



Achievement Level Descriptors (ALDs)

Mathematics

Grades 6-8

The achievement level descriptors describe what a typical student scoring at each achievement level can do. A student who scores at a level would be expected to also be able to demonstrate the skills described in previous levels. A student would not necessarily demonstrate all the skills listed at a particular achievement level on a particular test in order to score at that level.

Achievement Level Descriptors (ALDs)
Mathematics
Grade 6

	Far Below Proficient	Below Proficient	Proficient	Advanced
Overall for Reports – not specific to grade level or content	Student may partially meet the standards but has significant gaps in knowledge and skills of current grade-level content.	Student partially meets the standards and may have gaps in knowledge and skills but is capable of most grade-level content.	Student meets the standards at a proficient level, demonstrating knowledge and skills of current grade-level content.	Student meets the standards at an advanced level, demonstrating knowledge and skills of complex grade-level content.
Ratios and Proportional Relationships				
6.RP.1 6.RP.2 6.RP.3	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • understands ratio concepts as part-to-part and numerator/denominator relationships • identifies equivalent ratios 	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • understands ratio concepts as part-to-part, dividend/divisor relationships, equivalent fractions, and percentages 	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • understands ratio concepts as numerical comparisons using division, equivalence of rates, unit rates, percentages, and measurement conversions • uses ratio reasoning to solve problems 	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • understands ratio concepts as numerical and symbolic comparisons, equivalence and inequality of rates, unit rates, percentages and fractions of percentages, and measurement conversions
The Number System				
6.NS.1 6.NS.2 6.NS.3 6.NS.4 6.NS.5 6.NS.6 6.NS.7 6.NS.8	<p style="text-align: center;">A student at this level</p>	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • solves problems involving division of fractions 	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • applies understanding of multiplication and division to divide decimals by decimals and fractions by fractions • uses visual fraction models to represent and divide fractions by fractions 	<p style="text-align: center;">A student at this level</p> <ul style="list-style-type: none"> • interprets and applies understanding of multiplication and division to divide decimals by decimals and fractions by fractions

	<ul style="list-style-type: none"> identifies common multiples orders positive integers on a number line identifies integer coordinate pairs in Quadrant I 	<ul style="list-style-type: none"> identifies common factors and common multiples adds, subtracts, and multiplies whole numbers orders positive and negative integers on a number line identifies the absolute values of positive and negative integers identifies integer points in all four quadrants 	<ul style="list-style-type: none"> finds and applies least common multiples and greatest common factors computes fluently with multi-digit whole numbers and multi-digit decimals orders rational numbers applies previous understanding of numbers to the system of rational numbers represents absolute values of rational numbers solves problems involving plotting integer points in all four quadrants translates among multiple representations of rational numbers with denominators reducible to 2, 3, 4, 5, 8, 10, and 100 	<ul style="list-style-type: none"> applies previous understanding of numbers to the system of rational numbers in real-world contexts
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Expressions and Equations				
6.EE.1 6.EE.2 6.EE.3 6.EE.4 6.EE.5 6.EE.6 6.EE.7 6.EE.8 6.EE.9	A student at this level <ul style="list-style-type: none"> reads and writes expressions with variables, including expressions described as verbal phrases uses trial and error to test single-step one-variable equations 	A student at this level <ul style="list-style-type: none"> reads, writes, and evaluates expressions with variables, including expressions described as verbal phrases writes equivalent expressions uses trial and error to test inequalities solve single-step one-variable equations 	A student at this level <ul style="list-style-type: none"> reads, writes, and evaluates expressions with variables and whole-number exponents, including expressions described as verbal phrases writes inequalities, given constraints applies properties of operations to write equivalent expressions represents and models relationships between dependent and independent variables 	A student at this level <ul style="list-style-type: none"> reads, writes, evaluates, and compares expressions with variables and whole-number exponents understands and interprets expressions, equations, and inequalities in real-world contexts interprets and analyzes relationships between dependent and independent variables in real-world contexts and translates among graphs, tables, equations, and inequalities
Geometry				
6.G.1 6.G.2 6.G.3 6.G.4 6.G.5	A student at this level <ul style="list-style-type: none"> solves word problems involving the areas of rectangles and involving the surface areas and volumes of cubes 	A student at this level <ul style="list-style-type: none"> solves word problems involving the areas of rectangles and triangles and involving the surface areas and volumes of right rectangular prisms 	A student at this level <ul style="list-style-type: none"> solves word problems involving the areas of polygons and involving the surface areas and volumes of three-dimensional objects 	A student at this level <ul style="list-style-type: none"> solves multistep real-world word problems involving the areas of polygons and involving the surface areas and

