College- and Career-Ready Assessments

South Carolina
SC READY

Mathematics
Grades 6 through 8

Test Data Review Report 2023

Introduction

On October 23, 2023, Data Recognition Corporation (DRC) and the South Carolina Department of Education (SCDE) Office of Assessment and Standards (OAS) convened a panel of educators to review item data from the SC READY assessment of the 2015 South Carolina College- and Career-Ready Math Standards. The panel discussed and analyzed items from the 2023 assessment, including information about how students performed on each item. The panel recognizes the hard work of South Carolina educators and offers these relevant and useful suggestions for improving instruction as an addendum to those from previous years.

General Observations and Comments

- Ensure students understand vocabulary; use correct mathematic vocabulary and terminology throughout instruction, not just when teaching that particular concept or standard.
- Help students make connections across standards; standards are interconnected and should be taught together rather than in isolation.
- Focus on conceptual understanding rather than complex computational problems.

Grade 6

Number System

- Provide simple examples with just a few decimal places; examples with very large number or many decimal places do not necessarily provide deeper understanding.
- Ensure students understand the comparison between number lines and the x- and y-axes.
- Use coordinate planes in a variety of situations and contexts.
- Practice working with improper fractions and converting to mixed numbers.

Ratios and Proportional Relationships

- Practice with a variety of representations and contexts for ratios and rates.
- Encourage students to read and understand what is happening in the context of a problem to help them understand the relationship between the numbers and the problem.
- Ask students to continue charts rather than only filling in a missing value.
- Practice a variety of ways to set up problems.

Expressions, Equations, and Inequalities

- Practice translating word problems to mathematical sentences.
- Ensure that students understand and can apply the distributive property.
- Provide examples of expressions and equations that have more than one variable.
- Relate independent and dependent variables to the coordinate plane.

Geometry and Measurement

- Provide examples of the coordinate plane in a variety of ways (e.g., showing all four quadrants vs. just one quadrant).
- Ensure students use and can understand formulas; provide ample practice manipulating formulas.
- Ask students to model with pictorial representations the shapes used in the geometry standards.
- Model for students how to represent a problem from words; let students create their own representations rather than providing them the model.

Data Analysis and Statistics

- Ensure students can do calculations by hand as well as with a calculator.
- Model using a think-aloud strategy.
- Use examples that ask students to use or find more than one feature from a data display (e.g., median, interquartile range, mode).
- Ask students to collect real-world data.

Grade 7

Number System

- Ensure students are fluent with multiplication facts and integer rules.
- Ensure students can translate fluently between fractions, decimals, and percentages; teach this along with other standards rather than in isolation.
- Practice modeling with fractions to ensure their answers are reasonable.
- Provide practice opportunities translating among rational numbers with percentages that are not integers.

Ratios and Proportional Relationships

- Students should be able to distinguish between the constant of proportionality, the rate, and the unit rate; teach the connection between them explicitly. The constant of proportionality should be presented in a variety of ways (e.g., tables, graphs, positive and negative constants).
- Include fractions and decimals in rates.
- Display data on different quadrants of the coordinate plane.
- Ensure students can relate and interpret graphs, tables, and equations to the situations they describe.

Expressions, Equations, and Inequalities

- Help students develop strategies for organizing information to write equations.
- Teach multiple strategies for solving problems; build confidence and fluidity with easier computational equations.
- Allow students to practice drawing models and relating them to scenarios and expressions.
- Offer more practice with word problems and translating them to mathematical sentences.

Geometry and Measurement

- Emphasize geometry vocabulary; revisit 2D shapes as well as 3D shapes.
- Ensure students understand when to use a given formula (e.g., 2D vs. 3D) or when a certain concept cannot be applied (e.g., you cannot find the volume of a polygon).
- Use manipulatives and hands-on activities to teach characteristics of shapes and angles; use nets to teach surface area and volume.

Data Analysis, Statistics, and Probability

- Use longer problems to build perseverance and to practice finding necessary information.
- Incorporate statistics standards throughout the year rather than teaching them last.
- Model how to talk or think through a problem; model thinking aloud so students start to build on their own problem-solving skills.
- Ensure students have inference skills; practice estimating and evaluating reasonability.
- Present a variety of data displays and word problems to compare measures of center.
- Ensure students have a conceptual understanding of fractions.
- Use real-world examples with probability.

Grade 8

Number System

- Review conversions among fractions, decimals, and percentages.
- Provide practice with the location of rational numbers and ordering them.
- Practice with perfect squares as a “benchmark” for placement of other irrational numbers.
- Use number lines so students can see the approximate location of square roots, pi, etc.
- Provide strategies on how to infer and make connections.
- Use correct vocabulary throughout instruction of all units.

Functions

- Ensure students see a variety of representations (graphs, tables, equations, ordered pairs, etc.) and can translate between them.
- Ensure students understand the difference between linear and nonlinear functions.
- Practice comparing different representations of functions with and without a scale to explain situations; teach students how to read a graph and understand increasing and decreasing.

Expressions, Equations, and Inequalities

- Ensure that students use all information provided with a graph, including information above and below the graph itself.
- Practice rewriting problems and simplifying to solve systems of equations.
- Provide a variety of examples for equivalent expressions; students should know how to find a missing base or exponent.
- Use simple rational numbers to teach the concept of multistep equations.

Geometry and Measurement

- Ensure that students can model situations without the coordinate plane and can visualize the coordinate plane when it is not provided.
- Teach corresponding angles and corresponding sides to ensure students perform the appropriate transformation; be precise with language.
- Ensure students recognize and understand concepts well enough to construct a model without graph paper.
- Use a variety of tools or software to investigate transformations and angle measures.

Data Analysis, Statistics, and Probability

- Ask students to organize data and add, subtract, and multiply matrices by a scalar in real-world contexts.
- Draw connections between matrices, two-way tables, and scatterplots.
- Ensure students see multiple representations of data showing positive, negative, or no correlation, with examples of strong and weak associations.