Virginia Standards of Learning Assessment
Grade 7 Mathematics Performance Level Descriptors

Fail/Below Basic	Fail/Basic	Pass/Proficient	Pass/Advanced
A student performing at this level should be able to: • Define negative powers of ten as a representation of small numbers. • Compare and order decimals, percents and whole numbers. • Recognize perfect squares using manipulatives. • Define the absolute value of a number as a positive value. • Identify patterns that represent an arithmetic sequence. • Add, subtract, multiply, and divide whole numbers. • Define proportion as the equivalent relationship between two sets. • Recognize appropriate uses for volume and surface area.	A student performing at this level should be able to: • Describe the concept of negative exponents for powers of ten. • Compare and order decimals, percents, and fractions with like denominators. • Identify perfect squares of two digit numbers. • Use the number line to describe the absolute value of a whole number. • Distinguish between arithmetic and geometric sequences. • Model addition, subtraction, multiplication, and division of integers. • Write proportions that represent equivalent relationships between two sets.	A student performing at this level should be able to: • Write a power of ten with a negative exponent in fraction and decimal form. • Compare and order fractions, decimals, percents, and numbers written in scientific notation. • Determine the square root of perfect squares less than or equal to 400. • Use the number line to demonstrate the absolute value of a rational number. • Extend arithmetic and geometric sequences using the common difference or common ratio. • Add, subtract, multiply, and divide integers. • Use proportional reasoning to solve single and multistep practical problems.	A student performing at this level should be able to: • Write a power of ten with a negative exponent in decimal and fraction form. • Compare and order fractions, decimals, percents, and numbers with positive or negative exponents written in scientific notation. • Represent the square root of a number geometrically as the side of a square. • Use the absolute value to determine the distance between two rational numbers on a number line. • Represent arithmetic or geometric sequences using variable expressions that describe the relationship between any two consecutive terms. • Add, subtract, multiply, and divide integers and rational numbers.

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• Use pictorial representations to name parallelograms, rectangles, rhombi, and trapezoids and label sides of angles of each figure. • Define reflection, dilation, rotation, and translation. • Define experimental and theoretical probability, and the Fundamental Counting Principle. • Interpret data from a histogram. . • Identify relations and functions using tables and graphs. • Identify algebraic expressions, equations, coefficients, and variables. • Combine like terms. • Identify the commutative, associative, distributive, identity, and inverse properties of operations.	• Describe volume and surface area of cylinders and rectangular prisms with a pictorial representation. • Name features associated with parallelograms, rectangles, rhombi, and trapezoids, and identify corresponding sides and angles for similar figures. • Identify a right triangle or rectangle that has been reflected, dilated, rotated, or translated on the coordinate plane, given the pre-image. . • Apply the Fundamental Counting Principle to compute the number of possible outcomes for experimental and theoretical probability. • Construct histograms for a given data set. • Describe and represent relations and functions with tables, graphs, and words. • Create examples of algebraic expressions and equations, and solve whole number one-step linear equations and inequalities in one variable.	• Solve practical problems involving the volume and surface area of rectangular prisms and cylinders, and describe how changing one measured attribute of a rectangular prism affects its volume and surface area. • Use properties to compare and contrast characteristics of parallelograms, rectangles, rhombi, and trapezoids, and use proportions to determine the corresponding sides and angles for similar figures. • Identify and sketch a right triangle or rectangle that has been reflected, dilated, rotated, or translated on the coordinate plane, given the pre-image. • Apply the experimental and theoretical probability formulas to determine the probability of an event or compound event containing no more than two events, and understand that as the number of trials increase, the experimental probability gets closer to the theoretical probability.	• Solve practical problems using proportions to determine tips, tax, and discounts. • Solve practical problems involving volume and surface area of rectangular prisms and cylinders, and describe how changing one measured attribute of a rectangular prism affects its volume and surface area. • Classify quadrilaterals based on their characteristics, and write similarity statements using symbols for two similar figures. • Analyze the changes in the coordinates of a right triangle or rectangle, given the pre-image, image, and transformation. • Determine the difference between the experimental and theoretical probability, and calculate the probability of a compound event containing two or more events, explaining the effect of increasing the number of trials. • Examine the characteristics of a data set displayed as a histogram and in other graphical representations to make comparisons, inferences and predictions.

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	• Identify the commutative, associative, distributive, identity, and inverse properties of operations.	• Analyze histograms for a given data set, and compare and contrast them with other graphical representations of the same data. • Use one representation of a relation to represent and describe the relation in another form. • Use the properties of real numbers to evaluate verbal and algebraic expressions for replacement values, and to solve one and two-step linear equations and inequalities in one variable.	• Use tables, graphs, rules, and words to determine if a relation is a function. • Solve and graph inequalities in one variable. • Translate verbal expressions and sentences into algebraic expressions and equations. • Use properties of operations to explain mathematical relationships used to solve practical problems involving one and two-step linear equations and inequalities in one variable. • Use the properties of real numbers to evaluate verbal and algebraic expressions for replacement values, and to solve practical problems in one and two-step linear equations. • Given an algebraic expression, identify properties of operations applied between steps.