

**Jackson Area Catholic Schools**  
**Mathematics Academic Standards**  
**for**  
**Fourth Grade**

**Numbers and Operations**

**A. Understand and use number notation and place value**

- N.ME.04.01 The student will read and write numbers to 1,000,000; relate them to the quantities they represent; compare and order.
- N.ME.04.02 The student will write numbers in standard and expanded form using place value to 1,000,000's (e.g., 25,068 is 2 ten thousands, 5 thousands, 0 hundreds, 6 tens, and 8 ones).
- N.ME.04.03 The student will understand the magnitude of numbers up to 1,000,000; recognize the place values of numbers and the relationship of each place value to the place to its right (e.g., 1,000 is 10 hundreds).

**B. Use factors and multiples**

- N.ME.04.04 The student will find all factors of any whole number through 100, list factor pairs, and determine if a one-digit number is a factor of a given whole number.
- N.ME.04.05 The student will list the first ten multiples of a given one-digit whole number; determine if a whole number is a multiple of a given one-digit whole number.
- N.MR.04.06 The student will recognize that a whole number is a multiple of each of its factors.
- N.MR.04.07 The student will determine whether a number, in the range 1-100, is prime or composite.

**C. Add and subtract whole numbers**

- N.FL.04.08 The student will add and subtract whole multi-digit numbers fluently.
- N.FL.04.09 The student will assess the reasonableness of answers using estimation strategies including rounding.
- N.FL.04.10 The student will solve word problems using equations with a letter standing for the unknown quantity.

**D. Multiply and divide whole numbers**

- N.FL.04.11 The student will find product fluently up to  $12 \times 12$ ; find related quotients using multiplication and division relationships.
- N.ME.04.12 The student will multiply two-digit numbers by 2, 3, 4, and 5 using the distributive property (e.g.,  $21 \times 3 = (1 + 20) \times 3 = (1 \times 3) + (20 \times 3) = 3 + 60 = 63$ ).
- N.FL.04.13 The student will multiply fluently any whole number by a one-digit number and a three-digit number by a two-digit number; for a two-digit by one-digit multiplication use distributive property to develop meaning for the algorithm.
- N.FL.04.14 The student will divide numbers up to four-digits by one-digit number and by 10.
- N.FL.04.15 The student will divide numbers up to three-digits by two-digits, with or without remainders.
- N.FL.04.16 The student will find the value of the unknowns in equations such as,  $a \div 10 = 25$ ;  $125 \div b = 25$ .
- N.MR.04.17 The student will use the relationship between multiplication and division to simplify computations and check results.
- N.MR.04.18 The student will solve contextual problems involving whole number multiplication and division. Illustrate and explain the calculation using equations, drawings, rectangular arrays, and/or area models.

**D. Multiply and divide whole numbers (cont.)**

- N.MR.04.19 The student will interpret a multiplication equation as a comparison (e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.
- N.FL.04.20 The student will assess the reasonableness of answers using estimation strategies including rounding.

**E. Generate and analyze patterns**

- N.MR.04.21 The student will generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself (e.g., given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms in the resulting sequence appear to alternate between odd and even numbers). Explain informally why the number will continue to alternate in this way.

**F. Read, interpret and compare decimal fractions**

- N.ME.04.22 The student will read, write, interpret and compare decimals up to two decimal places; relate to money and place value decomposition.
- N.ME.04.23 The student will locate tenths and hundredths on a number line.
- N.MR.04.24 The student will write tenths and hundredths in decimal and fraction forms, and know the decimal equivalents for halves and fourths.

**G. Understand fractions**

- N.ME.04.25 The student will understand fractions as parts of a set of objects.
- N.MR.04.26 The student will explain why equivalent fractions are equal, using models such as fraction strips or the number line for fractions with denominators of 16 or less, or equal to 100.
- N.MR.04.27 The student will locate fractions with denominators of 16 or less on the number line; include mixed numbers.
- N.MR.04.38 The student will understand the relationships among halves, fourths, and eighths and among thirds, sixths, and twelfths.
- N.ME.04.29 The student will know that fractions of the form  $m/n$  where  $m$  is greater than  $N$ , are greater than 1 and are called improper fractions; locate improper fractions on the number line.
- N.MR.04.30 The student will write improper fractions as mixed numbers, and understand that a mixed number represents the number of “wholes” and the part of a whole remaining (e.g.,  $5/4 = 1 + 1/4 = 1 \frac{1}{4}$ ).
- N.MR.04.31 The student will compare and order up to three fractions with denominators 2, 4, and 8, and 3, 6, and 12, including improper fractions and mixed numbers. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions.

