometer calibrated in Fahrenheit and Celsius scales

12.2.2 Estimate and use nonstandard units to measure area

12.2.3 Estimate and use nonstandard units to measure weight

12.2.4 Recognize the need for a uniform unit of measurement

12.2.5 Estimate capacity using cups and pints

12.2.6 Describe the relationship of inch, foot, and yard

12.2.7 Describe the relationship of centimeter and meter

12.2.8 Compare an inch to a centimeter and a yard to a meter

12.2.9 Measure to the nearest inch, centimeter, foot, yard, or meter

12.2.10 Identify the time on an analog and digital clock to include half-hour, quarter hour, and five minute intervals

12.2.11 Develop a sense of time regarding months (describe a month, i.e. a month is longer than two weeks and has about 30 days)

12.2.12 Identify the value of quarters, half-dollars, and dollars

12.2.13 Determine the value of a collection of pennies, nickels, dimes, and quarters whose total value is less than a dollar

12.2.14 Name the months of the year

**PROFICIENCY 13: USE DATA ANALYSIS AND PROBABILITY TO ANALYZE GIVEN SITUATION AND OUTCOMES OF EXPERIMENTS**

13.2.1 Collect data, construct, and interpret picture and bar graphs

13.2.2 Write a story problem using information from a graph

13.2.3 Recognize probability by determining which event is most likely or least likely to happen given appropriate information (Put a blue crayon and three green crayons in a bag. Which color is more likely to be pulled out of the bag?)

<p style="text-align: center;"><b>ELEMENTARY MATHEMATICS</b> <b>GRADE 3</b></p>
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**PROFICIENCY 1: USE TECHNOLOGY TO PROMOTE MATHEMATICAL UNDERSTANDING**

- 1.3.1 Enter a 3- or 4-digit number into a calculator accurately when given directions
- 1.3.2 Continue to use computers to practice math skills

**PROFICIENCY 2: COMMUNICATE UNDERSTANDING OF MATHEMATICS**

- 2.3.1 Reflect on, analyze, and synthesize mathematical concepts and ideas in both written and oral form
- 2.3.2 Illustrate and label the thought process used to solve a problem
- 2.3.3 Justify in writing the thought process used to solve a problem

**PROFICIENCY 3: DEVELOP REASONING SKILLS**

- 3.3.1 Use addition and subtraction to complete a number pattern
- 3.3.2 Verify answers to problems using techniques such as classifying and sorting, interpreting graphs, and predicting probability

**PROFICIENCY 4: RECOGNIZE AND DEVELOP MATHEMATICAL CONNECTIONS**

- 4.3.1 Identify 5-digit numbers in environmental print
- 4.3.2 Recognize that math is used in all subject areas

**PROFICIENCY 5: DEVELOP PROBLEM-SOLVING ABILITIES**

- 5.3.1 Solve problems by attempting the following strategies
  - act out a problem situation
  - use manipulations
  - look for patterns
  - retell a story problem
  - draw pictures
  - choose the correct operation + or -
  - begin to formulate problems from everyday situations

- guess and check
- explain a problem situation
- write an equation
- make a table
- make a list

5.3.2 Identify key words or phrases which indicate the appropriate operation

**PROFICIENCY 6: DEVELOP AN UNDERSTANDING OF WHOLE NUMBERS AND THEIR RELATIONSHIPS**

- 6.3.1 Use patterns in whole number counting (3,6,9...)
- 6.3.2 Plot and label whole numbers on a number line up to 100
- 6.3.3 Arrange a set of numbers (0-999) from smallest to largest
- 6.3.4 State the number and write the numeral immediately before and after a 3-digit number
- 6.3.5 State the number and write the numeral that is ten units before or after any 3-digit number
- 6.3.6 Compare and contrast any set of 3-digit numbers to determine which is greater or less using appropriate symbols ( $<$   $=$   $>$ )

**PROFICIENCY 7: DEVELOP PLACE-VALUE CONCEPTS FOR WHOLE NUMBERS**

- 7.3.1 Recognize and write a 3-digit number given an illustration of a place-value model
- 7.3.2 Given the number of hundreds, tens and ones, write a 3-digit number
- 7.3.3 Write a 3-digit number in various expanded forms (i.e. 325 can be written as 3 hundreds + 2 tens and 5 ones or 2 hundreds + 12 tens and 5 ones, etc.)
- 7.3.4 Identify the number 1000 as a unit or in various combinations of hundreds, tens, and ones
- 7.3.5 Given a 4-digit number, identify the number of hundreds, tens, and ones

