

Criterion	Coding structure	Analyst instruction	Score guidance / examples
Measurability & Specificity	0-2	Assess whether the standards are written in a way that allows for the	2 = measurable & well specified; 1 = partially measurable / well specified; and 0 = not
Measurability Issue Flag	Select issue(s) if score < 2	Flag the primary reason(s) measurability is reduced.	Too vague; Too broad; Multiple expectations; Non-observable verb; Lacks performance expectation;
Instructional Focus Tag	K-8: Major Work, Supporting Work,	PK-8: Identify whether the standard addresses the "major work" of the grade;	PK-8: Classify as Major work, Supporting work, Additional work, or Extraneous work; Use
Clarity & Accessibility Score	0-2	Score whether the terminology is simple, concise, mathematically precise, and	2 = clear and accessible; 1 = partially clear and accessible; 0 = not clear and accessible.
Clarity & Accessibility Issue	Select issue(s) if score < 2	Flag the primary reason(s) clarity and accessibility are reduced.	Vague/ambiguous language; Jargon; Mathematical error/imprecise usage of mathematical
DOK Level	1, 2, 3, 4, Not applicable	Code the highest cognitive complexity clearly required by the standard. Use	DOK 1 = recall/reproduction/rote procedures; DOK 2 = skills/concepts; DOK 3 = strategic
Mathematical Rigor	Select all that apply: Procedural	Identify whether each standard addresses mathematical skills and procedures;	A standard does not need every component. Balance is judged later across the grade/course.
Developmental Appropriateness	0-2	Score whether each standard is developmentally appropriate for the grade	2 = developmentally appropriate; 1 = partially developmentally appropriate; 0 = not
Developmental Appropriateness	Select issue(s) if score < 2	Do not score at the standard level. Flag possible issues for later progression	Prerequisite missing; Too early; Too late; Repeats without growth; Abrupt jump; Other.
Math Practice Integration	0-2	Determine whether or not the MP(s) named in each standard are meaningfully	2. All named practices integrated = All practices explicitly named in the standard are
Math Practice Appropriateness	0-2	Determine whether or not the MP(s) named in each standard are appropriate to the	2. All named practices appropriate = All practices explicitly named in the standard are
Math Practice Alignment Tags	Grade-specific Utah MPs	If misaligned/integrated or partially aligned/integrated, list the mathematical	For any MP(s) not named in the standard that would be better integrated or aligned with the
QC/Review Flag	Optional status flag	Use to mark standards requiring secondary analyst or senior review. Each one is	Potential rationales for additional review/QC: Multi-part standard; Uncertain rating; Possible
Analyst Notes	Free text	Explain any non-obvious rating or flag. Notes should be concise but evidence-	Include specific phrase in the standard that drove the rating whenever possible.
QC/Consensus Notes	Free text	Reserved for project lead or consensus reviewer after double-coding/calibration.	Do not overwrite analyst notes.

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Domain	Standard ID
Operations and Algebraic Thinking (OA)	2. OA. 1
Operations and Algebraic Thinking (OA)	2. OA. 2
Operations and Algebraic Thinking (OA)	2. OA. 3
Operations and Algebraic Thinking (OA)	2. OA. 4
Number and Operations in Base Ten (NBT)	2. NBT. 1
Number and Operations in Base Ten (NBT)	2. NBT. 2
Number and Operations in Base Ten (NBT)	2. NBT. 3
Number and Operations in Base Ten (NBT)	2. NBT. 4
Number and Operations in Base Ten (NBT)	2. NBT. 5
Number and Operations in Base Ten (NBT)	2. NBT. 6

Number and Operations in Base Ten (NBT)	2. NBT. 7
Measurement and Geometry (MG)	2. MG. 1
Measurement and Geometry (MG)	2. MG. 2
Measurement and Geometry (MG)	2. MG. 3
Measurement and Geometry (MG)	2. MG. 4
Measurement and Geometry (MG)	2. MG. 5
Measurement and Geometry (MG)	2. MG. 6
Measurement and Geometry (MG)	2. MG. 7
Measurement and Geometry (MG)	2. MG. 8
Measurement and Geometry (MG)	2. MG. 9
Measurement and Geometry (MG)	2. MG. 10
Data Science (D)	2. D. 1

