

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 the relationship between percents, prime and composite numbers, *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 two-dimensional coordinate grids to represent points and to graph lines. Students display expertise in identifying, describing and classifying properties of plane and solid geometric shapes, and they understand and compute the area and volume of complex objects. Students also measure weight, temperature, time and money and 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:

- Explain the relationship between equivalent (equal) fractions, decimals and percents
- Add and subtract fractions, including mixed numbers, with unlike denominators
- Identify congruent triangles and justify by using side and angle measures
- Use the formulas for volume area of rectangles and triangles and find the area of more complex shapes
- 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 relationship between percents, prime and composite numbers. *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 two-dimensional coordinate grids to represent points and to graph lines. Students identify, describe and classify properties of plane and solid geometric shapes, and they understand and compute the area and volume of simple objects. In addition, students measure weight, temperature, time and money, and they 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 plot positive fractions, mixed numbers and decimals on a number line
- Multiply and divide whole numbers, decimals and fractions to solve problems
- Write simple expressions with one or two variables and compute to verify the answer
- Measure, identify and draw angles
- Decide which formula to use to solve problems involving perimeter, area, and surface area of rectangles, triangles, parallelograms and trapezoids
- 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 the relationship between percents, prime and composite numbers. *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 classify properties of plane and solid geometric shapes, and they understand and compute the area and volume of simple objects. For *Did Not Pass* students, measuring weight, temperature, time and money can be an obstacle, and 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
- Add, subtract, multiply, and divide whole numbers, mixed numbers, fractions and decimals to solve problems
- Identify, describe and group angles and polygons
- Add and subtract with money in decimal form
- Use strategies and results from simpler problems to answer more difficult problems and decide what information is not needed to solve a problem