**PROFICIENCY 8: DEVELOP AN UNDERSTANDING OF FRACTIONS AND DECIMALS**

- 8.3.1 Identify and use correct vocabulary for numerators and denominators
- 8.3.2 Given a region divided into congruent parts, name and write a fraction to represent a shaded portion
- 8.3.3 Given a set of objects, name and write a fraction to represent a subset
- 8.3.4 Given a set of fractional models, name and write those that represent equivalent fractions
- 8.3.5 Given a fraction, use physical models or illustrations to represent equivalent fractions

- 8.3.6 Given a pair of like fractions, determine which is larger or smaller by using illustrations
- 8.3.7 Given illustrations, name and write a decimal to represent tenths

**PROFICIENCY 9: WHOLE NUMBER COMPUTATION AND ESTIMATION**

- 9.3.1 Add or subtract any numbers less than 1,000 with and without regrouping
- 9.3.2 Use estimation and mental computation to solve problems
- 9.3.3 Use manipulatives to develop an addition and subtraction algorithm of any two numbers less than 1,000
- 9.3.4 Use manipulatives and pictures to develop concepts of multiplication facts as repeated addition
- 9.3.5 Explore the relationship between multiplication and division through fact families
- 9.3.6 Demonstrate mastery of multiplication facts up to nine
- 9.3.7 Demonstrate mastery of division facts through five
- 9.3.8 Complete number patterns using addition and subtraction
- 9.3.9 Justify and explain addition and subtraction strategies to get answers
- 9.3.10 Use manipulatives and pictures to represent division facts
- 9.3.11 Round to nearest 10's and 100's.

**PROFICIENCY 10: RECOGNIZE, DESCRIBE, DRAW, CLASSIFY, AND COMPARE GEOMETRIC OBJECTS**

- 10.3.1 Use the terms points, line segments, edges, lines, faces, and corners
- 10.3.2 Identify, make, and describe cylinders, cones, cubes, spheres, pyramids, and prisms
- 10.3.3 Identify and draw lines of symmetry
- 10.3.4 Determine if two planes are congruent

**PROFICIENCY 11: DEVELOP SPATIAL SENSE**

- 11.3.1 Divide a shape into smaller shapes  or
- 11.3.2 Recognize and make shapes that can be created from a set of three simple shapes
- 11.3.3 Identify a variety of congruent figures
- 11.3.4 Draw figures congruent to a given figure

**PROFICIENCY 12: ESTIMATE AND MEASURE USING CUSTOMARY, METRIC, AND NONSTANDARD**

- 12.3.1 Tell time to the nearest minute on analog and digital clocks
- 12.3.2 Measure line segments to the nearest half inch and quarter inch
- 12.3.3 Compute perimeter
- 12.3.4 Add units of length that may or may not require regrouping of inches to feet or centimeters to meters
- 12.3.5 Estimate weight using pounds and mass using kilograms
- 12.3.6 Estimate capacity using quarts, gallons, and liters
- 12.3.7 Given customary and metric units, compute the area of a rectangular region
- 12.3.8 Identify the value of any collection of coins and dollars
- 12.3.9 Given an amount of money, determine if a purchase can be made
- 12.3.10 Determine the most appropriate unit of measurement
- 12.3.11 Utilize calendar to identify number order of months and days

**PROFICIENCY 13: USE DATA ANALYSIS AND PROBABILITY TO ANALYZE GIVEN SITUATION AND OUTCOMES OF EXPERIMENTS**

- 13.3.1 Collect data, construct, and interpret picture and bar graphs using data
- 13.3.2 Interpret circle graphs (pie graphs)
- 13.3.3 Write, explain, and justify a story problem using information from a graph
- 13.3.4 Given appropriate information, determine which is most likely or least likely to happen or whether one event is more likely than another to occur
- 13.3.5 Use a table or chart to recognize number patterns
- 13.3.1 Use tallying as a method of gathering and organizing information

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**ELEMENTARY MATHEMATICS**  
**GRADE 4**

**PROFICIENCY 1: USE TECHNOLOGY TO PROMOTE MATHEMATICAL UNDERSTANDING**

- 1.4.1 Be familiar with the functions of a calculator and computer and be able to use them in problem solving situations to find and to check answers and to practice skills