Data Science (D)	2. D. 2
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Data Science (D)	2. D. 3
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Data Science (D)	2. D. 4
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Standard Text	Measurability Score	Measureability Measurability Issue
<i>Build and use models</i> to solve one-step addition and subtraction story problems with sums and minuends less than or equal to 100, and two-step addition and subtraction story problems with sums and minuends less than or equal to 20. <i>Add or remove story context</i> to solve problem type situations with unknowns in all positions while attending to the meaning of the equal sign. (MP 2, 4)	1—Partially measurable / well specified	Non-observable verb
Use strategies and properties to add and subtract <i>flexibly, accurately, and efficiently</i> with sums and minuends less than or equal to 20. Know from memory all sums of two one-digit numbers. (MP 6)	1—Partially measurable / well specified	Poorly specified; Too broad
<i>Describe and represent structures and patterns</i> to determine if a group of up to 20 objects has an odd or even number of items by pairing them or counting by twos. (MP 7)	2—Measurable & well specified	
<i>Build and use models</i> involving repeated addition to determine the total number of objects in rectangular arrays with up to 5 rows and up to 5 columns. <i>Describe and represent the structures and patterns of the arrays</i>. <i>Make and show place value understanding by bundling ten 10s to make a "hundred."</i> Use a variety of <i>models to represent</i> the amount of hundreds, tens, and ones in a three-digit number. Identify the number of hundreds, tens, and ones in a three-	2—Measurable & well specified	
Count within 1,000, <i>making conjectures</i> about counting patterns; Skip-count by twos, fives, tens, and hundreds. (MP 8)	2—Measurable & well specified	
Read three-digit whole numbers and <i>represent the place value structure in</i> those numbers using numerals, base 10 word form, and expanded form. (MP 7)	2—Measurable & well specified	
Compare two three-digit numbers using models and/or place value understanding. <i>Represent the relationship between the two numbers using comparison symbols <, =, and >.</i> (MP 4, 7)	2—Measurable & well specified	
Use numerical strategies to determine the sum of up to four two-digit numbers, and the difference of two two-digit numbers <i>flexibly, accurately, and efficiently</i>. Justify a chosen <i>strategy using the relationship between build and use concrete and pictorial models</i> to determine the sums and differences of three-digit numbers with sums and minuends up to and including 999. Use the models to <i>represent and describe the structure of combining hundreds</i>	1—Partially measurable / well specified	Poorly specified
	2—Measurable & well specified	

Mentally add and subtract multiples of 10 or 100 from a three-digit number and <i>justify the result</i> using place value language. (MP 3)	2—Measurable & well specified	
<i>Select and use appropriate tools</i> such as rulers, yardsticks, meter sticks, and measuring tapes to measure the length of objects to the nearest whole unit. (MP 5)	2—Measurable & well specified	
<i>Describe and represent</i> the length of an object using two different units of measure. <i>Describe the relationship</i> of the two measurements and relate them to the units chosen. (MP 7)	2—Measurable & well specified	
<i>Construct, justify, and communicate clear and reasonable arguments</i> when estimating lengths using inches, feet, centimeters, and meters. (MP 3)	2—Measurable & well specified	
Measure with <i>precision</i> to determine how much longer one object is than another. Express the difference in length using a standard unit. (MP 6)	2—Measurable & well specified	
<i>Build and use</i> a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2,... as a <i>model</i> to represent whole numbers as lengths from zero.	1—Partially measurable / well specified	Too vague
<i>Strategically use an open number line as a tool</i> <i>Attend to precision</i> when telling and writing time to the nearest five minutes. <i>Add context</i> to determine when to use a.m. and p.m., <i>attending to reasonableness.</i> (MP 2, 6)	1—Partially measurable / well specified	Too vague
<i>Add or remove context</i> when solving problems involving dollar bills, quarters, dimes, nickels, and pennies. (MP 2)	2—Measurable & well specified	
<i>Ask questions</i> to identify and describe shapes having specific attributes. Build and draw shapes that possess specified attributes. (MP 1)	1—Partially measurable / well specified	Too vague; Poorly specified
<i>Build and use models</i> to partition a rectangle into rows and columns of same-size squares and count to find the total number of squares. (MP 4)	2—Measurable & well specified	
<i>Describe and represent structures, patterns and relationships</i> when partitioning two-dimensional shapes into two, three, or four equal shares; describe the shares using the words halves, thirds, a fourth of, quarters, etc. Recognize	1—Partially measurable / well specified	Non-observable verb
Determine a topic question and <i>ask</i>	1—Partially	Non-observable

