

## Mathematics Grade 4 Summary

In Grade 4, instructional time should focus on four critical areas: (1) developing understanding and fluency with multi-digit multiplication including familiarity with patterns, factors and multiples, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction/decimal equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry; and (4) solving problems involving length, weight, liquid, mass, volume, time, area, and perimeter.

### Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

## Algebraic Concepts

- Represent verbal statements of multiplicative comparisons as multiplication equations (e.g.  $42 = 6 \times 7$  means that 42 is 6 times as many as 7).
- Multiply or divide to solve word problems involving multiplicative comparison (e.g. Diego has 3 times as many marbles as Stacy. Stacy has 17 marbles. How many marbles does Diego have?).
- Solve multi-step word problems posed with whole numbers using the four operations.
- Identify the missing symbol that makes a number sentence true.
- Find all factor pairs for a whole number in the interval 1 through 100.
- 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 5” and the starting number 1, generate terms and observe that the ones digit will always be 1 or 6).
- Determine the missing element in a function table.
- Determine the rule for a function table.

## Geometry

- Draw and identify points, lines, line segments, rays, angles, perpendicular lines, and parallel lines.
- Classify two-dimensional figures based on the presence or absence of parallel lines, perpendicular lines, or angles of a specified size.
- Recognize and draw lines of symmetry in two-dimensional figures.

## Measurement, Data, and Probability

- Know relative sizes of measurement units within one system and express measurements in a larger unit in terms of a smaller unit.
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money.
- Apply the area and perimeter formulas for rectangles.
- Identify time as the amount of minutes before or after the hour.
- Make a line plot to display a data set of measurements in fractions of a unit and use these line plots to solve problems.
- Translate information from one type of display to another.
- Measure angles with a protractor and use angle measures to solve addition and subtraction problems.

## Diagnostic Category Skills List

### Numbers and Operations

- Convert between numbers in expanded form ( $8 \times 1,000 + 7 \times 10$ ), standard form (8,070), and word form (eight thousand, seventy).
- Use place value to compare whole numbers. For example,  $604,000 < 630,000$ .
- Use place value to round numbers to the nearest 10, 100, 1,000, 10,000, or 100,000.
- Quickly and accurately add or subtract whole numbers up to a sum of 1,000,000.
- Multiply and divide a 4-digit number by a 1-digit number, such as  $9,870 \times 4$  or  $9,870 \div 4$ . Use remainders when necessary.
- Multiply a 2-digit number by another 2-digit number, such as  $32 \times 51$ .
- Find equivalent fractions.
- Compare fractions with different numerators and different denominators. Add two fractions with respective denominators 10 and 100.
- Use decimal notation for fractions with denominators 10 or 100.
- Compare two decimals to the hundredths place using the symbols  $>$ ,  $=$ ,  $<$ .



Additional Materials and Resources can be found at:

<http://www.pdesas.org/>

or

<https://pa.drctdirect.com/>

## CLASSROOM DIAGNOSTIC TOOLS

### Mathematics Grade 4

#### Grade Level Summary, Standards for Mathematical Practice, and Diagnostic Category Skills List

The Mathematics summary for grade 4 describes the performance in mathematics that students in grade 4 are expected to demonstrate. The standards for mathematical practice describe practices that students should develop across grades in their study of mathematics. The Diagnostic Category Skills List provides descriptions of skills that students can be expected to demonstrate within each Diagnostic Category while taking the Classroom Diagnostic Tools for Mathematics. While this list does not include every possible skill that students may encounter within the CDT, it does provide a representative sample for each diagnostic category. Additionally, mathematics instruction should not address these as discrete skills but rather incorporate them with the standards for mathematical practice as a part of an integrated curriculum.

