**Virginia Standards of Learning Assessment**

**Grade 8 Mathematics (2016 SOL) Performance Level Descriptors**

| **Fail/Below Basic** | **Fail/Basic** | **Pass/Proficient** | **Pass/Advanced** |
| --- | --- | --- | --- |
| A student performing at this level should be able to:  *Reporting Category 1: Number, Number Sense, Computation, and Estimation*   * compare fractions and decimals * identify natural numbers, whole numbers, and integers * use manipulatives to recognize perfect squares * solve practical problems involving fractions, decimals, and integers   *Reporting Category 2: Measurement and Geometry*   * define and recognize acute, obtuse, right, and straight angles * determine the areas of circles, triangles, and rectangles * determine the volume/surface area of a rectangular prism given a labeled figure * identify the image of a polygon resulting from a single transformation * use manipulatives to describe the views (top/front/side) of a three-dimensional figure * define the Pythagorean Theorem   *Reporting Category 3: Probability, Statistics, Patterns, Functions, and Algebra*   * determine the probability of a simple event * name the dependent and independent variables represented in a scatterplot * apply the order of operations to numerical expressions * simplify algebraic expressions using manipulatives * define domain and range * recognize the slope of a linear function as positive, negative, or zero * make connections between tables and ordered pairs * represent two-step linear equations using pictorial representations * solve and graph one-step linear inequalities | A student performing at this level should be able to:  *Reporting Category 1: Number, Number Sense, Computation, and Estimation*   * compare and order rational numbers * identify natural numbers, whole numbers, and integers * determine the positive square root of a perfect square * solve practical problems involving rational numbers, percents, and proportions   *Reporting Category 2: Measurement and Geometry*   * recognize and determine supplementary and complementary angles * determine the volume and surface area of cones and square based pyramids * identify and apply translations and reflections of right triangles and rectangles * identify a 3D model given 2D views * label hypotenuse and legs of a right triangle * apply the Pythagorean Theorem when the hypotenuse is unknown * identify polygons in composite figures and calculate their area and perimeter   *Reporting Category 3: Probability, Statistics, Patterns, Functions, and Algebra*   * determine probability of two independent events * define a dependent event * represent data in boxplots and scatterplots * apply order of operations * simplify algebraic expressions * determine independent and dependent variables from ordered pairs or a table of values * identify the slope and *y*-intercept of an equation in *y = mx + b* form * graph linear equations given a table * make connections between graphs and tables * solve two-step linear equations * solve and graph two-step linear inequalities. | A student performing at this level should be able to:  *Reporting Category 1: Number, Number Sense, Computation, and Estimation*   * compare and order real numbers * classify numbers belonging to subsets of real numbers * compute percent increase and percent decrease * determine between which two integers a square root lies * solve practical consumer application problems   *Reporting Category 2: Measurement and Geometry*   * describe relationships among angles * solve practical problems involving volume and surface area of cones and pyramids * describe effect of changing one attribute of rectangular prism * apply transformations to polygons * construct 3D models from 2D views * apply Pythagorean Theorem to determine the unknown side of a right triangle * determine the area and perimeter of composite figures   *Reporting Category 3: Probability, Statistics, Patterns, Functions, and Algebra*   * determine probability of two independent and dependent events * make inferences from boxplots * construct scatterplots to determine line of best fit * evaluate algebraic expressions * determine domain/range and if a function exists * determine the independent and dependent variable from practical linear situations * identify slope and *y*-intercept given a table and graph * graph linear equations in   *y = mx + b* form   * make connections among various forms of linear functions * graph and solve multistep linear equations and inequalities | A student performing at this level should be able to:  *Reporting Category 1: Number, Number Sense, Computation, and Estimation*   * describe differences among and discriminate between numbers in the subsets of real numbers * solve practical problems involving simple interest and new balance of investments and loans   *Reporting Category 2: Measurement and Geometry*   * solve practical problems involving angle relationships * solve practical problems involving surface area and volume problems with cones and pyramids * describe how changing one dimension of a rectangular prism affects volume and surface area * describe how transformation affects congruency, orientation, location, and symmetry of an image * identify and generate practical applications of transformations * solve problems using Pythagorean Theorem * apply perimeter, circumference, and area formulas to solve practical problems involving composite figures   *Reporting Category 3: Probability, Statistics, Patterns, Functions, and Algebra*   * compare and contrast probability of independent and dependent events * compare and analyze two data sets using boxplots * compare different representations of the same relation * differentiate between independent and dependent variables * write a linear equation given slope and *y*-intercept or a practical linear situation * solve practical problems involving multistep linear equations and inequalities * differentiate between the solution of an equation and solutions of an inequality |