

Mathematics Grade 5 Summary

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

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

- Evaluate numerical expressions with multiple grouping symbols (e.g., $3 + (21 \div 3) - (8 - 4) = 6$).
- Write simple expressions that model calculations with numbers and interpret numerical expressions without evaluating them (e.g., recognize that $6 \times (2,549 - 355)$ is 6 times as large as $2,549 - 355$).
- Generate two numerical patterns using two given rules.
- Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules.

Geometry

- Identify the x -axis, y -axis, and origin of the coordinate plane and the x -coordinate and y -coordinate of an ordered pair.
- Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret values of points in the context of the situation.
- Classify two-dimensional figures in a hierarchy based on properties (e.g., a trapezoid is a polygon and a quadrilateral, but not a parallelogram).

Measurement, Data, and Probability

- Convert between different-sized measurement units within a given measurement system (e.g., 0.035 liters is the same as 35 milliliters).
- Solve problems involving computation of fractions by using information presented in line plots.
- Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels.
- Apply the formulas for volumes of rectangular prisms in the context of solving real-world and mathematical problems (e.g., A building is in the shape of a rectangular prism. The area of the base is 3,500 square feet and the building is 20 feet high. What is the volume of the building?).
- Find the volume of solid figures composed of two non-overlapping right rectangular prisms.

Diagnostic Category Skills List

Numbers and Operations

- Explain patterns in the number of zeros of a product when multiplying by a power of 10. Use whole number exponents to denote powers of 10.
- Read, write, compare, and round decimals to the thousandths.
- Multiply and divide multi-digit whole numbers.
- Add, subtract, multiply, and divide decimals.
- Add and subtract fractions (including mixed numbers) with unlike denominators.
- Solve word problems involving division of whole numbers leading to answers in the form of a fraction (e.g., Ahmed poured 10 quarts of lemonade evenly into 8 pitchers, so each pitcher has $1\frac{1}{4}$ quarts of lemonade).
- Multiply a fraction by a fraction.
- Demonstrate an understanding of multiplication as scaling (e.g., $5 \times 1\frac{1}{2} > 5$ because $5 \times 1 = 5$ and $1\frac{1}{2} > 1$).
- Divide unit fractions by whole numbers and whole numbers by unit fractions (e.g., $7 \div \frac{1}{4} = 28$).



Additional Materials and Resources can be found at:

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

or

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

CLASSROOM DIAGNOSTIC TOOLS

Mathematics Grade 5

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

The Mathematics summary for grade 5 describes the performance in mathematics that students in grade 5 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.