Collect and organize data. *Build data visualizations* including bar graphs and pictographs with single-unit scales. *Ask questions* to consider a given data set about a classroom or grade level context, and organize Analyze data sets and single-unit scale data Interpret data to answer investigative

1—Partially
measurable / well
specified

Multiple
expectations; Non-
observable verb

1—Partially
2—Measurable & well

Non-observable

Measurability Notes	Instructional Focus		Clarity &
	Instructional	Instructional	

"Attending to" isn't an observable behavior.	Major work	Building fluency with addition and subtraction	1—Partially clear and accessible
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"Know from memory"; "Flexibly" and "efficiently" are subjective and undefined, making them difficult to	Major work	Building fluency with addition and subtraction	1—Partially clear and accessible
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Major work	builds early understanding of number patterns and structure and building fluency	1—Partially clear and accessible
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Major work	with addition and subtraction & the conceptual foundation for	1—Partially clear and accessible
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Major work	Extending understanding of base-ten (place value)	2—Clear and accessible
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Major work	Extending understanding of base-ten (place value)	1—Partially clear and accessible
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Major work	Extending understanding of base-ten (place value)	1—Partially clear and accessible
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Major work	Extending understanding of base-ten (place value)	2—Clear and accessible
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"Flexibly" and "efficiently" are subjective and undefined, making them difficult to	Major work	Extending understanding of base-ten (place value)	2—Clear and accessible
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Major work	building fluency with addition and subtraction; Extending understanding of	1—Partially clear and accessible
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	Major work	Building fluency with addition and subtraction; Extending understanding of	2—Clear and accessible
	Supporting work	measurement	2—Clear and accessible
	Supporting work	measurement	2—Clear and accessible
	Supporting work	measurement	1—Partially clear and accessible
	Supporting work	measurement	2—Clear and accessible
"Strategically use"	Major work	the standard is fundamentally about: representing whole numbers on	1—Partially clear and accessible
add context to determine" and "attending to reasonableness" require	Supporting work	measurement	1—Partially clear and accessible
	Supporting work	measurement	2—Clear and accessible
ask questions to identify and describe shape" is vague and high-inference. It does	Additional work	geometry	2—Clear and accessible
	Additional work	geometry	2—Clear and accessible
"Recognize that"	Additional work	geometry	1—Partially clear and accessible
"Investigative	Supporting work	data	1—Partially

“Ask questions to consider” is less precise and more open-ended. It does not clearly define “Analyze” how? “Ask	Supporting work	data representation and analysis	1—Partially clear and accessible
	Supporting work	data	2—Clear and
	Supporting work	data	1—Partially

Clarity & Accessibility		DOK	
Clarity & Accessibility	Clarity & Accessibility	DOK Level (1-3)	DOK Notes
Jargon; Other	While terms like "minuends" & "unknowns in all positions" are appropriate and precise, they are technical and may not be familiar and accessible to all.	3	Multi-step problems, unknowns in all positions, and context shifts require strategic reasoning.
Vague/ambiguous language; Insufficient guidance to understand PE	The phrase "attending to the meaning of the terms" because the terms "strategies and properties" are broad and not defined (e.g., counting on, making ten, commutative)	1	Fact fluency and efficient computation rely on recall and routine
Jargon; Insufficient guidance to understand PE	The phrase "describe and represent structures and patterns" is abstract and does not clearly define what the statement is	2	Identifying odd/even through patterns requires conceptual understanding
Jargon; Other	The statement is long and combines multiple expectations (modeling, describing patterns, making conjectures)	3	Making and evaluating conjectures about arrays requires reasoning beyond representing
		2	place value with models shows conceptual understanding of making
Jargon	The term "conjectures" while appropriate may be unfamiliar to many.	3	conjectures about counting patterns requires pattern analysis and
Jargon	The phrases "base 10 word form" and "expanded form" are somewhat technical and may not be familiar to all	1	Reading and writing numbers is primarily recall; the representations
		2	comparing numbers uses place value concepts with a clear solution
		3	Justifying strategies involves reasoning about properties and
Jargon; Other	The term "minuends" while appropriate is technical and may not be accessible to all users.	3	connecting models to strategies and asking questions requires deeper conceptual