		<ul style="list-style-type: none"> identifies three-dimensional objects represented as nets composed of rectangles and triangles uses previous understanding of packing unit cubes to understand the formula for the volume of a rectangular prism 	<p>with rectangular and triangular faces</p> <ul style="list-style-type: none"> represents three-dimensional figures by using nets composed of rectangles and triangles finds the lengths of polygonal sides drawn in a coordinate plane if the vertices have the same x-coordinates or same y-coordinates 	<p>volumes of three-dimensional objects</p> <ul style="list-style-type: none"> extends understanding of the volume formula of a rectangular prism with fractional edge lengths
Statistics and Probability				
6.SP.1 6.SP.2 6.SP.3 6.SP.4 6.SP.5 6.SP.6 6.SP.7	<p>A student at this level</p> <ul style="list-style-type: none"> describes the differences between uniform and variable data 	<p>A student at this level</p> <ul style="list-style-type: none"> finds the mean, median, mode, range, maximum, and minimum of a data set 	<p>A student at this level</p> <ul style="list-style-type: none"> describes the nature and distribution of data in terms of shape, center, spread, and number of observations finds the first quartile, third quartile, and interquartile range of a data set understands the relationships between measures of center and measures of spread displays data in line plots, histograms, and box plots 	<p>A student at this level</p> <ul style="list-style-type: none"> determines and explains the most appropriate measure of center and measure of variability, based on the shape of the data and the context of the problem

			<ul style="list-style-type: none">• recognizes or identifies statistical and non-statistical questions	
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Achievement Level Descriptors (ALDs)
Mathematics
Grade 7

	Far Below Proficient	Below Proficient	Proficient	Advanced
Overall for Reports – not specific to grade level or content	Student may partially meet the standards but has significant gaps in knowledge and skills of current grade-level content.	Student partially meets the standards and may have gaps in knowledge and skills but is capable of most grade-level content.	Student meets the standards at a proficient level, demonstrating knowledge and skills of current grade-level content.	Student meets the standards at an advanced level, demonstrating knowledge and skills of complex grade-level content.
Ratios and Proportional Relationships				
7.RP.1 7.RP.2 7.RP.3	<p>A student at this level</p> <ul style="list-style-type: none"> identifies proportional relationships from relationships between equivalent ratios and percentages 	<p>A student at this level</p> <ul style="list-style-type: none"> determines proportional relationships by examining tables and graphs computes unit rates 	<p>A student at this level</p> <ul style="list-style-type: none"> analyzes proportional relationships and uses them to solve problems by computing and comparing unit rates and recognizing equivalent ratios explains the constant of proportionality in context and uses it to write an equation solves problems with percentages identifies specified points on the graph of a proportional relationship and interprets their meaning 	<p>A student at this level</p> <ul style="list-style-type: none"> analyzes and interprets numerical and symbolic proportional relationships and uses them to solve complex multistep problems by comparing rates and ratios, determining and applying rates, and determining rates from graphs identifies on the graph of a proportional relationship the points $(0, 0)$ and $(1, r)$, where r is the unit rate