**PROFICIENCY 2: COMMUNICATE UNDERSTANDING OF MATHEMATICS**

- 2.4.1 Reflect on, analyze, justify, and synthesize mathematical concepts and ideas in both written and oral form based upon level of skill
- 2.4.2 Illustrate and label the thought process used to solve a problem
- 2.4.3 Justify in writing the thought process used to solve a problem

**PROFICIENCY 3: DEVELOP REASONING SKILLS**

- 3.4.1 Use addition, subtraction, and multiplication to complete a number pattern
- 3.4.2 Verify answers to a problem using appropriate and varied strategies

**PROFICIENCY 4: RECOGNIZE AND DEVELOP MATHEMATICAL CONNECTIONS**

- 4.4.1 Recognize that math is integrated in all subject areas using strategies such as
- mathematical applications in social studies such as graphs, tables, and map skills
  - mathematical applications in science such as measurement, graphs, and data analysis
  - mathematical applications in fine arts such as half notes in music, tessellations in art, and shapes in sculpture
  - the use of geometry in nature, art, and architecture
  - the use of probability and statistics to describe and predict natural events
  - the use of money and banking applications

**PROFICIENCY 5: DEVELOP PROBLEM-SOLVING ABILITIES**

- 5.4.1 Use the following problem-solving strategies

- attempt to solve any problem presented
- explain a problem in writing and/or with labeled drawings
- explain and/or model the process used to solve a given problem
- use problem-solving approaches to investigate and understand mathematical concepts
- formulate problems from real-life situations
- develop and apply strategies to solve a wide variety of problems including those which require several steps to solve
- verify and interpret results with respect to the original problem
- act out a problem situation
- use manipulatives
- look for patterns
- retell a story problem
- draw a picture
- explain a problem situation
- recognize key/cue words
- guess and check
- write an equation/number sentence
- make a table or original list
- use logic
- work backwards
- make it simpler

**PROFICIENCY 6: DEVELOP AN UNDERSTANDING OF WHOLE NUMBERS AND THEIR RELATIONSHIPS**

- 6.4.1 Estimate, plot, and label a position on the number line
- 6.4.2 Tell a number and write a numeral immediately before or after a 4-digit number
- 6.4.3 Compare and contrast any two 4-digit numbers using appropriate symbols and ordering
- 6.4.4 Count by multiples of 1 through 10
- 6.4.5 Use appropriate mathematical terms

**PROFICIENCY 7: DEVELOP PLACE-VALUE CONCEPTS FOR WHOLE NUMBERS**

- 7.4.1 Write a 4-, 5-, 6-digit number given an illustration of a place value model
- 7.4.2 Write a 4, 5, 6-digit number given the hundred thousands, ten thousands, thousands, hundreds, tens, and ones
- 7.4.3 Identify any 4-digit number as various combinations of thousands, hundreds, tens and ones
- 7.4.4 Given a 4-digit number, round to the nearest thousand, hundred, or ten
- 7.4.5 Using the pattern of hundreds, tens, and ones, name the place value for numbers in thousand period

- 7.4.6 Read and write any numeral equal to or less than one million in both standard and expanded term
- 7.4.7 Write and interpret number words through thousands

**PROFICIENCY 8: DEVELOP AN UNDERSTANDING OF FRACTIONS AND DECIMALS**

- 8.4.1 Rename and rewrite whole numbers as fraction with varying denominators
- 8.4.2 Using physical models or illustrations, determine the sum or difference of fractions with like denominators
- 8.4.3 Given physical models or illustrations, name and write mixed numerals
- 8.4.4 Using physical models or illustrations, name and write mixed numerals as improper fractions
- 8.4.5 Given a decimal representing tenths, represent it as a fraction
- 8.4.6 Given a decimal representing hundredths, represent it as a fraction
- 8.4.7 Use appropriate mathematical terms
- 8.4.8 Add and subtract fractions with like denominators
- 8.4.9 Add and subtract decimals in tenths and hundredths
- 8.4.10 Reduce fractions to the lowest terms

