ISTEP+ Performance Level Descriptors
Mathematics – Grade 5

Grade 5
Pass+

Pass+ students demonstrate advanced mathematical and problem-solving skills. Students display advanced skills when computing whole numbers, decimals, and fractions, and they are capable of understanding and interpreting the relationship between digits and their place value. *Pass+* students solve more complex problems involving addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals. *Pass+* students expertly perform operations using variables in a variety of expressions and plot the results and skillfully use coordinate grids to represent points and to graph lines. Students display expertise in identifying, describing, and classifying properties of polygons, and they understand and compute the area and volume of complex objects. Students also demonstrate a highly-developed skill of collecting, displaying, analyzing, comparing, and interpreting data sets. *Pass+* students solve sophisticated problems, support their solutions, and generalize the results to other situations.

Some examples of specific knowledge, skills, and abilities for Grade 5 students scoring at the *Pass+* level include:

- Divide unit fractions by non-zero whole numbers and whole numbers by unit fractions
- Add, subtract, multiply, and divide decimals, mixed numbers, and fractions with unlike denominators with the ability to describe the strategy and explain the reasoning
- Interpret coordinate values of points in the context of real-world situations
- Define and use up to two variables to write linear expressions
- Classify polygons in a hierarchy based on properties
- Find the total volume of two non-overlapping solid figures
- Decide upon and apply various methods in solving problems using a variety of checking methods to validate the correctness of answers
- Analyze problems by identifying important relationships, sequencing and prioritizing information, observing patterns, and using correct mathematical terms to justify answers

Pass

Pass students demonstrate proficient mathematical and problem-solving skills. Students compute with whole numbers, decimals, and fractions, and they understand the process of evaluating expressions. *Pass* students solve problems involving addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals, perform operations using variables in simple expressions and plot the results, and use coordinate grids to represent points and to graph lines. Students are able to identify and classify properties of polygons, and they understand and compute the perimeter, area, and volume of simple objects. In addition, students collect, display,

analyze, compare, and interpret data sets. *Pass* students experience success when solving problems, communicating ideas, and applying mathematical knowledge to a variety of other situations.

Some examples of specific knowledge, skills, and abilities for Grade 5 students scoring at the *Pass* level include:

- Identify and order positive fractions, mixed numbers, and decimals on a number line
- Evaluate expressions with parentheses or brackets requiring the use of algebraic properties
- Add, subtract, multiply, and divide whole numbers, decimals, and fractions (with like or unlike denominators without regrouping) to solve real-world problems
- Identify and classify polygons based on angle measures and sides
- Develop and use formulas to solve problems involving perimeter and area
- Apply volume formulas to find the volumes of right rectangular prisms
- Understand and use measures of central tendency to describe data
- Make accurate calculations while solving problems and describe how to find the solution to a problem

Did Not Pass

Did Not Pass students demonstrate a limited understanding of mathematical and problem-solving skills. Students may find it difficult to compute with whole numbers, decimals, and fractions, and they struggle with understanding, interpreting, and modeling percents. *Did Not Pass* students strive to solve problems involving addition, subtraction, multiplication, and division of whole numbers, fractions, and decimals, wrestle with the use of variables in simple expressions, and may find it difficult to use two-dimensional coordinate grids to represent points and to graph lines. Students may be able to identify, describe, and draw triangles and circles, but struggle with their properties, and they understand and compute the volume of simple objects using models. In addition, they may find it difficult to collect, display, analyze, compare, and interpret data sets. *Did Not Pass* students find it challenging to make decisions about how to approach problem-solving situations, how to communicate their ideas, and how to apply mathematical knowledge to other situations.

Some examples of specific knowledge, skills, and abilities for Grade 5 students scoring at the *Did Not Pass* level include:

- Round and compare whole numbers and decimals
- Solve real-world problems involving multiplication and division of whole numbers
- Add and subtract fractions with like denominators
- Understand the relationship between radius and diameter
- Find the volume of a prism by packing it with unit cubes
- Interpret data and formulate questions that can be addressed with data
- Use strategies and results from simpler problems to answer more difficult problems and decide what information is not needed to solve a problem