ISAT Mathematics Performance Definitions
Grade 5

EXCEEDS STANDARDS

Fifth-grade students whose measured performance exceeds standards demonstrate a knowledge and sense of numbers that allows them to apply their understanding of the relative magnitude of numbers in a broad range of settings. They are able to order and compare whole numbers, decimals and fractions with like and unlike denominators and to apply these skills in one- and two-step problems involving the four operations. They can convert between improper fractions and mixed numbers, and they demonstrate an understanding of the relationship between fractions and decimals. These learners can apply their understanding of ratios, proportions and percents to solve one- and two- step problems involving these concepts. They can describe the relationship between two sets of data using appropriate notations. These fifth-grade students are able to apply estimation skills to predict solutions to complex problems. Furthermore, they have the ability to test the validity of logical arguments.

Additionally, fifth-grade students at the exceeds level are able to make and use measurements to apply concepts of precision, accuracy and greatest possible error. These students are able to use appropriate technology instruments and formulas to solve problems and interpret results. They can estimate conversions between measures within the customary and metric systems. These students are able to make conversions within a system of measure to perform operations with compatible units. These fifth-grade students can determine and compare area and perimeter using formulas and/or other strategies, and they can apply these concepts to solve problems.

Algebraically, the exceeds student at fifth grade can solve multi-step problems and equations using whole numbers. They can solve equations and expressions using order of operations, and they demonstrate an understanding of number properties including commutative, associative, distributive, transitive, zero and equality. These students can construct algebraic expressions using variables to describe a pattern and/or represent an unknown quantity. These fifth-grade students can analyze data from tables and graphs, transfer data from tables to graphs and make predictions based on implications from the data. They are also able to estimate probabilities from experimental simulations.

Geometrically, fifth-grade students at the exceeds level can apply their knowledge of two- and three-dimensional objects to solve complex problems. They can identify, classify and compare relationships using points, lines, planes and solids. These students apply their knowledge of polygonal relationships to compare and classify geometric figures. They recognize the effects of slides, flips and turns of shapes, and they identify relationships between radius, diameter and circumference of a circle.

Fifth-grade students at the exceeds level are able to collect, organize, interpret, compare and analyze data and make predictions and decisions based on that data. These students apply the concepts of mean, median, mode and range in data analysis. They determine and apply basic properties of probability to solve problems, and they compare the likelihood of events in terms of "certain," "more likely," "less likely," or "impossible." These students are also able to estimate probabilities from experimental simulations.

Overall, fifth-grade students at the exceeds level have a solid grasp of the mathematics curriculum along with the ability to extend and apply their knowledge in a wide range of problem-solving situations. They are able to use reasoning and communications skills in mathematics, not only to solve the immediate problem but also to make further inquiries and create additional problems from their own interests. Their work is characterized by its insightful nature and by consistently high performance across the various areas.

MEETS STANDARDS

Fifth-grade students whose measured performance meets 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. These students are able to solve practical one- and two-step problems involving whole numbers using addition, subtraction, multiplication and division. They can add and subtract decimals and simple fractions and can translate and solve word problems that involve these concepts and skills. These learners have a conceptual understanding of ratios, proportions and percents and are able to extend that understanding to the solution of simple problems involving these concepts. These fifth-grade students are able to round whole numbers and decimals to a specified place and can use rounding and estimation skills to predict solutions to simple problems and check the reasonableness of their answers.

Additionally, fifth-grade students at the meets standards level are able to use tools to make measurements that are accurate within the range of precision of the instruments used. They are also able to estimate a given measure and/or a conversion between measures within the customary and metric systems. They understand and apply concepts of perimeter and area.

Algebraically, fifth-grade students at the meets 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. These learners can plot and read ordered pairs in the positive quadrant.

Geometrically, fifth-grade students at the meets 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. These students demonstrate an understanding of angle properties including right, acute, obtuse, and straight angles, and they are able to determine the measures of angles and sides in congruent figures.

Fifth-grade students at the meets standards level are able to collect, organize, interpret, analyze and display data. They can determine mean, median, mode and range. These students have the ability to predict outcomes from experiments involving chance, and they can calculate the probability of a simple event.

Overall, fifth-grade students at the meets 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.

