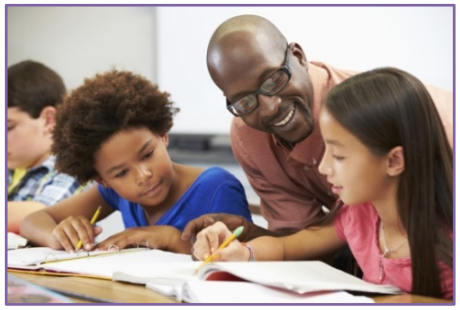
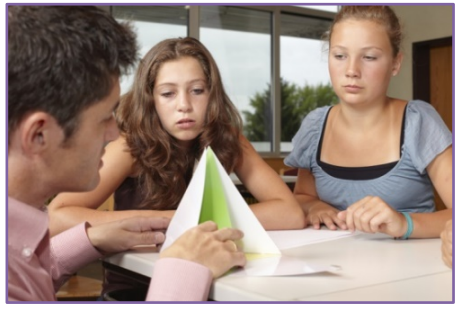
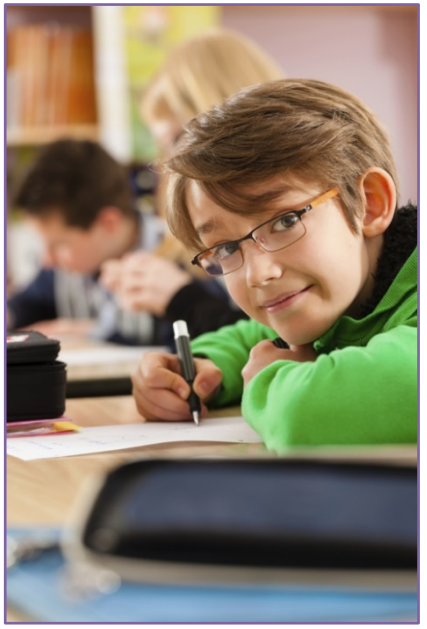
DoDEA Mathematics Standards Gap Analysis

Alignment of DoDEA's College and Career Ready Standards for Mathematics with DoDEA Academic Standards

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Second Grade

Content that is **new** to Grade 2	Content that is still included in Grade 2, but may be **modified** or **at a greater depth**	*Content that is **no longer** a focus at Grade 2*
Operations & Algebraic Thinking • Add and subtract within 20 **(2.OA.2)** **Number Base Ten** • Understand place value **(2.NBT.4)** • Use place value understanding and properties of operations to add and subtract **(2.NBT.7-9)** **Measurement and Data** • Measure and estimate lengths in standard units **(2.MD.2-4)** • Relate addition and subtraction to length **(2.MD.6)** • Work with time and money **(2.MD.8)** • Represent and interpret data **(2.MD.9)** **Geometry** • Reason with their shapes and their attributes **(2.G.1-2)**	**Operations & Algebraic Thinking** • Represent and solve problems involving addition and subtraction **(2.OA.1)** • Work with equal groups of objects to gain foundations for multiplication **(2.OA.3-4)** **Number & Operation in Base Ten** • Understand place value **(2.NBT.A.1-3)** • Use place value understanding and properties of operations to add and subtract **(2.NBT.5-6)** **Measurement and Data** • Measure and estimate lengths in standard units **(2.MD.1)** • Relate addition and subtraction to length **(2.MD.5)** • Work with time and money **(2.MD.7)** • Represent and interpret data **(2.MD.10)** **Geometry** • Reason with their shapes and their attributes **(2.G.3)**	***Numbers & Operations*** • Estimate and verify answers in addition and subtraction problems with two-digit numbers ***Algebra*** • Solve open sentences by representing an expression in more than one way using the associative property of addition (see Grade 1.OA) • Create and describe patterns with multiple attributes • Identify and extend a linear pattern by its rules • Describe qualitative changes • Describe quantitative changes, especially those involving add/sub ***Measurement*** • Make and use estimates of measurement, including time volume, weight, and area; verify result (see Grade 3.MD) • Describe and compare relationships of time • Use repetition of a single unit to measure something larger than the unit ***Geometry*** • Predict the results of putting together and taking apart 2-Dshapes • Find and name locations using simple relationships and in coordinate systems • Identify shapes that have been rotated (turned), reflected (flipped), and translated (slide). • Identify and create shapes with symmetry ***Data Analysis & Probability*** • Develop categories for sorting a collection of materials • Generate questions, collect and organize data to address the questions, and draw conclusions • Describe events that are more likely, least likely, or equally likely to happen • Use physical models and pictures to represent possible arrangements of two or three objects • Identify events that can have more than one outcome

