

ISTEP+ Performance Level Descriptors

Mathematics – Grade 4

Grade 4

Pass+

Pass+ students demonstrate advanced comprehension of mathematical and problem-solving skills. Students fully understand the relationships among numerical place value; solve a variety of complex problems using addition, subtraction, multiplication and division, and use and interpret mathematical symbols and properties to write and simplify difficult numerical expressions and equations. *Pass +* students skillfully describe and compare the attributes of plane and solid shapes, use their conceptual understandings to show relationships and solve problems with perimeter, area, volume, capacity, time and money. *Pass+* students synthesize and apply mathematical skills in order to solve sophisticated problems.

Some examples of specific knowledge, skills, and abilities for Grade 4 students scoring at the *Pass+* level include:

- Determine all factor pairs for whole numbers
- Express conversions of mixed numbers and improper fractions in simplest form.
- Add and subtract mixed numbers with common denominators in real-world problems
- Display understanding of commutative, associative, and distributive properties
- Use a rule to describe a relationship between two variables
- Understand that an angle is measured with reference to a circle
- Finding area and perimeter of complex shapes, including missing dimensions by decomposing the shape
- Interpret data displayed in line plots to solve problems involving addition and subtraction of fractions
- Analyze problems by identifying, telling the relevance of, sequencing and prioritizing information
- Rationalize answers and solutions by explaining why and how and conveying their thoughts in a clear and concise manner

Pass

Pass students demonstrate proficient mathematical and problem-solving skills. Students understand the relationships among numerical place value; solve problems using addition, subtraction, multiplication and division. *Pass* students describe and compare the attributes of plane and solid shapes, demonstrate their understanding to show relationships and solve problems, and they display an understanding of perimeter, area, volume, capacity, time and money. Students demonstrate the ability to organize, represent and interpret data, and clearly communicate and represent their outcomes. *Pass* students experience success when solving problems, communicating ideas, and applying mathematical knowledge to new situations.

Some examples of specific knowledge, skills, and abilities for Grade 4 students scoring at the *Pass* level include:

- Express whole numbers as fractions and mixed numbers as improper fractions
- Compare two fractions with different numerators and different denominators
- Round to the nearest whole number
- Compare decimals to the nearest hundredths
- Multiply and divide with remainders up to four-digits by a one-digit whole number
- Add and subtract fractions with common denominators
- Identify, describe, and draw rays, angles, and perpendicular and parallel lines
- Use the four operations to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money
- Apply area and perimeter formulas to solve real-world problems
- Measure angles in whole-number degrees using appropriate tools
- Represent information in data tables, line plots, and bar graphs
- Measure length to the nearest eighth-inch and millimeter
- Apply strategies from simpler problems to solve harder problems
- Use explanations to describe how answers were discovered

Did Not Pass

Did Not Pass students demonstrate a limited understanding of mathematical and problem-solving skills. Students attempt to understand the relationships among numerical place value, strive to solve simple problems using addition, subtraction, multiplication and division, and may find it difficult to use and interpret variables, mathematical symbols, and properties to write and simplify numerical expressions and sentences. *Did Not Pass* students struggle to describe and compare the attributes of plane and solid shapes and they display a basic understanding of perimeter, area, time and money. Students may find organizing and interpreting data, along with communicating their outcomes, complicated. *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 4 students scoring at the *Did Not Pass* level include:

- Read and write numbers using words, models, standard form, and expanded form
- Compare two whole numbers up to one million
- Solve real-world problems involving addition and subtraction
- Identify, describe, and draw two dimensional shapes using the appropriate tools
- Recognize and draw lines of symmetry
- Measure length to the nearest quarter-inch
- Decide whether an answer is reasonable/makes sense