ISAT Mathematics Performance Definitions
Grade 4

EXCEEDS STANDARDS

Fourth-grade students whose measured performance exceeds standards are able to identify, read, write, represent, and model whole numbers beyond 1,000,000. They can order and compare whole numbers beyond 100,000. They can order and compare decimals beyond hundredths. They use a variety of strategies and all four operations to represent and solve multi-step problems. They select the relevant information needed to set up and solve application problems, choosing the correct operation(s) and an appropriate strategy. They check the accuracy of their solution by solving it in other ways. They can consistently use fractions to describe pictures or data and can accurately divide sets or regions to represent a fraction.

Fourth-grade students whose measured performance exceeds standards are able to accurately use a ruler (beyond 1/2 inch or 1/2 cm) and other measuring tools. They can read a thermometer using the Fahrenheit and Celsius scales. They can compare, estimate, and determine area, perimeter, length, volume (including cubic units), and weight/mass of a variety of geometric figures by frequently using methods beyond counting. In using money, they are able to compare units and make change for amounts up to and often beyond $100.00. Given a number sentence, they can easily write a number story and solve a number sentence that includes multiple variables. On a Cartesian Coordinate Graph, they understand how to plot, locate, identify and connect points, as well as describe paths using ordered pairs.

Fourth-grade students whose measured performance exceeds standards demonstrate a knowledge and sense of numbers that allows them to order and compare whole numbers, fractions and decimals and to recognize the relative magnitude of these numbers without models. They can add and subtract decimals and simple fractions and can translate and solve word problems that involve these concepts and skills. These learners are beginning to have a conceptual understanding of ratios, proportions and percents. They can round whole numbers and decimals to a specified place and can use rounding and estimation skills to predict solutions to problems and also check the reasonableness of their answers with confidence.

They are also able to estimate a given measure and/or a conversion between measures within the customary and metric systems. They understand time and can interpret both analog and digital time displays. They can compute elapsed time with little difficulty.

Algebraically, fourth-grade students at the exceeds standards level can identify and extend geometric and numeric patterns and can write and solve one-step equations that involve the four fundamental operations and whole numbers. These students can recognize and use variables to represent unknown quantities, and they demonstrate an understanding of number properties including commutative, associative, zero, equality and order of operations.

Geometrically, fourth-grade students at the exceeds standards level can compare and contrast the attributes of two- and three-dimensional shapes. These learners can identify geometric properties, including parallel, perpendicular, similar, congruent, and line symmetry. They recognize and can demonstrate understanding of angle properties including right, acute, and obtuse angles, and they are able to determine the measures of angles and sides in simple figures.

Fourth-grade students at the exceeds standards level are able to collect, organize, interpret, analyze and display data. They understand and know how to calculate mode and range when given a set of data and are starting to become familiar with mean and median. These students have the ability to predict outcomes from experiments involving chance, and they can accurately calculate the probability of an event.

Overall, fourth graders at the exceeds standards level have a solid grasp of the mathematics curriculum. They exhibit a range of problem-solving abilities, reasoning skills and communication abilities. They are

able to use calculators and other forms of technology productively to carry out computation and to test or extend familiar patterns. They are on a solid path of progress in the mathematics curriculum.

MEETS STANDARDS

Fourth-grade students whose measured performance meets standards are able to identify, read, write, represent, and model whole numbers and their place values up to 1,000,000. They can order and compare whole numbers up to 100,000 and decimals through hundredths. They can order, compare, and model addition and subtraction of fractions having like denominators. They may use the same one or two strategies and all four operations to represent and solve multi-step problems. They usually can select the relevant information needed to set up and solve application problems, choosing the correct operation(s) and an appropriate strategy. They generally check the accuracy of their solution by solving it in at least one other way. They can use fractions to describe pictures or data.

Fourth-grade students whose measured performance meets standards are able to use a ruler and other measuring tools accurately. They can read a thermometer using the Fahrenheit or Celsius scale. They understand time and can generally compute elapsed time that occurs either in the a.m. or p.m. They can determine the perimeter and area of geometric figures by using methods beyond counting. They can estimate the area of irregularly shaped objects drawn on square grids. In using money, they can solve problems involving different denominations of bills and coins that have a total value of $100.00 or less, including making change. Given a number sentence, they can write a number story. They can solve simple, one-operation number and word sentences that include multiple or missing variables. They can locate, plot, identify, use ordered pairs, and connect points in Quadrant 1 on a Cartesian Coordinate Graph.

