Mathematics Grade 6 Summary

In Grade 6, instructional time should focus on four critical areas:
(1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

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 expressions with exponents. For example, 5^3 is the same as $5 \times 5 \times 5$ or 125.
- Write expressions using numbers and variables. For example, "three less than 5 times a number" is $5n - 3$.
- Evaluate expressions by substituting a number for a variable. For example, evaluate $b^2 - 5$ when $b = 4$.
- Use the distributive property to find equivalent expressions. For example, $2(x - 5) = 2x - 10$.
- Solve one-step equations. For example, $3x = 12$ means that $x = 4$, or $5 + y = 17$ means that $y = 12$.
- Model real-world situations with inequalities and show the solution using number lines. For example, model "the temperature in the freezer is always colder than 32^{o}F" with the inequality $t < 32$.
- Write equations using two variables. For example, "Jim is paid 8 dollars per hour" can be modeled with $p = 8h$.
- Use tables, graphs, and equations to look at the relationship between variables.

Geometry

- Use formulas to find the area of triangles, trapezoids, and parallelograms.
- Find the areas of polygons by breaking them into shapes with known area formulas. For example, the area of a pentagon shaped like "home plate" can be found by finding the area of a triangle and the area of a rectangle.
- Find the volumes of right rectangular prisms. For example, a box with the dimensions 10 (3/4) cm × 8 (1/2) cm × 6 cm has a volume of 548 (1/4) cm^3.
- Represent prisms and pyramids using nets made of rectangles and triangles.
- Find the surface areas of prisms.

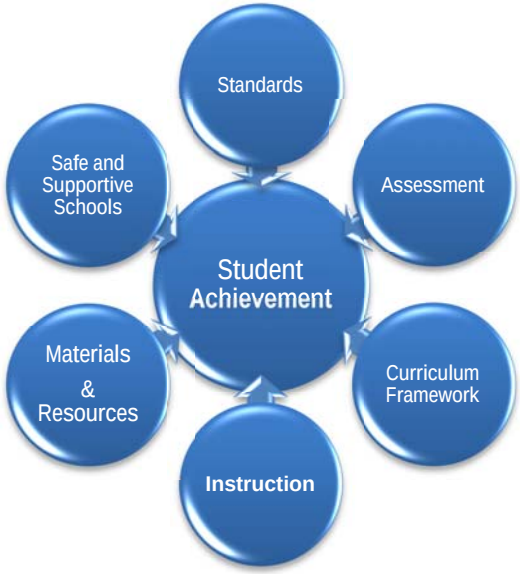
Measurement, Data, and Probability

- Display numerical data in dot plots, histograms, and box-and-whisker plots.
- Compute mean, median, and mode to measure the "center" of a data set. Compute range, interquartile range, and mean absolute deviation to measure the variability of a data set.

Diagnostic Category Skills List

Numbers and Operations

- Divide a fraction by a fraction. For example, (2/3) ÷ (3/4) = 8/9.
- Solve addition, subtraction, multiplication, and division problems with decimals.
- Find the greatest common factor and/or the least common multiple of two numbers. For example, the least common multiple of 6 and 8 is 24.
- Locate negative numbers on number lines.
- Compare negative numbers in real-world contexts. For example, $-4^{o}F > -8^{o}F$ because $-4^{o}F$ is warmer than $-8^{o}F$.
- Plot points in the coordinate plane using all four quadrants and answer questions about those points. For example, given a graph of the points (-6, 4) and (2, 4), determine that the two points are 8 units apart.
- Use ratio language (3 to 4, 3:4, 3/4).
- Find unit rates and use them to solve problems.
- Find a percent of a quantity as a rate per 100 and use percentages to solve problems.



Additional Materials and Resources can be found at:

http://www.pdesas.org/

or

https://pa.drcedirect.com/

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CLASSROOM DIAGNOSTIC TOOLS

Mathematics
Grade 6
Grade Level Summary, Standards for Mathematical Practice, and Diagnostic Category Skills List

The Mathematics summary for grade 6 describes the performance in mathematics that students in grade 6 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.

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SAS Standards Aligned System