Appendix A

Kindergarten

DOMAIN	College and Career Ready Standards for Mathematics (CCRSM)		DoDEA Standards		Alignment Notes
COUNTING AND CARDINAITY	**CLUSTER: Know number names and the count sequence.**				
	K.CC.A.1	Count to 100 by ones and by tens.	**1.M.1a**	Count and group objects into ones and tens up to 100.	Grouping is more than the expectation in CCRSM.
			2.M.1h	Count by twos, fives, and tens to 100.	Grade levels higher for DoDEA, indicates need to move down.
	K.CC.A.2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	**not aligned**		DoDEA does not specify this type of counting.
	K.CC.A.3	Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	**K.M.1a**	Identify, write, and name numbers up to 20.	DoDEA is silent on zero and a set with no elements, and is also unclear whether "numbers" are wholes (includes 0) or natural (no 0).
	CLUSTER: Count to tell the number of objects.				
	K.CC.B.4	Understand the relationship between numbers and quantities; connect counting to cardinality.	**K.M.1b**	Using one-to-one correspondence, count the number of objects in sets up to 20.	DoDEA example: "Identify that 12 is the number for the set" speaks to cardinality. DoDEA standard does not go to "understand the relationship" that CCRSM requires. In this cluster, one DODEA standard is matched to 5 CCRSM: K.CC.B.4.A, K.CC.B.4.B and K.CC.B.5
	K.CC.B.4.A	When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	**K.M.1b**	Using one-to-one correspondence, count the number of objects in sets up to 20.	DoDEA example: "Identify that 12 is the number for the set" assumes the earlier CCRSM limit of 20.
	K.CC.B.4.B	Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	**K.M.1b**	Using one-to-one correspondence, count the number of objects in sets up to 20.	DoDEA example: "Identify that 12 is the number for the set" assumes the earlier CCRSM limit of 20.

DOMAIN	College and Career Ready Standards for Mathematics (CCRSM)		DoDEA Standards		Alignment Notes
	K.CC.B.4.C	Understand that each successive number name refers to a quantity that is one larger.	**not aligned**		Not included in DoDEA.
	K.CC.B.5	Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.	**K.M.1b**	Using one-to-one correspondence, count the number of objects in sets up to 20.	DoDEA does not include making a set with that number.
	CLUSTER: Compare numbers.				
	K.CC.C.6	Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.	**PK.M.1e**	Compare the number of items in two sets using comparative language, i.e., more, fewer, same number.	DODEA standard does not refer to "matching and counting strategies", and thus could be interpreted/taught as a rote skill.
	K.CC.C.7	Compare two numbers between 1 and 10 presented as written numerals.	**not aligned**		DoDEA refers to sets for comparison through Grade 2 (compares numbers in Grade 3).
OPERATIONS AND ALGEBRAIC THINKING	**CLUSTER: Understand addition and understand subtraction.**				
	K.OA.A.1	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	**K.M.1d**	Use objects and drawings to model, represent, and solve related addition and subtraction problems.	The full range of representations in CCRSM is not included in DoDEA standards. DODEA standard only refers to objects and drawings. CCRSM lists many more representations (situations, sounds, mental images, verbal explanations, expressions, equations), an important connection to MP7 and MP8. This is noted in the comments column. CCRSM is at a higher conceptual level.
	K.OA.A.2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.	**K.M.1d**	Use objects and drawings to model, represent, and solve related addition and subtraction problems.	There are 4 CCRSM (1-4) written to cover one DODEA standard.