**PROFICIENCY 9: WHOLE NUMBER COMPUTATION AND ESTIMATION**

- 9.4.1 For any given situation involving repeated addends, represent it as multiplication
- 9.4.2 Use manipulatives and pictures to represent division as the sharing of objects and as the number of groups of shared objects
- 9.4.3 Using division facts, write a number sentence for a given situation
- 9.4.4 Demonstrate mastery of multiplication facts up through twelve
- 9.4.5 Demonstrate the mastery of division facts up through twelve
- 9.4.6 Develop the concept of remainder with division problems “close to” division facts
- 9.4.7 Complete number patterns using multiplication and division
- 9.4.8 Justify and explain multiplication and division strategies to solve problems
- 9.4.9 Determine the logic of answers for problems involving multiplication and division

- 9.4.10 Use estimation and mental computation to solve problems where exact answers are not required
- 9.4.11 Round numbers to the hundred thousands
- 9.4.12 Recognize appropriate multiple and division vocabulary

**PROFICIENCY 10:      RECOGNIZE, DESCRIBE, DRAW, CLASSIFY, AND COMPARE  
GEOMETRIC OBJECTS**

- 10.4.1 Identify, describe, and draw rays, right angles, acute angles, obtuse angles, and straight angles
- 10.4.2 Identify, describe, and draw parallel and perpendicular lines
- 10.4.3 Identify, describe, define, and draw parallelograms, rhombuses, and trapezoids
- 10.4.4 Identify, describe, and construct 3-dimensional solids
- 10.4.5 Identify, describe, and draw lines of symmetry
- 10.4.6 Recognize congruent shapes

**PROFICIENCY 11:      DEVELOP SPATIAL SENSE**

- 11.4.1 Combine several simple shapes to make a complex shape
- 11.4.2 Draw the translation (slide), rotation (turn), and reflection (flip) of a given shape
- 11.4.3 Select a three-dimensional object given illustrations from two different perspectives

**PROFICIENCY 12:      ESTIMATE AND MEASURE USING CUSTOMARY, METRIC, AND  
NONSTANDARD**

- 12.4.1 Add and subtract units of length that may or may not require renaming of feet to inches or meters to centimeters
- 12.4.2 Select an appropriate unit of measure for a given situation
- 12.4.3 Determine the perimeter of a rectangular region
- 12.4.4 Compare and contrast figures with equal perimeters
- 12.4.5 Given customary or metric units, estimate the area of any region
- 12.4.6 Develop the formula for finding areas of rectangular regions
- 12.4.7 Develop an understanding of adding and subtracting time intervals
- 12.4.8 Determine the amount of change to be received from a purchase

12.4.9 Recognize and read a thermometer using Celsius or Fahrenheit

**PROFICIENCY 13.0**

**USE DATA ANALYSIS AND PROBABILITY TO ANALYZE  
GIVEN SITUATION AND OUTCOMES OF EXPERIMENTS**

13.4.1 Discriminate, collect data, and interpret picture, bar, circle, and line graphs

13.4.2 Use graphs with scales marked off in units other than one

13.4.3 Justify and explain strategies used to get answers to problems derived from collected data

13.4.4 Write a story problem using information from a graph

13.4.5 Investigate the probability of an event occurring

13.4.6 Construct picture, bar, and line graphs

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**ELEMENTARY MATHEMATICS**  
**GRADE 5**

**PROFICIENCY 1: DEVELOP STRATEGIES FOR SOLVING PROBLEMS THROUGH  
TRANSLATING DATA INTO MATHEMATICAL LANGUAGE**

1.5.1 Use and justify in writing various problem-solving strategies

- solve story problems by determining and using the appropriate mathematical function
- determine if an exact answer or an estimate is appropriate to a problem
- understand the question in a problem
- estimate the answer to a problem, before solving, to decide what answer would be reasonable
- solve problems by finding related problems
- solve problems involving the use of data in a drawing from a table and diagrams
- solve multiple-step problems
- solve problems with more than one answer
- solve problems by making an organized list
- solve problems by looking for a pattern
- solve a simpler problem to suggest a solution to a more complex one
- use logic to solve a problem

1.5.2 Use labels in explaining problems

**PROFICIENCY 2: DEVELOP AND PRACTICE EFFECTIVE COMMUNICATION**

2.5.1 Justify or explain procedures and answers

- describe ways numbers are used in the real world
- explain the thought process in writing or orally when given a problem-solving situation
- explain and justify the solution to a given problem in a variety of settings such as cooperative learning
- make and validate ideas about possible relationships
- use all appropriate mathematical vocabulary where necessary