**H. Add and subtract fractions**

- N.MR.04.32 The student will understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- N.MR.04.33 The student will add and subtract fractions with like and unlike denominators (denominators through 12).
- N.MR.04.34 The student will add and subtract mixed numbers with like denominators (denominators through 12).
- N.MR.04.35 The student will solve contextual problems involving sums and differences for fractions where one denominator is a multiple of the other (denominators 2 through 12, and 100) by using visual fraction models and equation to represent the problem.
- N.MR.04.36 The student will find the value of an unknown in equations with like denominators such as  $1/8 + x = 5/8$ .

**I. Multiply fractions by whole numbers**

- N.MR.04.37 The student will multiply fractions by whole numbers, using repeated addition and area or array models.
- Understand a fraction  $a/b$  as a multiple of  $1/b$ . For example use a visual fraction model to represent  $5/4$  as the product  $5 \times (1/4)$ , recording the conclusion by the equation  $5/r = 5 \times (1/4)$ .
  - Understand a multiple of  $a/b$  as a multiple of  $q/b$ , and use this understanding to multiply a fraction by a whole number (e.g., use a visual fraction model to express  $3 \times (2/5)$  as  $6 \times (1/5)$ , recognizing this product as  $6/5$ . In general,  $n \times (a/b) = (n \times a)/b$ ).
  - Solve word problems involving multiplication of a fraction by a whole number (e.g., by using visual fraction models and equations to represent the problem). For example, if each person at a party will eat  $3/8$  of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

**J. Add and subtract decimals**

- N.MR.04.38 The student will, for problems that use addition and subtraction of decimals through hundredths, represent with mathematical statements and solve.
- N.FL.04.39 The student will add and subtract decimals through hundredths.
- N.FL.04.40 The student will assess the reasonableness of answers using estimation strategies including rounding.

**Measurement**

**A. Measure using common tools and appropriate units**

- M.UN.04.01 The student will measure using common tools and select appropriate units of measure for length, weight, mass, volume, and time.
- M.PS.04.02 The student will give answers to a reasonable degree of precision in the context of a given problem.
- M.UN.04.03 The student will measure and compare integer temperatures in degrees Celsius and Fahrenheit scales.
- M.TE.04.04 The student will use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**B. Convert measurement units**

- M.TE.04.05 The student will carry out the following conversions from one unit of measure to a larger or smaller unit of measure: meters to centimeters, kilograms to grams, liters to milliliters, hours to minutes, minutes to seconds years to months, weeks to days, feet to inches, ounces to pounds (using numbers that involve only simple calculations).

**C. Use perimeter and area formulas**

- M.TE.04.06 The student will know and understand the formulas for perimeter and area of a square and a rectangle; calculate the perimeters and areas of these shapes and combinations of these shapes using the formulas.
- M.TE.04.07 The student will find one dimension of a rectangle given the other dimension and its perimeter or area.
- M.TE.04.08 The student will find the side of a square given its perimeter or area.
- M.PS.04.09 The student will solve contextual problems about perimeter and area of squares and rectangles.

**Geometry****A. Understand perpendicular, parallel, and intersecting lines**

G.GS.04.01 The student will identify and draw, points, lines, line segments, rays, angles (right, acute, obtuse), perpendicular, parallel, and intersecting lines using a ruler and a tool or object with a square ( $90^\circ$ ) corner.

**B. Identify basic geometric shapes and their components, and solve problems**

G.GS.04.02 The student will recognize angles as geometric shapes that are formed wherever two rays share a common endpoint. An angle is measured with reference to a circle with its center at the common endpoint of the rays. An angle that turns through  $1/360$  of a circle is called a “one-degree angle,” and can be used to measure angles.

G.GS.04.03 The student will identify right angles and compare angles to right angles.

G.GS.04.04 The student will recognize angle measure as additive. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems (e.g., by using an equation with a symbol for the unknown angle measure).

G.GS.04.05 Student will measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

G.GS.04.06 The student will identify basic geometric shapes including isosceles, equilateral, and right triangles, and use their properties to solve problems.

G.GS.04.07 The student will classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size.

**C. Recognize symmetry and transformations**

G.TR.04.08 The student will recognize plane figures that have line symmetry.

G.TR.04.09 The student will recognize rigid motion transformations (flips, slides, turns) of a two-dimensional object.

**Data and Probability**

**A. Represent and solve problems for given data**

D.RE.04.01 The student will construct tables and bar graphs from given data.

D.RE.04.02 The student will order a given set of data, find the median, and specify the range of values.

D.RE.04.03 The student will solve problems using data presented in tables and bar graphs (e.g., compare data represented in two bar graphs and read bar graphs showing two data sets).