Achievement Level Descriptors Mathematics Grade 8

ALD	Standard	Level 2	Level 3	Level 4	Level 5
Policy		Students at this level	Students at this level	Students at this level	Students at this level
		demonstrate a below	demonstrate a satisfactory	demonstrate an above	demonstrate mastery of the
		satisfactory level of success	level of success with the	satisfactory level of success	most challenging content of
		with the challenging content of	challenging content of the	with the challenging content	the Florida Standards.
		the Florida Standards.	Florida Standards.	of the Florida Standards.	
		A student performing at Level	A student performing at Level	A student performing at Level	A student performing at Level
		2	3	4	5
	r		Number System		
Range	8.NS1.1	identifies square roots of non-	places irrational numbers on a	uses approximations of	explains how to get more
	8.NS1.2	square numbers and pi as	number line; identifies	irrational numbers to	precise approximations of
		irrational numbers; identifies	irrational decimal expansions	estimate the value of an	square roots; analyzes and
		rational or irrational numbers	as approximations; identifies	expression; compares and	explains the patterns that exist
		and converts familiar rational	rational and irrational numbers	orders rational and irrational	when writing rational numbers
		numbers with one repeating	and converts less familiar	numbers without a number	as fractions
		digit to fraction form	rational numbers to fraction	line	
			form		
			Expressions and Equatio	ns	
Range	8.EE.1.1	applies the properties of	applies the properties of	uses multiple properties of	analyzes the reasonableness
		natural number exponents to	integer exponents to generate	integer exponents within an	of the result of using the
		generate equivalent numerical	equivalent numerical	expression with integer	properties of integer
		expressions	expressions	exponents	exponents in numerical
					expressions
Range	8.EE.1.2	evaluates square roots and	uses square root and cube root	writes and solves equations	justifies how square roots and
		solves mathematical equations	symbols to represent solutions	representing real-world	cube roots relate to each
		in the form x ₂ = p, where p is a	to mathematical equations in	situations using square root	other and to their radicands
		positive rational number and is	the form $x_2 = p$ and $x_3 = p$, where	and cube root symbols	
		a small perfect square; knows	p is a positive rational number;		
		that square root 2 is irrational	evaluates cube roots of small		
			perfect cubes		
Range	8.EE.1.3	uses numbers expressed in the	uses numbers expressed in the	expresses how many times as	[intentionally left blank]
		form of a single digit times an	form of a single digit times an	much a number written in the	
		integer power of 10 to express	integer power of 10 to express	form of single digit times an	
		very large numbers	very small numbers	integer power of 10 is than	
				another number written in	
				the same form	

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Range	8.EE.1.4	represents very large and very	performs operations with	performs operations and	analyzes the process and
		small quantities in scientific	numbers expressed in scientific	interprets values written in	solution to given problems
		notation and uses units of	notation, including problems	sciencific notation within a	using scientific notation
		appropriate size for	where both decimal and	real-world context	
		measurements of very large or	scientific notation are used;		
		very small quantities	Interprets scientific notation		
_	0.55.0.5		generated by technology		
Range	8.EE.2.5	graphs proportional	identifies the unit rate as the	generates a model of a	[intentionally left blank]
		relationships, interpreting the	slope; compares two different	proportional relationship	
		unit rate as the slope	proportional relationships	given specific qualities	
			represented in different ways		
Range	8.EE.2.6	determines the slope of a line	explains, using similar triangles,	derives the equation y = mx +	compares and contrasts
		given a graph	why the slope is the same	b for a line intercepting the	situations in which similar
			between any two distinct	vertical axis at b	triangles would or would not
			points on a nonvertical line in		yield the same slope between
			the coordinate plane; derives		any two distinct points on a
			the equation y = mx for a line		nonvertical line in the
			through the origin		coordinate plane
Range	8.EE.3.7	solves linear equations with	solves multistep linear	justifies why an equation has	creates examples of
	(ab)	integer coefficients and	equations in one variable with	one solution, infinitely many	equations that have one
		variables on one side	rational coefficients using the	solutions, or no solution	solution, infinitely many
			distributive property or		solutions, or no solution
			collecting like terms on a given		
			side; identifies linear equations		
			as having solutions of one,		
			infinitely many, or none by		
			transforming the given		
			equation into simpler forms by		
			inspection		

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Range	8.EE.3.8	interprets mathematical or	solves mathematical and real-	solves and analyzes a system	solves and analyzes problems
	(abc)	real-world problems, given the	world systems of two linear	of equations in two variables	involving two linear
		graph, of a system of two linear	equations in two variables with	with integer and benchmark	equations in two variables
		equations in two variables	integer coefficients by	fraction coefficients	with rational coefficients or
			inspection, algebraically by		constants
			multiplying only one of the		
			equations by an integer		
			Functions		
Range	8.F.1.1	identifies, from a graph, if a	uses a table or graph to	explains, given a rule, why it is	creates a rule, given a table
		relation is a function	demonstrate understanding	a function or not a function	or graph, and explains why it
			that a function is a rule that		is or is not a function
			assigns to each input exactly		
			one output and that the graph		
			of a function is the set of		
			ordered pairs consisting of an		
			input and the corresponding		
			output		
Range	8.F.1.2	compares properties (i.e.,	compares properties (i.e.,	compares two linear functions	creates a function, based on
		slope, y-intercept, values) of	slope, y-intercept, values) of	and justifies whether two	given criterion, in comparison
		two linear functions	two linear functions each	functions each represented in	to a given function
		represented in a different way	represented in a different way	a different way (algebraically,	
		(graph and equation in slope	(algebraically, graphically,	graphically, numerically in	
		intercept form)	numerically in tables, or verbal	tables, or verbal description)	
			description)	are equivalent or not by	
				comparing their properties	
Range	8.F.1.3	determines whether a function	interprets the equation y = mx	determines whether a	gives real-world examples of
		is linear or nonlinear from	+ b as defining a linear function	function is linear or nonlinear	functions that are linear or
		graph	whose graph is a straight line	(table or equation)	nonlinear