The Number System				
7.NS.1 7.NS.2 7.NS.3	<p>A student at this level</p> <ul style="list-style-type: none"> uses addition, subtraction, multiplication, and division to solve single-step word problems involving positive fractions and decimals 	<p>A student at this level</p> <ul style="list-style-type: none"> adds and subtracts rational numbers adds, subtracts, multiplies, and divides integers converts a fraction to a decimal typically by using long division 	<p>A student at this level</p> <ul style="list-style-type: none"> applies understanding of fractions and decimals to fluently use all four arithmetic operations with rational numbers represents addition and subtraction of rational numbers on number lines recognizes additive inverses, rules for signs, absolute values, and properties of operations and uses them to solve real-world problems with rational numbers 	<p>A student at this level</p> <ul style="list-style-type: none"> applies understanding of all four operations with rational numbers to solve multistep real-world problems, using fractions and decimals interchangeably, including translating among multiple representations of rational numbers
Expressions and Equations				
7.EE.1 7.EE.2 7.EE.3 7.EE.4	<p>A student at this level</p> <ul style="list-style-type: none"> uses one or more properties of operations to combine like terms in an expression writes single-step equations to solve problems 	<p>A student at this level</p> <ul style="list-style-type: none"> uses one property of operations, such as the distributive property, to generate equivalent linear expressions solves two-step problems with rational numbers 	<p>A student at this level</p> <ul style="list-style-type: none"> uses properties of operations to generate equivalent expressions and to solve multistep problems with rational coefficients uses variables to represent quantities in multistep problems solves multistep problems with equations and inequalities and assesses 	<p>A student at this level</p> <ul style="list-style-type: none"> uses multiple properties of operations to strategize and generate equivalent expressions and to solve complex multistep problems with rational coefficients uses variables to represent quantities in complex multistep word problems with equations and inequalities requiring multistep solutions and

			the reasonableness of answers	interprets solutions in context, including graphs
Geometry				
7.G.1 7.G.2 7.G.3 7.G.4 7.G.5 7.G.6	<p>A student at this level</p> <ul style="list-style-type: none"> identifies the vertices, edges, and faces of a rectangular prism draws and describes specific polygons with labeled vertices and identifies their sides and angles identifies the center, radius, diameter, and circumference of a circle 	<p>A student at this level</p> <ul style="list-style-type: none"> describes the vertices, edges, and faces of a rectangular prism and describes its surface area as the sum of the areas of its six rectangular faces constructs triangles by hand and with the appropriate tools and technology uses formulas to find the circumference of a circle 	<p>A student at this level</p> <ul style="list-style-type: none"> describes geometric figures, including two-dimensional cross sections, and the relationships between them decomposes prisms into rectangles and triangles constructs triangles and special quadrilaterals by hand and with the appropriate tools and technology and describes the relationship between their sides and angles writes and solves mathematical problems involving angle measures, including intersecting lines and complementary, supplementary, vertical, and adjacent angles uses formulas to find the area of a circle and to find surface area and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms 	<p>A student at this level</p> <ul style="list-style-type: none"> creates geometric figures and analyzes and compares their general properties solves complex multistep problems involving the angle measures, areas, surface areas, and volumes of right rectangular prisms, right triangular prisms, and shapes composed of those prisms

			<ul style="list-style-type: none"> identifies the scale factor of a model and solves problems with scale drawings by using proportional reasoning 	<ul style="list-style-type: none"> interprets scale factors and translates between scale models and drawings and actual measurements
Statistics and Probability				
7.SP.1 7.SP.2 7.SP.3 7.SP.4 7.SP.5 7.SP.6 7.SP.7 7.SP.8	A student at this level <ul style="list-style-type: none"> distinguishes between populations and samples understands probability as quantifiable between 0 and 1 understands samples can be used to gain information about a population distinguishes between random and nonrandom samples 	A student at this level <ul style="list-style-type: none"> uses random sampling and numerical measures of center and variability to describe a population calculates simple probability 	A student at this level <ul style="list-style-type: none"> uses random sampling and numerical measures to draw comparative inferences about two populations develops, uses, and evaluates probability models compares theoretical and experimental probabilities creates sample spaces to represent outcomes finds probabilities of compound events, including simulations 	A student at this level <ul style="list-style-type: none"> draws interpretive comparative inferences about multiple populations develops, uses, and evaluates multiple probability models distinguishes between uniform and non-uniform probability models and compares theoretical and experimental probabilities of compound events