2.5.2 Illustrate and label the thought process used to solve a problem

2.5.3 Justify in writing the thought process used to solve a problem

**PROFICIENCY 3: DEVELOP REASONING SKILLS AND APPLY THEM TO PROBLEM-SOLVING SITUATIONS**

3.5.1 Develop reasoning skills and apply them to problem-solving situations

- estimate the answer to a problem, before solving, to decide what answer would be reasonable
- use simulations as a method of predicting possible outcomes
- use critical thinking to make predictions of probable outcomes

**PROFICIENCY 4: USE MATH IN A VARIETY OF CONTEXTS AND MAKE CONNECTIONS**

4.5.1 Recognize that math is integrated in all subject areas and in everyday life using strategies such as

- mathematical applications in social studies such as graphs, tables, and map skills
- mathematical applications in science such as measurement, graphs, and data analysis
- mathematical applications in fine arts such as half notes in music, tessellations in art, and shapes in sculpture
- the use of geometry in nature, art, and architecture
- the use of probability and statistics to describe and predict natural events
- the use of money and banking applications

**PROFICIENCY 5: REINFORCE AN UNDERSTANDING OF THE PLACE-VALUE SYSTEM FOR WHOLE NUMBERS AND DECIMALS**

5.5.1 Identify a number from billions to hundredths and conversely

5.5.2 Name the place value from thousandths to billions of a particular digit given a whole number or decimal using a place value model where needed

5.5.3 Round any given whole number to any specified place value

5.5.4 Order a set of whole numbers up to one million

**PROFICIENCY 6: REINFORCE AN UNDERSTANDING OF FRACTIONS, AND DEVELOP AN UNDERSTANDING OF PERCENTS, INTEGERS, AND IRRATIONALS**

6.5.1 Identify and classify a list of whole numbers 0-100 as prime and composite

6.5.2 Compare two or more rational numbers

6.5.3 Explore percents

6.5.4 Use the appropriate terminology and symbols for percents and fractions



**PROFICIENCY 7: COMPUTATION AND ESTIMATION WITH REAL NUMBERS**

- 7.5.1 Compute the sum or difference of two or more decimals including whole numbers of four digits or less
- 7.5.2 Introduce multiplication and division of decimals
- 7.5.3 Find the quotient of a 3-digit dividend with a 2-digit divisor
- 7.5.4 Add or subtract fractions with like or unlike denominators
- 7.5.5 Introduce multiplication of fractions
- 7.5.6 Change improper fractions to mixed numerals and reverse
- 7.5.7 Reduce fractions to lowest terms
- 7.5.8 Multiply by 1 and 2 digit multipliers
- 7.5.9 Estimate the sums, differences, products, and quotients of given problems
- 7.5.10 Use estimation and mental math where exact answers are not required
- 7.5.11 Add or subtract whole numbers in columns up to millions

**PROFICIENCY 8: UNDERSTAND GEOMETRIC TERMS AND CONCEPTS AND APPLY THESE IN PROBLEM SOLVING**

- 8.5.1 Identify and classify plane figures
- 8.5.2 Identify plane figures and like three dimensional figures
- 8.5.3 Use geometric concepts and terminology, such as symmetry, slides, flips and turns to describe phenomenon in nature, art, construction, and other events
- 8.5.4 Introduce measuring and describing angles and other plane figures

**PROFICIENCY 9: DEVELOP MEASUREMENT SKILLS**

- 9.5.1 Choose the appropriate metric or English unit (centimeter, meter, inches, feet, or yard) to determine the linear measure and/or area of an object
- 9.5.2 Choose the appropriate metric or English unit to determine the volume of an object
- 9.5.3 Measure a given item to an indicated precision
- 9.5.4 Given a problem-solving situation, make an appropriate estimate relating to size, quantity, temperature, capacity, and passage of time
- 9.5.5 Determine the amount of change using the fewest coins possible

**PROFICIENCY 10: COLLECT, ORGANIZE, ANALYZE, AND INTERPRET DATA**

- 10.5.1 Interpret a bar, line, or picture graph and analyze the data
- 10.5.2 Choose an appropriate scale and construct a graph using data
- 10.5.3 Given a problem situation, collect, organize, and present the numerical data in a variety of forms
- 10.5.4 Identify which bar, line, and picture graphs reflect a given set of data
- 10.5.5 Predict the likelihood of an event occurring given the data and/or graphs
- 10.5.6 Find the average of a given set of data