BELOW STANDARDS

Fifth-grade students whose measured performance is below standards are generally able to order and compare whole numbers, simple fractions and decimals. They are usually able to solve one-step problems involving whole numbers using addition, subtraction, multiplication and division. They are beginning to develop the ability to solve simple problems using fractions and decimals. They can identify and name a ratio that describes a given situation and are beginning to recognize simple percents. These learners are also able to round whole numbers to a specified place and can often round decimals to the tenths and hundredths. Generally, fifth-grade students at this level use a single strategy to solve problems.

Fifth-grade students at the below standards level are able to use tools to make measurements to the nearest whole and half unit. They can inconsistently estimate a given measure within the customary system. They are beginning to demonstrate an understanding of area and perimeter. They can calculate area and perimeter by counting squares and linear units on a grid, and they can inconsistently determine perimeter by applying a formula.

Algebraically, fifth-grade students who are below standards can identify geometric and numeric patterns. They can inconsistently solve one-step equations with whole numbers that involve the four fundamental operations. These students recognize that variables represent unknown quantities, and they are beginning to develop an understanding of number properties, including commutative, associative, zero and equality. These learners can inconsistently plot and read ordered pairs in the positive quadrant.

Geometrically, fifth-grade students at the below standards level can identify, compare and contrast the attributes of two-dimensional shapes, and they can inconsistently identify and compare the attributes of three-dimensional shapes. They can identify similar, congruent and symmetric figures and can locate the line(s) of symmetry in the latter. They can identify right angles and angles that are greater than and less than a right angle; however, they are inconsistent in their ability to use and understand the terms "acute" and "obtuse."

Fifth-grade students at the below standards level can read and interpret information contained in tables, charts and graphs. They are also able to collect and display data. They can inconsistently determine mean and range from a given set of data. These students are able to calculate simple probabilities and can inconsistently predict the outcome of an event.

Overall, fifth-grade students who operate at the below standards level have an emerging sense of numbers, but they are somewhat limited in their understanding of what may be accomplished within the whole number system. Their computational abilities are limited by the four basic operations, and they inconsistently recognize how and when to use technology. These learners have limited ability to transfer their knowledge and skills beyond the content and approaches used in their classes.

ACADEMIC WARNING

Fifth-grade students at the academic warning level are generally able to order and compare whole numbers. They can identify simple fractions and decimals and can compare simple fractions with like denominators. These students can inconsistently solve one-step problems with whole numbers using the four operations. They can inconsistently identify a ratio that describes a given situation. These students are very limited in their ability to estimate; however, they are sometimes able to round whole numbers to a specified place value. Generally, fifth-grade students at this level have difficulty identifying an appropriate strategy for solving problems.

Fifth-grade students at the academic warning level use tools inconsistently to make measurements to the nearest whole unit. They can occasionally estimate a given measure within the customary system. These learners demonstrate a limited understanding of area and perimeter, and they can inconsistently calculate area and perimeter by counting units of figures drawn on square unit grid.

Algebraically, fifth-grade students at the academic warning level can inconsistently identify simple geometric and numeric patterns. They can inconsistently solve simple one-step equations that involve addition and subtraction. These learners are beginning to recognize that variables represent an unknown quantity. Fifth-grade students at the academic warning level demonstrate an emerging ability to recognize number properties including commutative, zero and equality.

Geometrically, fifth-grade students at the academic warning level can identify the attributes of two-dimensional shapes and can inconsistently identify attributes of some three-dimensional shapes. These learners may be able to inconsistently identify symmetry and congruence. They may be able to locate some lines of symmetry in a figure. These students may recognize a right angle but rarely recognize angles that are acute or obtuse.

Fifth-grade students at the academic warning level can inconsistently read and interpret information contained in tables, charts and graphs. These students may be able to collect and display data but are rarely able to make predictions based on that data. They are able to inconsistently calculate simple probabilities, and they can occasionally predict the outcome of an event.

Overall, fifth-grade students at the academic warning level have a significantly limited sense of numbers and what may be accomplished within the number system. Their computational abilities are underdeveloped, and their problem-solving skills are limited. These learners are rarely able to transfer their knowledge and skills beyond the content and approaches used in their mathematics classes.