		3	Mental computation with justification requires
		2	Selecting and using measurement tools is application of skills
		2	comparing measurements across units requires
Insufficient guidance to understand PE	It is unclear what qualifies as a "reasonable argument" at this level.	3	conceptual and constructing and justifying estimates requires
		2	reasoning and comparing lengths is procedural with some application
Insufficient guidance to understand PE	Strategically use an open number line" is vague—what "strategically" means is not defined. "Attending to reasonableness" and "add context" are abstract and does not clearly define what	2	Using number lines to model problems applies known strategies. Applying time concepts in context requires reasoning but
Insufficient guidance to understand PE		2	resolving routine problems with context shifts involves
		2	application with identifying and building shapes with attributes applies
		2	using arrays/area models to count squares is structured
		2	conceptual work partitioning shapes and describing shares applies known
Vague/ambiguous language	the phrase "describe and represent structures, patterns and relationships" is abstract and does not	3	fraction
Insufficient guidance to	The phrase "determine a		Developing

Vague/ambiguous language; Insufficient guidance to understand PE	The standard combines multiple expectations (collecting, graphing, questioning, organizing by variables), which reduces	2	Collecting and representing data follows clear processes.
Jargon; Vague/ambiguous	The phrase	2	Analyzing graphs
		3	Interpreting

Mathematical Rigor		Developmental Appropriateness	
Mathematical Rigor	Mathematical Rigor	Developmental	Developmental
	Solving one- and two-step story problems applies mathematical concepts in real-world contexts, including interpreting unknowns and the equal sign. Focuses on efficient, accurate computation and memorization of basic facts.		
Applications	Determining odd/even through patterns and grouping	2—Developmentally appropriate	
Procedural Skill / Fluency	emphasizes number arrays and repeated addition	2—Developmentally appropriate	
Conceptual Understanding	build understanding of structure and demonstrates place value relationships across hundreds, tens, and ones	2—Developmentally appropriate	
Conceptual Understanding	Counting (procedural) with pattern recognition and reading and representing numbers	2—Developmentally appropriate	
Conceptual Understanding; Procedural Skill / Fluency	(procedural) while showing place	2—Developmentally appropriate	
Conceptual Understanding; Procedural Skill / Fluency	Comparing numbers procedurally while applying place value reasoning. Computation	2—Developmentally appropriate	
Conceptual Understanding; Procedural Skill / Fluency	(procedural) with justification and strategy	2—Developmentally appropriate	
Conceptual Understanding	connections emphasizes place value structure and reasoning through modeling and comparison	2—Developmentally appropriate	

Conceptual Understanding	Mental computation supported by place value reasoning and justification. measuring	2—Developmentally appropriate
Applications; Procedural Skill / Fluency	accurately (procedural) using real-world tools (application) Comparing	2—Developmentally appropriate
Conceptual Understanding; Procedural Skill / Fluency	measurements across units requires understanding and estimation and justification	2—Developmentally appropriate
Conceptual Understanding	emphasize reasoning about measurement	2—Developmentally appropriate
Procedural Skill / Fluency	Focuses on precise measurement and determining differences.	2—Developmentally appropriate
Conceptual Understanding	Number lines model mathematical structure.	2—Developmentally appropriate
Applications; Procedural Skill / Fluency	telling time accurately (procedural) in real-life contexts (application) Solving money	2—Developmentally appropriate
Applications	problems applies math to real-world financial identifying	2—Developmentally appropriate
Conceptual Understanding	defining attributes builds geometric understanding	2—Developmentally appropriate
Conceptual Understanding	arrays as equal groups connects to structure and multiplication Partitioning	2—Developmentally appropriate
Conceptual Understanding	shapes and reasoning about equal shares	2—Developmentally appropriate
Applications	deepens fractional Formulating	2—Developmentally