**PROFICIENCY 11: DEVELOP AN UNDERSTANDING OF RATIOS, PROPORTIONS, AND PERCENTS WITH APPLICATIONS TO PROBLEM SOLVING**

- 11.5.1 Use models and manipulatives to represent ratios and proportions
- 11.5.2 Write and simplify ratios
- 11.5.3 Given a real life situation, write and simplify ratios
- 11.5.4 Understand the relationship between ratios and percents
- 11.5.5 Introduce the relationship between decimals, percents, and fractions

**PROFICIENCY 12: DEVELOP EXPLORATIONS OF ALGEBRAIC CONCEPTS AND PROCESSES**

- 12.5.1 Given an equation, replace the variable with an appropriate number
- 12.5.2 Plot points on a number line
- 12.5.3 Examine a pattern and make predictions
- 12.5.4 Introduce ordered pairs and grid positions
- 12.5.5 Introduce order of operations

**PROFICIENCY 13: DEVELOP AND REINFORCE APPROPRIATE SKILLS IN THE USE OF CALCULATORS AND COMPUTERS IN PROBLEM-SOLVING SITUATIONS**

**Calculators and computers are useful tools in mathematics and should be utilized whenever the instructor feels it is necessary and valuable and will reinforce or introduce concepts.**

MONROE COUNTY COMMUNITY SCHOOL CORPORATION  
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**ELEMENTARY MATHEMATICS**  
**GRADE 6**

**PROFICIENCY 1: DEVELOP STRATEGIES FOR SOLVING PROBLEMS THROUGH  
TRANSLATING DATA INTO MATHEMATICAL LANGUAGE**

1.6.1 Use and justify in writing various problem-solving strategies

- solve story problems by determining and using the appropriate mathematical function
- determine if an exact answer or an estimate is appropriate to solve a problem
- understand the question in a problem
- estimate the answer to a problem, before solving, to decide what answer would be reasonable
- solve problems by finding related problems
- solve problems involving the use of data in a drawing from a table and diagrams
- solve multiple-step problems
- solve problems by making an organized list
- solve problems by looking for a pattern
- solve a simpler problem to suggest a solution to a more complex one
- use logic to solve a problem

1.6.2 Use labels in explaining problems

**PROFICIENCY 2: DEVELOP AND PRACTICE EFFECTIVE COMMUNICATION**

2.6.1 Justify or explain procedures and answers

- describe ways numbers are used in the real world
- explain the thought process in writing or orally when given a problem-solving situation
- explain and justify the solution to a given problem in a variety of settings such as cooperative learning
- make and validate ideas about possible relationships
- use all appropriate mathematical vocabulary where necessary

2.6.2 Illustrate and label the thought process used to solve a problem

2.6.3 Justify in writing the thought process used to solve a problem

**PROFICIENCY 3: DEVELOP REASONING SKILLS AND APPLY THEM TO PROBLEM-  
SOLVING SITUATIONS**

3.6.1 Develop reasoning skills and apply them to problem-solving situations

- estimate the answer to a problem before solving to decide what answer would be reasonable
- use simulations as a method of predicting possible outcomes
- use critical thinking to make predictions of probable outcomes

**PROFICIENCY 4: USE MATH IN A VARIETY OF CONTEXTS AND MAKE CONNECTIONS**

4.6.1 Recognize that math is integrated in all subject areas and in everyday life using strategies such as

- mathematical applications in social studies such as graphs, tables, and map skills
- mathematical applications in science such as measurement, graphs, and data analysis
- mathematical applications in fine arts such as half notes in music, tessellations in art, and shapes in sculpture
- the use of geometry in nature, art, and architecture
- the use of probability and statistics to describe and predict natural events
- the use of money and banking applications

**PROFICIENCY 5: REINFORCE AN UNDERSTANDING OF THE PLACE-VALUE SYSTEM FOR WHOLE NUMBERS AND DECIMALS**

5.6.1 Round any decimal or whole number to any specified place

5.6.2 Order a set of decimal or whole numbers up to thousandths

**PROFICIENCY 6: REINFORCE AN UNDERSTANDING OF FRACTIONS, AND DEVELOP AN UNDERSTANDING OF PERCENTS, INTEGERS, AND IRRATIONALS**

