

MONROE COUNTY COMMUNITY SCHOOL CORPORATION
CURRICULUM GUIDE

MIDDLE SCHOOL MATHEMATICS
GRADE 8

PROFICIENCY 1: STUDENTS WILL DEVELOP STRATEGIES FOR SOLVING PROBLEMS BY TRANSLATING DATA INTO MATHEMATICAL LANGUAGE

- 1.8.1 Continue to solve problems by strategies such as making a list, drawing a picture, or looking for a pattern
- 1.8.2 Solve problems that require interpreting a diagram or drawing, using logical reasoning, or using guess and check
- 1.8.3 Solve a simpler problem to suggest a solution to a more complex one
- 1.8.4 Solve a problem involving two or more steps
- 1.8.5 Recognize and use properties of numbers to solve problems (associative, commutative, distributive, identity, and inverse)

PROFICIENCY 2: STUDENTS WILL DEVELOP AND PRACTICE EFFECTIVE MATHEMATICAL COMMUNICATION

- 2.8.1 Keep math notebooks and/or journals
- 2.8.2 Communicate strategies for solving problems using appropriate mathematical vocabulary
- 2.8.3 Explain the thought process in writing or orally when given a problem-solving situation
- 2.8.4 Explain and justify the solution to a given problem in a variety of settings or groups
- 2.8.5 Make and validate conjectures about possible relationships given a pattern
- 2.8.6 Create and solve word problems

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

- 3.8.1 Develop and apply appropriate deductive or inductive reasoning strategies to solve a problem

- 3.8.2 Identify one or more strategies in a problem-solving situation
- 3.8.3 Make predictions, gather evidence, and formulate rules in problem-solving

PROFICIENCY 4: STUDENTS WILL RECOGNIZE AND MAKE CONNECTIONS

- 4.8.1 Discuss applications of numbers to everyday life
- 4.8.2 Recognize relationships and patterns within the set of integer numbers, including rationals
- 4.8.3 Recognize that mathematical topics like measurement, probability, statistics, and problem-solving can be applied to social studies, science, home economics, and other disciplines
- 4.8.4 Investigate and recognize the role of mathematics in our society
- 4.8.5 Relate geometric concepts and terminology to everyday situations
- 4.8.6 Discuss vocations and their mathematical requirements

PROFICIENCY 5: STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE PLACE-VALUE SYSTEM FOR WHOLE NUMBERS AND DECIMALS

- 5.8.1 Read and interpret whole numbers and decimals from trillions through millions
- 5.8.2 Round a whole or decimal number to a specified place
- 5.8.3 Express any whole or decimal number in scientific notation
- 5.8.4 Order a set of rational numbers sequentially

PROFICIENCY 6: STUDENTS WILL DEVELOP AN UNDERSTANDING OF FRACTIONS, PERCENT, AND INTEGERS

- 6.8.1 Determine the prime factorization of a whole number in exponential form
- 6.8.2 Explore the relationships between percent, ratio, and proportion
- 6.8.3 Find the greatest common factor and least common multiple of two or more numbers
- 6.8.4 Convert fractions, decimals, and percent to equivalent forms
- 6.8.5 Order a set of rational numbers sequentially
- 6.8.6 Show connections between integers and everyday situations

PROFICIENCY 7: STUDENTS WILL DEVELOP COMPUTATIONAL PROFICIENCY WITHIN THE SET OF REAL NUMBERS

- 7.8.1 Solve a problem within the set of rational numbers using one or more operations
- 7.8.2 Compute the sum, difference, product, or quotient of a problem involving two or more integers
- 7.8.3 Identify and apply the order of operations with any problem involving real numbers

PROFICIENCY 8: STUDENTS WILL DEVELOP ESTIMATING SKILLS WITH WHOLE NUMBERS, FRACTIONS, AND DECIMALS WITH APPLICATION TO MEASUREMENT, GEOMETRY, AND PROBLEM-SOLVING

- 8.8.1 Recognize when an estimated answer is reasonable and justify conclusions
- 8.8.2 Estimate the sum, difference, product, or quotient of a problem involving the four operations of any rational numbers
- 8.8.3 Given a problem-solving situation, make an appropriate estimate relating to size, quantity, temperature, capacity, or passage of time, etc.