Applications; Procedural Skill / Fluency	Creating graphs (procedural) to represent real- world data (application).	2—Developmentally appropriate
Conceptual	Analyzing	2—Developmentally
Conceptual	Interpreting,	2—Developmentally

ss		Integration of Approp
Developmental	Math Practice	Math Practice

2—All named practices
integrated

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practices appropriate

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2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
2—All named practices	2—All named

Identify Better Aligned Mathematical Practices		
	Identify Better Aligned	Mathematical Practice

MP2

MP7

MP6

MP7

MP7

MP7

MP6

[illegible]

Domain	Standard ID	Standard Text	Measurability Score (0-
Operation and Algebraic Thinking (OA)	4.OA.1	<i>Build and use</i> models to visualize a multiplication equation as a comparison. <i>Represent</i> verbal statements of multiplicative comparisons as multiplication equations. (MP 4, 7)	1—Partially measurable / well specified
Operation and Algebraic Thinking (OA)	4.OA.2	Solve story problems involving multiplicative comparison by <i>building and using models</i> , including drawings and equations with a symbol for the unknown number. <i>Make and evaluate</i> conjectures about the difference between multiplicative and additive comparison. (MP 4, 8)	1—Partially measurable / well specified
Operation and Algebraic Thinking (OA)	4.OA.3	Use and name properties of operations to <i>justify</i> strategies used to solve problems involving the four operations. (MP 3)	1—Partially measurable / well specified
Operation and Algebraic Thinking (OA)	4.OA.4	<i>Build and use models</i> to solve multi-step story problems involving whole numbers using the four operations, including problems in which remainders must be interpreted. <i>Attend to the reasonableness of answers</i> . <i>Remove context</i> to represent situations as equations with a variable standing in for the unknown quantity. (MP 2, 4, 6)	1—Partially measurable / well specified

Operation and Algebraic Thinking (OA)	4.OA.5	Find factors and multiples of whole numbers. <i>Make and test conjectures</i> about the relationship between any whole number and its factors. (MP 8)	1—Partially measurable / well specified
Operation and Algebraic Thinking (OA)	4.OA.6	Generate a number or shape pattern based on a given rule. <i>Describe and represent</i> the features of the pattern that are not explicitly stated in the rule itself. <i>Make and test conjectures</i> about how the pattern will continue. (MP 7, 8)	1—Partially measurable / well specified
Number and Operations in Base Ten (NBT)	4.NBT.1	<i>Describe the structure</i> of place value by explaining how the value of one place represents ten times more than the place to its right. <i>Represent those patterns</i> with a statement of multiplicative comparison. (MP 7)	2—Measurable & well specified
Number and Operations in Base Ten (NBT)	4.NBT.2	Read multi-digit whole numbers up to and including 1,000,000. <i>Represent</i> multi-digit whole numbers using numerals and expanded form. (MP 7)	2—Measurable & well specified
Number and Operations in Base Ten (NBT)	4.NBT.3	Compare two whole numbers with up to 6 digits and <i>represent the relationship</i> between two numbers using comparison symbols <, =, and >. (MP 7)	2—Measurable & well specified

Number and Operations in Base Ten (NBT)	4.NBT.4	Apply knowledge of place value structure to round whole numbers up to and including six digits <i>in and out of context</i> . <i>Justify</i> whether rounding is appropriate in a given situation. (MP 2, 3)	2—Measurable & well specified
Number and Operations in Base Ten (NBT)	4.NBT.5	Use efficient algorithms to determine sums and differences of multi-digit whole numbers <i>in real-world contexts and equations flexibly, accurately, and efficiently</i> . Determine if sums and differences are <i>reasonable</i> . (MP 2, 6)	1—Partially measurable / well specified
Number and Operations in Base Ten (NBT)	4.NBT.6	Develop <i>visual and numerical models</i> based on place value and/or the properties of multiplication to multiply a whole number of up to four digits by a one-digit whole number, and to multiply two two-digit numbers. (MP 4)	2—Measurable & well specified
Number and Operations in Base Ten (NBT)	4.NBT.7	<i>Develop visual and numerical models</i> based on place value and/or the relationship between multiplication and division to divide up to a three-digit number by a one-digit number. (MP 4)	2—Measurable & well specified
Number and Operations—Fractions (NF)	4.NF.1	Compose and decompose fractions, mixed numbers and fractions greater than one by <i>building and using models</i> . Represent fractions as the sum of fractions with the same denominator in more than one way. Justify the equivalence with equations. Recognize that a value can be expressed as a fraction greater than one and an equivalent mixed number. (MP 3, 4)	1—Partially measurable / well specified

