End-of-Course Examination Program

South Carolina
EOCEP

Algebra 1

Test Data Review Report 2023

Introduction

On October 24, 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 South Carolina End-of-Course Examination Program (EOCEP) 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.

Algebra

- Teachers should encourage students to focus on the problem-solving process rather than just the final solutions. Students should understand how to use inverse operations to help solve problems, not just guess and check.
- The panel recommended teaching problem-solving techniques explicitly. Error analysis was suggested as one way to get students focused on methods for solving functions and systems of equations. Students should be able to explain their solution in the context of the problem.
- The panelists noted the importance of using correct vocabulary during instruction, even when it may not be necessary to teach a given standard. The panel suggested having students identify parts of an equation any time they encounter one (linear, quadratic, or exponential).
- Help students to understand that functions and equations are similar and ensure that they see examples of each. Students should see functions in other contexts, not just when teaching functions explicitly.
- Students should practice working with literal equations where constants are represented with letters. Use literal equations without numbers more frequently. Teaching literal equations using tangible objects may be a good daily warm-up activity.
- Ensure students know that a variable without a coefficient given has a coefficient of 1.
- Use plenty of examples when teaching the quadratic formula, including examples with a negative coefficient on b.
- Students should understand what decimals in inequalities mean. Students may be used to rounding but should not round when working with inequalities.
- Ensure that students know what “equivalent” means.

Functions

- Spend time comparing three types of functions (linear, exponential, and quadratic) throughout instructional time rather than waiting for that lesson or standard.
- Use a variety of representations (tables, graphs, verbal, etc.). Practice going from equation to table to graph, from graph to table to equation, etc. Help students understand that each representation is a different way to look at the same function.

- Ensure students know vocabulary, and that they understand what it means to "satisfy" a function. Use all vocabulary words that are relevant (i.e., not just "domain" and "range").
- Reinforce that domain and range is not limited to interval notation and can also be represented with an inequality.
- Practice using function notation as well as interval notation.
- Revisit terms from 8th grade like "rate of change" and "slope" to ensure students are comfortable with them.
- Transformations should be shown in a variety of ways, including as a parent function and result after transformation and in function notation without the parent function shown.
- Use the Desmos calculator to ensure students are comfortable using it as a resource.

Number and Quantity; Interpreting Data

- Use vocabulary in context. Use appropriate vocabulary for all items: correlation coefficient, slope, y-intercept, etc.
- Practice perseverance using word problems that require students to solve lengthy word problems.
- Have students practice highlighting useful information in items to avoid becoming "lost in words."
- Teach the parts of a graph explicitly, including axis labels.
- Ask students to interpret slope and y-intercept in many different situations and representations.
- Revisit content throughout the school year to maintain understanding.
- Use real-world scenarios to help students understand the meaning of the y-intercept.