Fourth-grade students whose measured performance meets standards can distinguish between rays, lines, line segments and angles and can identify rectangular, triangular, hexagonal and octagonal prisms and their properties. Given a two-dimensional drawing, they can visualize and identify the three-dimensional shape that would result from folding along lines of the given two-dimensional shape. They can determine all the lines of symmetry of a given shape. They understand and can consistently sketch parallel and perpendicular lines and right angles correctly. The fourth grader who is meeting standards can identify images resulting from flips, slides, or turns, but may not always refer to them as reflections, translations, or rotations. They know the difference between polygons and non-polygons. They can identify and describe two- and three- dimensional shapes according to the number vertices, angles, edges, faces, and length of sides. They can usually sketch the two-dimensional shapes.

Fourth-grade students whose measured performance meets standards can analyze and interpret data and make simple inferences and predictions based on the data. Sometimes they can list all of the possible outcomes of a simple two-stage event. They can write the probability of an event using “3” out of “4” language or 3/4. Given a circle, bar or pictograph, students can create a different kind of graph using the same data.

A fourth grader who meets standards can read, interpret, and create simple graphs with a given set of data. They can consistently determine mode and range given a set of data or graph with whole numbers.

BELOW STANDARDS

Fourth-grade students whose measured performance is below standards are not consistently able to read, write and order whole numbers below 100,000. They can sometimes solve basic addition and subtraction problems that involve whole numbers up to four-digit sums. These students can inconsistently solve multiplication and division problems with two-digit factors. They are most often able to select the relevant information needed to set up and solve elementary application problems, choosing the correct operation and an appropriate strategy. They can write and represent consistently the fractions of 1/2, 1/3, and 1/4, but cannot consistently compare or order them.

Fourth-grade students whose measured performance is below standards can inconsistently use a ruler to measure to the nearest 1/2 inch or 1/2 cm. They know the basics of where on the ruler to begin measuring. They are more consistent in their demonstration of understanding standard units of measurement. They can sometimes accurately determine weight/mass and liquid measures using ounces, pounds, grams and liters and can determine equivalent measures of time. They are inconsistent in determining elapsed time correctly. Their understanding of digital clocks is stronger than analog. They can read a thermometer in Fahrenheit, but cannot translate Fahrenheit to Celsius. They sometimes confuse the concepts of perimeter and area of straight-sided geometric figures drawn on square grids. They can measure volume by physically counting cubes. When using money, they are inconsistently able to compare units and make correct, simple, change. Some of their estimates are unreasonable.

Fourth-grade students whose measured performance is below standards can describe, extend and find the missing components of patterns. They can make generalizations from specifics. Sometimes, when they are given a specific number story, they can write a number sentence using variables, equality and inequality notation. They can sometimes solve a number or word sentence that includes more than one variable. On a Cartesian Coordinate Graph, they can locate a point given the coordinates and can name the coordinates of a given point.

Fourth-grade students whose measured performance is below standards can, with few exceptions, identify points, lines, circles, simple polygons and the three-dimensional shapes of cone, cube, cylinder, sphere and pyramid and their properties. This includes congruency and the number of sides, faces and vertices. Given several drawings, they can inconsistently identify the figure with the correct line of symmetry drawn. They are able to sort and classify using the geometric vocabulary of circle, square, rectangle, triangle, pentagon, hexagon and octagon.

Fourth-grade students whose measured performance is below standards can read tallied data, tables, charts, Venn diagrams, bar, picture and pictographs. They can compute the probability of simple events. They can list the outcomes of a simple, two-stage, event. They can use “likely,” “unlikely,” and “impossible” to describe possible outcomes. They are beginning to use the language of “three out of four” to describe the probability of an event, but lack basic understanding about fractions as they relate to probability and proportion.

ACADEMIC WARNING

Fourth-grade students whose measured performance indicates academic warning have limited understanding of place value through hundredths. They can follow procedures with minimal understanding of the process. They are unaware when their answer is unreasonable. They know simple addition, subtraction, multiplication, and division facts and sometimes use concrete materials to solve basic operational problems. They can order smaller numbers, but usually only 2-digit whole numbers. They have an understanding of 1/4 and 1/2 and can identify these values in a visual representation. They understand the concept of sharing fairly.

Fourth-grade students whose measured performance indicates academic warning can physically compare objects to determine which is heavier, longer or warmer. They can read digital clocks and calendars, and most analog clocks. They can usually identify most coins and bills correctly, but they inconsistently make correct change over $10.00.

Fourth-grade students whose measured performance indicates academic warning can tell what comes next in a simple, repeating pattern. They can identify circles, squares, triangles, rectangles, polygons and non-polygons. They can count the number of sides, vertices, faces and edges on two- and three-dimensional figures, but they are inconsistent in their understanding and use of geometric terminology. They can read uncomplicated picture graphs, Venn diagrams, circle graphs, and timelines. They can consistently demonstrate that the largest area on the spinner affects the outcome.

Overall, fourth-grade students at the academic warning level have a somewhat limited sense of the number system. Their computational and problem-solving skills are substandard; these learners inconsistently transfer their knowledge and skills beyond the content and approaches used in mathematics classes.