

## ISTEP+ Performance Level Descriptors Mathematics – Grade 4

### Grade 4

#### Pass+

*Pass+* students demonstrate advanced 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 variables, mathematical symbols and properties to write and simplify difficult numerical expressions and sentences. *Pass +* students skillfully describe and compare the attributes of plane and solid shapes, using their superior understanding to show relationships and solve problems, and they display a highly-developed understanding of perimeter, area, volume, capacity, time and money. Students demonstrate an advanced ability to organize, represent and interpret data, and clearly communicate and represent their outcomes. *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 4 students scoring at the *Pass+* level include:

- Round decimals to tenths or the nearest whole number
- Use a step-by-step process to divide numbers up to 100 by numbers up to 10 without remainders
- Add and subtract fractions with different denominators
- Recognize and apply the opposite relationship between multiplication and division to solve problems
- Describe and solve problems involving rays and four types of angles
- Analyze problems by identifying, telling the relevance of, sequencing and prioritizing information
- Justify/explain steps to solve problems and completely support answers with evidence

#### 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, and use and interpret variables, mathematical symbols and properties to write and simplify numerical expressions and sentences. *Pass* students describe and compare the attributes of plane and solid shapes, using 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 a variety of other situations.

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

- Write fractions as decimals up to tenths and hundredths
- Know which fractions equal halves and fourths
- Compare numbers with symbols: (<) less than; (>) greater than; and (=) equal to
- Use pictures to add and subtract fractions with different denominators
- Solve two-digit multiplication problems step-by-step when multiplying numbers up to 100 by numbers up to 10
- Knows multiplication facts 0's through 10's
- Estimate positions on a number line
- Identify and name rays and four types of angles
- Know and use the formula for finding the area of a rectangle or square
- Represent information on a number line in table/chart/graph form
- Create a graph to show results of a probability experiment
- Write answers clearly and logically using appropriate mathematical terms and notations
- Make precise calculations and check work

### **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, using their limited understanding to show relationships, 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:

- Identify and write numbers up to one million
- Place numbers in order from smallest to largest?
- Solve multiplication or division problems containing 0, 1, 2, and/or 5's
- Use a step-by-step process to solve addition and subtraction problems
- Recognize and apply the relationship between adding and subtracting
- Continue number patterns using multiplication and/or division
- Solve word problems involving multiplication and division
- Plot and label whole numbers on a number line
- Identify, describe and draw parallel and perpendicular lines

- Know and use the formula to find the perimeter of a rectangle or square
- Interpret graphs to answer questions
- Apply strategies from simpler problems to solve harder problems
- Decide whether an answer is reasonable/makes sense