Maine Mathematics

Grade 3

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

9. Develop and extend the understanding of fractions as numbers, including equivalence and ordering. QR.C.9

    1. Understand a unit fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b. 3.NF.A.1

    2. Understand a fraction as a number on the number line; represent fractions on a number line diagram. 3.NF.A.2

        a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. 3.NF.A.2.A

        b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. 3.NF.A.2.B

    3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. 3.NF.A.3

        a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. 3.NF.A.3.A

        b. Recognize and generate simple equivalent fractions, e.g., ½ = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model. 3.NF.A.3.B

        c. Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. 3.NF.A.3.C

        d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. 3.NF.A.3.D

Algebraic Reasoning

Operations and Algebraic Thinking

4. Understand properties of multiplication and the relationship between multiplication and division to represent and solve problems within 100. AR.C.4
    1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. 3.OA.A.1
    2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. 3.OA.A.2
    3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 3.OA.A.3
    4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. 3.OA.A.4
    5. Apply properties of operations as strategies to multiply. 3.OA.B.5
    6. Understand division as an unknown-factor problem. 3.OA.B.6
    7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. 3.OA.C.7
5. Solve problems involving the four operations. AR.C.5
    8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. 3.OA.D.8
8. Identify, explain, generate and analyze patterns. AR.C.8
    9. Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. 3.OA.D.9

Geometric Reasoning

Geometry

2. Analyze, compare, create, and compose shapes based on their attributes. GR.C.2
    1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. 3.G.A.1
    2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. 3.G.A.2

Statistical Reasoning

Measurement & Data

5. Solve problems involving measurement, conversion of measurement and estimation of intervals of time, liquid volumes, and masses of objects. SR.C.5

    1. Tell and write time to the nearest minute and measure time intervals in minutes using analog and digital clocks. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. 3.MD.A.1

    2. Measure and estimate liquid volumes and masses of objects using standard metric units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same metric units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. 3.MD.A.2

6. Represent and interpret data. SR.C.6

    3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. 3.MD.B.3

    4. Generate measurement data by measuring lengths of objects using rulers marked with halves and fourths of an inch. Record and show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or fourths. 3.MD.B.4

7. Understand concepts of Geometric measurement: involving perimeter, area, and volume. SR.C.7

    5. Recognize area as an attribute of plane figures and understand concepts of area measurement. 3.MD.C.5

        a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. 3.MD.C.5.A

        b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units. 3.MD.C.5.B

    6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and non- standard units 3.MD.C.6

    7. Relate area to the operations of multiplication and addition. 3.MD.C.7

        a. Find the area of a rectangle with whole-number side lengths by tiling it and show that the area is the same as would be found by multiplying the side lengths. 3.MD.C.7.A

        b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems and represent whole-number products as rectangular areas in mathematical reasoning. 3.MD.C.7.B

        c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning. 3.MD.C.7.C

d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. 3.MD.C.7.D

8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. 3.MD.D.8