DOMAIN	College and Career Ready Standards for Mathematics (CCRSM)		DoDEA Standards		Alignment Notes
			K.M.2d	Model a problem situation using actual objects.	
	K.OA.A.3	Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).	**K.M.1d**	Use objects and drawings to model, represent, and solve related addition and subtraction problems.	Although addition and subtraction are used, the concept of decomposition is not specified.
	K.OA.A.4	For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	**K.M.1d**	Use objects and drawings to model, represent, and solve related addition and subtraction problems.	Building 10 is more of a specific strategy than finding the difference to a number.
	K.OA.A.5	Fluently add and subtract within 5.	**2.M.1c**	Show equivalent representations for whole numbers by using addition and subtraction facts.	DoDEA standards do not refer to fluency or automaticity for addition/subtraction.
NUMBER & OPERATIONS IN BASE TEN	**CLUSTER: Work with numbers 11-19 to gain foundations for place value.**				
	K.NBT.A.1	Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	**1.M.1a**	Count and group objects into ones and tens up to 100.	Grouping is very similar to composing. Identifying number of tens and ones is somewhat similar to decomposing, but does not speak to ten as ten ones. DoDEA standard in Grade 1 goes to 100--well beyond 19.
			1.M.1c	Identify the number of tens and ones in numbers less than 100.	

DOMAIN	College and Career Ready Standards for Mathematics (CCRSM)		DoDEA Standards		Alignment Notes
MEASUREMENT AND DATA	**CLUSTER: Describe and compare measurable attributes.**				
	K.MD.A.1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	**K.M.4a**	Compare and order objects according to length, capacity, weight, and temperature by using descriptors, e.g., longer, taller, and heavier.	DoDEA standards do not require the student to identify the attributes, just use the attributes.
	K.MD.A.2	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.	**K.M.4a**	Compare and order objects according to length, capacity, weight, and temperature by using descriptors, e.g., longer, taller, and heavier.	DoDEA standards include order, which is more than compare.
	CLUSTER: Classify objects and count the number of objects in each category.				
	K.MD.B.3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	**K.M.2b**	Identify, sort, and classify a set of objects by color, shape, size, number, and other attributes.	DoDEA standard does not include counting the sets created.
GEOMETRY	**CLUSTER: Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).**				
	K.G.A.1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.	**K.M.3a**	Name, describe, sort, compare, and draw two-dimensional shapes.	The example for K.M.3a makes specific reference to a "shape walk" to find examples. Shapes include: squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres.
			K.M.3b	Identify and compare three-dimensional objects.	
			K.M.3c	Describe and demonstrate positions of objects and compare their relative locations and distances.	
	K.G.A.2	Correctly name shapes regardless of their orientations or overall size.	**K.M.3a**	Name, describe, sort, compare, and draw two-dimensional shapes.	The orientation issue is not mentioned in DoDEA standards.

DOMAIN	College and Career Ready Standards for Mathematics (CCRSM)		DoDEA Standards		Alignment Notes
			K.M.3b	Identify and compare three-dimensional objects.	
	K.G.A.3	Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	**K.M.3a**	Name, describe, sort, compare, and draw two-dimensional shapes.	Although DoDEA standards address two-dimensional and three-dimensional, they do not describe distinguishing between the two cases.
			K.M.3b	Identify and compare three-dimensional objects.	
	CLUSTER: Analyze, compare, create, and compose shapes.				
	K.G.B.4	Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	**K.M.3a**	Name, describe, sort, compare, and draw two-dimensional shapes.	K.M.3a and K.M.3b together span CCRSM because one is two-dimensional and the other three-dimensional. The word "analyze" is missing from DoDEA standards at this level, but "compare" and "sort" require a certain amount of analysis. CCRSM specificity about size and orientations of figures is not in DoDEA statements. DODEA standard does not specify different sizes, orientations, informal language.
			K.M.3b	Identify and compare three-dimensional objects.	
	K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	**K.M.3a**	Name, describe, sort, compare, and draw two-dimensional shapes.	DoDEA standards do not require students to build or draw three-dimensional shapes. DODEA standard refers to 2D only.
	K.G.B.6	Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"	**1.M.3b**	Create new shapes by combining, cutting, or taking apart existing shapes.	DoDEA standards go further, including taking apart shapes.

