

**Mathematics**  
**Grade-Level Expectations: Grade 4**

**Number and Number Relations**

1. Read and write place value in word, standard, and expanded form through 1,000,000 (N-1-E)
2. Read, write, compare, and order whole numbers using place value concepts, standard notation, and models through 1,000,000 (N-1-E) (N-3-E) (A-1-E)
3. Illustrate with manipulatives when a number is divisible by 2, 3, 5, or 10 (N-1-E)
4. Know all basic facts for multiplication and division through  $12 \times 12$  and  $144 \div 12$ , and recognize factors of composite numbers less than 50 (N-1-E) (N-6-E) (N-7-E)
5. Read, write, and relate decimals through hundredths and connect them with corresponding decimal fractions (N-1-E)
6. Model, read, write, compare, order, and represent fractions with denominators through twelfths using region and set models (N-1-E) (A-1-E)
7. Give decimal equivalents of halves, fourths, and tenths (N-2-E) (N-1-E)
8. Use common equivalent reference points for percents (i.e.,  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , and 1 whole) (N-2-E)
9. Estimate fractional amounts through twelfths, using pictures, models, and diagrams (N-2-E)
10. Solve multiplication and division number sentences including interpreting remainders (N-4-E) (A-3-E)
11. Multiply 3-digit by 1-digit numbers, 2-digit by 2-digit numbers, and divide 3-digit numbers by 1-digit numbers, with and without remainders (N-6-E) (N-7-E)
12. Count money, determine change, and solve simple word problems involving money amounts using decimal notation (N-6-E) (N-9-E) (M-1-E) (M-5-E)
13. Determine when and how to estimate, and when and how to use mental math, calculators, or paper/pencil strategies to solve multiplication and division problems (N-8-E)
14. Solve real-life problems, including those in which some information is not given (N-9-E)

**Algebra**

15. Write number sentences or formulas containing a variable to represent real-life problems (A-1-E)
16. Write a related story problem for a given algebraic sentence (A-1-E)
17. Use manipulatives to represent the distributive property of multiplication over addition to explain multiplying numbers (A-1-E) (A-2-E)
18. Identify and create true/false and open/closed number sentences (A-2-E)
19. Solve one-step equations with whole number solutions (A-2-E) (N-4-E)

**Measurement**

20. Measure length to the nearest quarter-inch and mm (M-2-E) (M-1-E)
21. Describe the concept of volume, and measure volume using cubic in. and cubic cm and capacity using fl. oz. and ml (M-2-E) (M-3-E)
22. Select and use the appropriate standard units of measure, abbreviations, and tools to measure length and perimeter (i.e., in., cm, ft., yd., mile, m, km), area (i.e., square inch, square foot, square centimeter), capacity (i.e., fl. oz., cup, pt., qt., gal., l, ml), weight/mass (i.e., oz., lb., g, kg, ton), and volume (i.e., cubic cm, cubic in.) (M-2-E) (M-1-E)
23. Set up, solve, and interpret elapsed time problems (M-2-E) (M-5-E)
24. Recognize the attributes to be measured in a real-life situation (M-2-E) (M-5-E)
25. Use estimates and measurements to calculate perimeter and area of rectangular objects (including squares) in U.S. (including square feet) and metric units (M-3-E)
26. Estimate the area of an irregular shape drawn on a unit grid (M-3-E)

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27. Use unit conversions within the same system to solve real-life problems (e.g., 60 sec. = 1 min., 12 objects = 1 dozen, 12 in. = 1 ft., 100 cm = 1 m, 1 pt. = 2 cups) (M-4-E) (N-2-E) (M-5-E)

**Geometry**

28. Identify the top, bottom, or side view of a given 3-dimensional object (G-1-E) (G-3-E)
29. Identify, describe the properties of, and draw circles and polygons (triangle, quadrilateral, parallelogram, trapezoid, rectangle, square, rhombus, pentagon, hexagon, octagon, and decagon) (G-2-E)
30. Make and test predictions regarding transformations (i.e., slides, flips, and turns) of plane geometric shapes (G-3-E)
31. Identify, manipulate, and predict the results of rotations of 90, 180, 270, and 360 degrees on a given figure (G-3-E)
32. Draw, identify, and classify angles that are acute, right, and obtuse (G-5-E) (G-1-E)
33. Specify locations of points in the first quadrant of coordinate systems and describe paths on maps (G-6-E)

**Data Analysis, Probability, and Discrete Math**

34. Summarize information and relationships revealed by patterns or trends in a graph, and use the information to make predictions (D-1-E)
35. Find and interpret the meaning of mean, mode, and median of a small set of numbers (using concrete objects) when the answer is a whole number (D-1-E)
36. Analyze, describe, interpret, and construct various types of charts and graphs using appropriate titles, axis labels, scales, and legends (D-2-E) (D-1-E)
37. Determine which type of graph best represents a given set of discrete data (D-2-E) (D-1-E)
38. Solve problems involving simple deductive reasoning (D-3-E)
39. Use lists, tables, and tree diagrams to generate and record all possible combinations for 2 sets of 3 or fewer objects (e.g., combinations of pants and shirts, days and games) and for given experiments (D-3-E) (D-4-E)
40. Determine the total number of possible outcomes for a given experiment using lists, tables, and tree diagrams (e.g., spinning a spinner, tossing 2 coins) (D-4-E) (D-5-E)
41. Apply appropriate probabilistic reasoning in real-life contexts using games and other activities (e.g., examining fair and unfair situations) (D-5-E) (D-6-E)

**Patterns, Relations, and Functions**

42. Find and describe patterns resulting from operations involving even and odd numbers (such as even + even = even) (P-1-E)
43. Identify missing elements in a number pattern (P-1-E)
44. Represent the relationship in an input-output situation using a simple equation, graph, table, or word description (P-2-E)