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Range	8.F.2.4	determines the rate of change	interprets the rate of change	interprets the rate of change	analyzes a set of values in
		from two (x, y) values or from a	and initial value of a linear	and initial value of a linear	either a table or graph to
		graph	function in terms of the	function in terms of a verbal	determine changes to be
			situation it models, and in	description of the linear	made to make the
			terms of its graph or a table of	function	relationship linear
			values; constructs a function to		
			model a linear relationship		
			between two quantities		
Range	8.F.2.5	describes qualitatively the	describes qualitatively the	sketches a graph that exhibits	interprets qualitative features
		functional relationship	functional relationship	given qualitative features of a	of a function in a context
		between two quantities by	between two quantities by	function	
		analyzing some features of a	analyzing a graph (e.g., where		
		graph to be linear and	the function is increasing or		
		nonlinear	decreasing, linear or nonlinear)		
Geometry					
Range	8.G.1.1	describes a rigid	describes a sequence of up to	use properties of rigid and	[intentionally left blank]
	8.G.1.2	transformation between two	two rigid transformations	non-rigid transformations to	
		congruent figures that exhibits	between two congruent figures	understand the relationship	
		the congruence between them		between transformations and	
				congruence	
Range	8.G.1.3	describes the effect of a	describes the effect of a	describes the effect of up to	describes the effect of two
		reflection or translation on	dilation, translation, rotation,	two rigid transformations on	transformations, including at
		two-dimensional figures using	or reflection on two-	two-dimensional figures using	least one dilation, on two-
		coordinates	dimensional figures using	coordinates	dimensional figures using
			coordinates and coordinate		coordinates and coordinate
			notation		notation
Range	8.G.1.4	[intentionally left blank]	identifies a sequence of	describes a sequence of	[intentionally left blank]
			transformations and a dilation	transformations and a dilation	
1			that results in similarity	that results in similarity	

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Range	8.G.1.5	uses the fact that the sum of	finds unknown angle measures	gives an informal argument	gives an informal argument
		the angles of a triangle equals	for angle pairs when parallel	for congruent angle	that a triangle can only have
		180 and identifies angle pairs	lines are cut by a transversal;	relationships when parallel	one 90-degree angle; gives an
		when parallel lines are cut by	gives an informal argument for: •	lines are cut by a transversal	informal argument for the
		a transversal	sum of the angles of a triangle		pairs of angles that are
			equals 180 · the measure of an		supplementary when parallel
			exterior angle of a triangle is		lines are cut by a transversal
			equal to the sum of the		
			measures of the non-adjacent		
			angles		
Range	8.G.2.6	uses the Pythagorean	models and explains the proof	[intentionally left blank]	[intentionally left blank]
		theorem and applies to right	of the Pythagorean theorem and		
		triangles	its converse using a pictorial		
			representation		
Range	8.G.2.7	calculates hypotenuse length	calculates unknown side lengths	applies the Pythagorean	finds multiple leg lengths
	8.G.2.8	using the Pythagorean	using the Pythagorean theorem;	theorem to a real-world	given a hypotenuse of an
		theorem, given a picture of a	applies the Pythagorean	situation in two and three	isosceles triangle or finds
		right triangle or the lengths of	theorem to find the distance	dimensions to determine	multiple leg lengths when two
		the two legs	between two points in a	unknown side lengths or the	triangles with the same
			coordinate system with the right	distance between two points	hypotenuse are given; applies
			triangle drawn	in a coordinate system	the Pythagorean theorem in
					multistep problems; finds the
					coordinates of a point which is
					a given distance (nonvertical
					and nonhorizontal) from
					another point
Range	8.G.3.9	[Intentionally left blank]	uses the formulas for the	explains the relationship	Justifies the relationship
			volume of cones, cylinders, and	between formulas for the	between the formulas for
			spheres to solve real-world and	volumes of cones and	volume of cones, cylinders, or
			mathematical problems	cyinders	spheres; explains the
					derivation of the formulas for
					cones, cylinders, and spheres

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	Statistics and Probability					
Range	8.SP.1.1	constructs a scatter plot and	constructs and interprets scatter	describes patterns such as	[intentionally left blank]	
		describes the pattern as	plots for bivariate measurement	outliers and nonlinear		
		positive, negative, or no	data to investigate patterns of	association		
		relationship	association between quantities			
Range	8.SP.1.2	identifies a straight line used	draws a straight line on a scatter	judges how well the trend	compares more than one	
		to describe a linear	plot that closely fits the data	line fits the data by looking	trend line for the same scatter	
		association on a scatter plot	points	at the closeness of the data	plot and justifies the best one	
				points		
Range	8.SP.1.3	identifies the slope and y-	interprets the slope and	uses the equation of a linear	creates and uses a linear	
		intercept of a linear model on	intercept, given context	model to solve problems in	model based on a set of	
		a scatter plot, given an		the context of bivariate	bivariate data to solve a	
		equation		measurement data	problem involving slope and	
					intercept	
Range	8.SP.1.4	interprets a two-way table by	completes a two-way table of	constructs a two-way table	interprets a two-way table to	
		row or column	categorical data	to summarize data; describes	summarize data; compares	
				relative frequencies for	relative frequencies to	
				possible associations from a	identify patterns of	
				two-way table	association	