Mathematics Grade 7 Summary

In Grade 7, instructional time should focus on four critical areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; (3) solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume; and (4) drawing inferences about populations based on samples.

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

- Add, subtract, factor, and expand linear expressions. For example, $(1/2) \times (p + 4)$ is equivalent to $(1/2) \times p + 2$ and $5.9 + y + 9.3$ is equivalent to $y + 15.2$.
- Apply properties of operations to calculate with numbers in any form. For example, the price of a $10.00 hat after 6% sales tax is added can be found by 10.00×1.06.
- Solve problems that can be modeled by the equation $px + q = r$ or $p(x + q) = r$. For example, Stacy has 2 more packages of stickers than Cliff. Each package has 8 stickers. Stacy has 72 stickers. How many packages of stickers does Cliff have?
- Solve problems that can be solved by the inequality $px + q > r$ or $px + q < r$. For example, Ms. Chang has 80 pieces of paper. She will give 5 pages to each student and keep 3 pages for herself. Write an inequality to show the number of students who can get paper from Ms. Chang.

Geometry

- Solve problems involving scale drawing of geometric figures.
- Describe the properties of all types of triangles based on angle measures and side length measures.
- Describe the two-dimensional cross sections of prisms and pyramids.
- Use the properties of supplementary, complementary, and adjacent angles to solve problems.
- Use the properties of the angles created when two parallel lines are cut by a transversal.
- Find the area and circumference of a circle.
- Solve problems involving area, volume, and surface area of two- and three-dimensional objects composed of polygons and prisms.
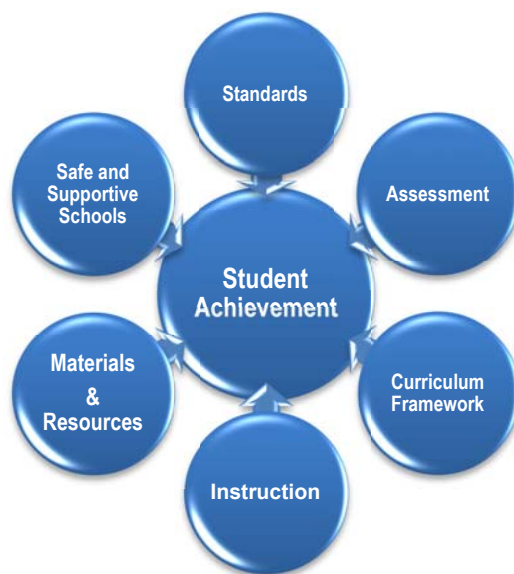
Measurement, Data, and Probability

- Use data from random samples to draw inferences about a population.
- Compare two numerical data distributions using measures of center (mean, median, and mode) and variability (range, interquartile range, and mean absolute deviation).
- Determine whether an outcome is certain, more likely, less likely, equally likely, or impossible.
- Determine the probability of a chance event given relative frequency.
- Find the probability of a simple event, including the probability of a simple event **not** occurring.
- Find probabilities of independent compound events using organized lists, tables, tree diagrams, and simulations.

Diagnostic Category Skills List

Numbers and Operations

- Add and subtract rational numbers to solve problems.
- Represent addition and subtraction of rational numbers on a number line.
- Multiply and divide rational numbers to solve problems.
- Show that the decimal expansion of a rational number will always terminate ($3/8 = 0.375$) or repeat ($5/33 = 0.15151515 . . .$).
- Find unit rates when the ratios are fractions. For example, "Emilio walks 4/5 mile in 1/2 hour" is represented by the unit rate of 8/5 mile in 1 hour.
- Determine whether two quantities are proportional by looking at tables or graphs of the relationship. For example, $y = 3x$ is a proportional relationship because the graph passes through the origin, (0, 0), and is linear.
- Identify the constant of proportionality (or unit rate) from tables, graphs, equations, or descriptions.
- Use proportional relationships to solve ratio and percentage problems.

Standards

Safe and Supportive Schools

Assessment

Student Achievement

Materials & Resources

Curriculum Framework

Instruction

Additional Materials and Resources can be found at:

http://www.pdesas.org/

or

https://pa.drcedirect.com/

**Mathematics
Grade 7
Grade Level Summary, Standards
for Mathematical Practice, and
Diagnostic Category Skills List**

The Mathematics summary for grade 7 describes the performance in mathematics that students in grade 7 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