Maine Mathematics

Grade 5

Adopted 2020

Standards for Mathematical Practice

1. **Make sense of problems and persevere in solving them - Students will plan strategies to use and persevere in solving math problems.** MP.1
2. **Reason abstractly and quantitatively - Students will think about numbers in many ways and make sense of numerical relationships as they solve problems.** MP.2
3. **Construct viable arguments and critique the reasoning of others - Students will explain their thinking and make sense of the thinking of others.** MP.3
4. **Model with mathematics - Students will use representations to show their thinking in a variety of ways.** MP.4
5. **Use appropriate tools strategically - Students will use math tools such as tables, diagrams, and technology to explore and deepen their understanding of concepts.** MP.5
6. **Attend to precision - Students will use precise mathematical language and check their work for accuracy.** MP.6
7. **Look for and make use of structure - Students will use their current mathematical understandings to identify patterns and structure to make sense of new learning.** MP.7
8. **Look for and express regularity in repeated reasoning - Students will look for patterns and rules to help create general methods and shortcuts that can be applied to similar mathematical problems.** MP.8

Quantitative Reasoning

Numbers and Operations: Fractions

12. Apply and extend previous understandings of multiplication and division to multiply and divide fractions. QR.C.12

    3. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 5.NF.B.3

    5. Interpret multiplication scaling (resizing), by: 5.NF.B.5

        a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. 5.NF.B.5.A

        b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n × a)/(n × b) to the effect of multiplying a/b by 1. 5.NF.B.5.B

    6. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 5.NF.B.6

    7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.1 5.NF.B.7

        a. Interpret division of a unit fraction by a non-zero whole number and compute such quotients. 5.NF.B.7.A

        b. Interpret division of a whole number by a unit fraction and compute such quotients. 5.NF.B.7.B

        c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. 5.NF.B.7.C

Algebraic Reasoning

Operations and Algebraic Thinking

7. Write and interpret numerical expressions. AR.C.7
    1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 5.OA.A.1
    2. Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them. 5.OA.A.2
8. Identify, explain, generate and analyze patterns. AR.C.8
    3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns and graph the ordered pairs on a coordinate plane. 5.OA.B.3

Geometric Reasoning

Geometry

2. Analyze, compare, create, and compose shapes based on their attributes. GR.C.2
    3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. 5.G.B.3
    4. Classify two-dimensional figures in a hierarchy based on properties. (e.g., all rectangles are parallelograms, because they are all quadrilaterals with two pairs of opposite sides parallel.) 5.G.B.4
4. Graph points on the coordinate plane to solve real-world and mathematical problems. GR.C.4
    1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). 5.G.A.1
    2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation. 5.G.A.2

Statistical Reasoning

Measurement & Data

6. Represent and interpret data. SR.C.6
    2. Make a line plot to display a data set of measurements in fractions of a unit (½, ¼, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. 5.MD.B.2