Achievement Level Descriptors (ALDs)
Mathematics
Grade 8

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The Number System				
8.NS.1 8.NS.2 8.NS.3	<p>A student at this level</p> <ul style="list-style-type: none"> recognizes irrational numbers as a category distinct from rational numbers 	<p>A student at this level</p> <ul style="list-style-type: none"> recognizes examples of irrational numbers as square roots of non-perfect squares or cube roots of non-perfect cubes recognizes prime factorizations 	<p>A student at this level</p> <ul style="list-style-type: none"> interprets irrational numbers as non-repeating and nonterminating decimals or as constants such as π writes prime factorizations writes, orders, or plots approximations of irrational numbers between two whole numbers 	<p>A student at this level</p> <ul style="list-style-type: none"> determines fractional equivalence of repeating decimals
Expressions and Equations				
8.EE.1 8.EE.2 8.EE.3 8.EE.4 8.EE.5 8.EE.6 8.EE.7 8.EE.8	<p>A student at this level</p> <ul style="list-style-type: none"> understands exponents as representing repeated multiplication finds the slope of a line using a graph 	<p>A student at this level</p> <ul style="list-style-type: none"> rewrites expressions with negative exponents as fractions with positive exponents calculates the value of a positive base with a negative integer exponent 	<p>A student at this level</p> <ul style="list-style-type: none"> understands and applies the properties of integer exponents and scientific notation understands and applies the connections between 	<p>A student at this level</p> <ul style="list-style-type: none"> understands, applies, and interprets the properties of integer exponents, scientific notation, and operations in scientific notation understands, applies, and interprets the graphs of

	<ul style="list-style-type: none"> represents whole-number multiples of ten in scientific notation 	<ul style="list-style-type: none"> expresses quantities in scientific notation understands the meaning of equations with two variables 	<p>proportional relationships, the slope of a graph, and triangle similarity</p> <ul style="list-style-type: none"> solves linear equations and systems of linear equations, including the intersection of the graphs of a system solves word problems with two linear equations in two variables 	<p>proportional relationships in multiple ways and the relationship between similar triangles and the slope of a graph</p> <ul style="list-style-type: none"> interprets, analyzes, graphs, and solves linear equations in two variables solves complex multistep word problems involving systems of linear equations identifies systems with no solutions, one solution, and infinitely many solutions
Functions				
8.F.1 8.F.2 8.F.3 8.F.4 8.F.5	<p>A student at this level</p> <ul style="list-style-type: none"> identifies relations that are functions and relations that are not 	<p>A student at this level</p> <ul style="list-style-type: none"> identifies and defines linear functions distinguishes between linear and nonlinear functions identifies the slope and y-intercept of a linear function 	<p>A student at this level</p> <ul style="list-style-type: none"> defines, evaluates, compares, and uses functions that model linear relationships between quantities in multiple representations uses functions to model linear relationships between two quantities in slope-intercept form 	<p>A student at this level</p> <ul style="list-style-type: none"> defines, evaluates, compares, analyzes, and uses functions that model nonlinear relationships between quantities in multiple representations identifies characteristics of different types of functions

Geometry				
8.G.1 8.G.2 8.G.3 8.G.4 8.G.5 8.G.6 8.G.7 8.G.8 8.G.9	<p>A student at this level</p> <ul style="list-style-type: none"> recognizes congruence and similarity and distinguishes between them using physical models finds the hypotenuse of a right triangle whose sides are Pythagorean triples recognizes single transformations 	<p>A student at this level</p> <ul style="list-style-type: none"> recognizes and identifies congruence and similarity via multiple transformations applies the Pythagorean theorem in two dimensions identifies supplementary angles 	<p>A student at this level</p> <ul style="list-style-type: none"> understands and analyzes congruence and similarity using physical models, transparencies, or geometry software understands and applies the Pythagorean theorem and its converse in two dimensions understands, analyzes, and justifies congruence and similarity through translations, reflections, rotations, and dilations applies the formulas of volume of a cone, volume of a cylinder, volume of a sphere, and surface area of a cylinder understands and applies properties of triangles and of interior and exterior angles 	<p>A student at this level</p> <ul style="list-style-type: none"> interprets and applies the Pythagorean theorem in three dimensions justifies or completes a proof of the Pythagorean theorem applies the formulas of volume of a prism, volume of a cone, volume of a cylinder, and volume of a sphere to real-world problems

Statistics and Probability				
8.SP.1 8.SP.2 8.SP.3 8.SP.4	<p>A student at this level</p> <ul style="list-style-type: none"> recognizes association in bivariate data 	<p>A student at this level</p> <ul style="list-style-type: none"> recognizes and describes association in bivariate data identifies the line of best fit for a linear association 	<p>A student at this level</p> <ul style="list-style-type: none"> constructs and describes bivariate data and recognizes, describes, and investigates patterns of association in bivariate data interprets the slope and y-intercept of the line of best fit identifies patterns of association between two categorical variables 	<p>A student at this level</p> <ul style="list-style-type: none"> describes, analyzes, and investigates patterns of association in bivariate categorical data in a two-way table