PROFICIENCY 9: STUDENTS WILL DEVELOP AN UNDERSTANDING OF GEOMETRIC TERMS AND CONCEPTS AND APPLY THOSE IN PROBLEM-SOLVING ACTIVITIES

- 9.8.1 Identify the properties of a plane or solid figure
- 9.8.2 Given a problem-solving situation involving similar geometric figures, apply the properties of similarity to solve the problem
- 9.8.3 Discuss the meaning of pi
- 9.8.4 Calculate the area, perimeter, or circumference of a polygon or circle
- 9.8.5 Calculate volume of geometric solids such as cones, prisms, etc.
- 9.8.6 Use a protractor to measure angles
- 9.8.7 Use a compass to bisect angles and line segments

PROFICIENCY 10: STUDENTS WILL DEVELOP MEASUREMENT SKILLS USING METRIC AND/OR CUSTOMARY UNITS

- 10.8.1 Given a ruler, measure a line segment in both metric or customary units
- 10.8.2 Given a protractor, measure an angle between 0 and 180 degrees
- 10.8.3 Given a variety of problem-solving situations, apply the concepts of measurement to solve

10.8.4 Convert both metric and customary measurements to equivalent forms

PROFICIENCY 11: STUDENTS WILL COLLECT, ORGANIZE, INTERPRET DATA, AND COMMUNICATE CONCLUSIONS

11.8.1 Given a bar, line, picture, or circle graph, interpret and analyze the data

11.8.2 Choose an appropriate scale and construct a graph or diagram using a set of numerical data

11.8.3 Identify the appropriate graph for a set of data

11.8.4 Given a problem situation, collect, organize, and present the data in a variety of forms

11.8.5 Given a set of data, find the mean, median, mode, and range of a set of data

11.8.6 Make predictions related to the data illustrated in a graph

PROFICIENCY 12: STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE BASIC CONCEPTS OF PROBABILITY AND APPLY THESE TO MAKING APPROPRIATE PREDICTIONS

12.8.1 Predict and find the probability of outcomes of a simple probability experiment

12.8.2 Find the number of combinations and or permutations by using the basic counting principle

12.8.3 Create and solve problems involving the probability of an event

PROFICIENCY 13: STUDENTS WILL DEVELOP AN UNDERSTANDING OF RATIOS, PROPORTIONS, AND PERCENTS WITH APPLICATIONS TO PROBLEM SOLVING

13.8.1 Determine the percent for any ratio involving two whole numbers and vice versa

13.8.2 Use proportions to solve problems

13.8.3 Solve real life problems involving discount, tax, interest, markup, and/or statistics using percent

13.8.4 Find a percentage of a number

13.8.5 Find the percent of increase or decrease of two numbers

13.8.6 Estimate a percentage of a number

13.8.7 Estimate what percent one number is of another

- 13.8.8 Find a percent of a number, find the percent one number is of another number, and find the number when a percent is known

PROFICIENCY 14: STUDENTS WILL EXPLORE ALGEBRAIC CONCEPTS AND PROCESSES

- 14.8.1 Evaluate a given expression
- 14.8.2 Translate a word problem into an equation or expression
- 14.8.3 Solve a one or two-step equation with appropriate transformations
- 14.8.4 Given a problem, solve the problem algebraically using proportions, formulas, and functions

PROFICIENCY 15: STUDENTS WILL DEVELOP AND REINFORCE APPROPRIATE SKILLS IN THE USE OF CALCULATORS IN PROBLEM-SOLVING

- 15.8.1 Use the calculator to solve word problems involving rational numbers
- 15.8.2 Use the calculator to explore patterns and relationships among wholes, decimals, and rationals

PROFICIENCY 16: STUDENTS WILL EXPLORE AND DEVELOP AN UNDERSTANDING OF THE BASIC CONCEPTS OF GRAPHING THE SOLUTION OF AN EQUATION

- 16.8.1 Graph equations of equality and inequalities with one variable on a number line
- 16.8.2 Identify the parts of a coordinate system
- 16.8.3 Plot points on a coordinate plane using ordered pairs
- 16.8.4 Graph linear equations by using selected values, intercept points, and slope
- 16.8.5 Solve and graph the solution of two linear equations
- 16.8.6 Graph linear inequalities on a coordinate plane