Fifth Grade Alignment Sorted by DoDEA Standards

X = grade level with similar alignment to current DoDEA standards
Gray shading = no alignment with CCRSM at specified grade levels

DoDEA Standards Fifth Grade	CCRSM				
	Gr 3	Gr 4	Gr 5	Gr 6	Gr 7
5.M.1a: identify verbally and in writing the place value for each digit in decimals through millionths			X		
5.M.1b: identify and represent equivalent forms of fractions with denominators of 12 or less, decimals, and percents	X	X			
5.M.1c: explain how decimals and percents are parts of a whole				X	
5.M.1d: use models to show the ratio interpretation of a fraction as part-to-part and part-to-whole				X	
5.M.1e: represent and compare numbers less than zero by extending the number line and using familiar applications (e.g., temperature), to demonstrate the usefulness of negative numbers				X	
5.M.1f: identify and use the distributive property to simplify and/or perform computations	X				
5.M.1g: use order of operations, including the use of parentheses, to simplify numerical expressions			X		
5.M.1h: explain why fractions need common denominators to be added or subtracted			X		
5.M.1i: use models to show an understanding of the concept of multiplication and division of fractions with denominators of 12 or less		X	X		
5.M.1j: understand and compute positive integer powers of nonnegative integers as repeated multiplication				X	X
5.M.1k: divide whole numbers with two-digit divisors			X		

DoDEA Standards Fifth Grade	CCRSM				
	Gr 3	Gr 4	Gr 5	Gr 6	Gr 7
5.M.1l: use models and equivalent forms to add and subtract fractions with like and unlike denominators up to 12, expressing answers in simplest form		X	X		
5.M.1m: use estimation strategies for the results of computations involving whole numbers, fractions with denominators of 12 or less, and decimals through millionths			X		
5.M.1n: compute and perform multiplication and division of fractions with denominators of 12 or less and decimals		X	X	X	
5.M.1o: understand and apply divisibility rules for 2, 3, 4, 5, 6, 9, and 10					
5.M.2a: express a general rule for a pattern by using visual representations, words, tables, graphs, or mathematical symbols			X		
5.M.2b: explain the concept of variable (e.g., a letter standing for all numbers of a specific set, such as integers)				X	
5.M.2c: use variables to represent unknown quantities in general rules when describing mathematical patterns and relationships				X	
5.M.2d: apply order of operations and the commutative, associative properties for addition and multiplication and the distributive property to simplify algebraic expressions, equations, and inequalities				X	
5.M.2e: construct tables and graphs that accurately represent the relationship between two variables			X		
5.M.2f: identify, describe, and compare situations that represent constant or varying rates of change					
5.M.3a: identify, describe and compare the properties of a three-dimensional objects				X	
5.M.3b: identify and graph ordered pairs in the first quadrant of a coordinate system			X		
5.M.3c: create patterns that result from drawing a combination of reflections (flips), rotations, and translations (slides) of geometric figures, including rotational symmetry					

DoDEA Standards Fifth Grade	CCRSM				
	Gr 3	Gr 4	Gr 5	Gr 6	Gr 7
5.M.3d: visualize and draw two-dimensional views of three-dimensional objects made from rectangular solids					X
5.M.4a: identify volume as the space inside a three-dimensional object as a measured in cubic units and use strategies to determine the surface areas and volumes of rectangular solids			X	X	
5.M.4b: convert standard units of measurement within both customary and metric systems of measurement		X	X	X	
5.M.4c: develop and use strategies for estimating the volume of various three-dimensional objects			X	X	
5.M.4d: use standard measurement tools and units to measure volume					
5.M.5a: explain sampling techniques for gathering data					
5.M.5b: select and use a graph that is appropriate for the type of data to be displayed					
5.M.5c: describe the role of the mean as a balance point for the data set				X	X
5.M.5d: recognize samples as subsets of larger populations					
5.M.5e: use a sample to make projections for a larger population					
5.M.5f: use common fractions to represent the probability of events that are neither certain nor impossible					X
5.M.5g: compare theoretical and experimental outcomes in an experiment when the total number of possible outcomes is 12 or less					X
5.M.5h: make predictions based on experimental and theoretical probabilities					X