6.6.1 Determine the prime factorization of a whole number less than 100

6.6.2 Compare two or more rational numbers

6.6.3 Given two or more commonly used fractions, such as fourths, eighths, and tenths, identify equivalent fractions

6.6.4 Express a fraction as a decimal

6.6.5 Recognize relationships between fractions, decimals, percents, ratios, and proportions

6.6.6 Express a terminating decimal as a fraction

6.6.7 Find the GFC and the LCM of a set of numbers

**PROFICIENCY 7: COMPUTATION AND ESTIMATION WITH REAL NUMBERS**

- 7.6.1 Multiply decimals including whole numbers
- 7.6.2 Find the quotient of a 4-digit dividend with a 2-digit divisor
- 7.6.3 Use estimation to predict the results of problems using four operations
- 7.6.4 Compute the sum, difference, product, and quotient of two fractions
- 7.6.5 Solve all appropriate addition, subtraction, multiplication, and division problems using whole numbers, decimals and fractions

**PROFICIENCY 8: UNDERSTAND GEOMETRIC TERMS AND CONCEPTS AND APPLY THESE IN PROBLEM SOLVING**

- 8.6.1 Identify, describe, compare and/or classify a selection of plane figures
- 8.6.2 Given a pictorial representation of a three-dimensional object identify, describe, compare, and classify such objects
- 8.6.3 Given a set of plane figures, identify those that are congruent
- 8.6.4 Use geometric concepts and terminology to describe phenomenon in the real world and in mathematics
- 8.6.5 Measure and use appropriate tools to describe angles and other plane figures

**PROFICIENCY 9: DEVELOP MEASUREMENT SKILLS**

- 9.6.1 Choose the appropriate metric or English unit (centimeter, meter, inches, feet, yard) to determine the linear measure area and/or volume of an object
- 9.6.2 Measure a given item to an indicated precision
- 9.6.3 Given a problem-solving situation, make an appropriate estimate relating to size, quantity, temperature, capacity, and passage of time
- 9.6.4 Determine the amount of change using the fewest coins possible

**PROFICIENCY 10: COLLECT, ORGANIZE, ANALYZE AND INTERPRET DATA**

- 10.6.1 Given a bar, line, or picture graph, interpret and analyze the data
- 10.6.2 Choose an appropriate scale and construct a graph or diagram using a set of numerical data
- 10.6.3 Given a problem-solving situation, collect, organize, and present the numerical data in a variety of forms

- 10.6.4 Given graphs of data, identify which bar, line, and picture graphs reflect the same set of data
- 10.6.5 Find the mean, median, mode, and range of a given set of data
- 10.6.6 Make predictions from given set of data and/or graph
- 10.6.7 Given a bar, line, or picture graph, interpret and analyze the data
- 10.6.8 Choose an appropriate scale and construct a graph or diagram using a set of numerical data
- 10.6.9 Given a problem situation, collect, organize, and present the numerical data in a variety of forms

**PROFICIENCY 11      DEVELOP AN UNDERSTANDING OF RATIOS, PROPORTIONS,  
AND PERCENTS WITH APPLICATIONS TO PROBLEM SOLVING**

- 11.6.1 Given a real life situation, write and simplify ratios
- 11.6.2 Understand the relationship between ratios, fractions, decimals, percents, and proportions
- 11.6.3 Use appropriate terminology and symbols for ratios, percents, and fractions when justifying answers to problems

**PROFICIENCY 12      DEVELOP EXPLORATIONS OF ALGEBRAIC CONCEPTS AND  
PROCESSES**

- 12.6.1 Given a word problem, translate the problem into an equation
- 12.6.2 Evaluate a given expression
- 12.6.3 Examine numerical patterns and make predictions
- 12.6.4 Solve equations involving one operation
- 12.6.5 Write an equation to find the solution to a given problem
- 12.6.6 Plot whole numbered ordered pairs on a 2-dimensional grid
- 12.6.7 Apply order of operations rules to number sentences
- 12.6.8 Introduce integers, negative, and positive numbers
- 12.6.9 Introduce appropriate algebraic symbols such as  $\succ$ ,  $a - b$ ,  $\emptyset$ , etc.

**PROFICIENCY 13      DEVELOP AND REINFORCE APPROPRIATE SKILLS IN THE USE OF  
CALCULATORS AND COMPUTERS IN PROBLEM-SOLVING  
SITUATIONS**

**Calculators and computers are useful tools in mathematics and should be utilized whenever the instructor feels it is necessary and valuable and will reinforce or introduce concepts**