Number and Operations-Fractions (NF)	4.NF.2	<i>Recognize and generate equivalent fractions, connecting numerical strategies to visual fraction models.</i> Make and test conjectures about what happens to a fraction when the numerator and the denominator are multiplied by the same number. (MP 8)	2—Measurable & well specified
Number and Operations-Fractions (NF)	4.NF.3	Compare and order fractions with different numerators and denominators. <i>Construct and communicate arguments that justify</i> the order of the fractions. (MP 3)	2—Measurable & well specified
Number and Operations-Fractions (NF)	4.NF.4	<i>Build and use models</i> to add and subtract fractions with like denominators, including mixed numbers. Solve problems involving addition and subtraction of fractions <i>in real world contexts and equations.</i> (MP 2, 4)	1—Partially measurable / well specified
Number and Operations-Fractions (NF)	4.NF.5	<i>Build and use models</i> to extend understanding of multiplication to fractions. Connect repeated addition to multiplication when multiplying a fraction by a whole number. Multiply a fraction by a whole number using numerical strategies. Solve problems involving multiplying a fraction by a whole number <i>in real world contexts.</i> (MP 2, 4)	1—Partially measurable / well specified
Number and Operations-Fractions (NF)	4.NF.6	<i>Build and use models</i> to express a fraction with denominator of 10 as an equivalent fraction with denominator of 100, and use this technique to add two fractions with respective denominators of 10 and 100. (MP 4)	2—Measurable & well specified

Number and Operations–Fractions (NF)	4.NF.7	Connect decimal notation to fractions with denominators of 10 or 100. <i>Construct clear and reasonable arguments to justify</i> how the decimal notation and fraction are equivalent. (MP 3)	2—Measurable & well specified
Number and Operations–Fractions (NF)	4.NF.8	Compare two decimal numbers to the hundredths place by reasoning about their size. Justify the comparison. <i>Represent the relationship</i> between two numbers using comparison symbols <, =, and >. (MP 3, 7)	2—Measurable & well specified
Measurement and Geometry (MG)	4.MG.1	<i>Add and remove context</i> to solve real-world and mathematical problems involving the area and perimeter of rectangles and rectilinear shapes. <i>Build and use models</i> to make sense of the area and perimeter formulas for rectangles. (MP 2, 4)	1—Partially measurable / well specified
Measurement and Geometry (MG)	4.MG.2	Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. <i>Describe these structures and their relationships</i> within two-dimensional figures. (MP 7)	1—Partially measurable / well specified
Measurement and Geometry (MG)	4.MG.3	<i>Describe</i> angles as geometric figures formed by two rays with a common endpoint. Understand that an angle is measured with reference to a circle. <i>Describe the relationship</i> between an angle's measure and the fraction of the circular arc that it represents. (MP 7)	1—Partially measurable / well specified

Measurement and Geometry (MG)	4. MG. 4	<i>Attend to precision and reasonableness</i> when measuring or sketching angles in whole-number degrees using a protractor. (MP 6)	0—Not measurable or poorly specified
Measurement and Geometry (MG)	4. MG. 5	Understand and demonstrate the additive nature of angle measures. Find and <i>justify</i> unknown angles on a diagram using addition and subtraction. (MP 3)	1—Partially measurable / well specified
Measurement and Geometry (MG)	4. MG. 6	Compare and classify two-dimensional figures including quadrilaterals and triangles based on the presence or absence of parallel lines, perpendicular lines, and angles of specified sizes. <i>Justify and evaluate the classification.</i> (MP 3)	2—Measurable & well specified
Data Science (D)	4. D. 1	Determine a topic question and <i>ask investigative questions</i> that will lead to collecting, analyzing, and interpreting data with up to two variables. <i>Make conjectures</i> about the impact of the sampling process and sample size on results. (MP 1, 8)	2—Measurable & well specified
Data Science (D)	4. D. 2	<i>Select and use tools strategically</i> to collect and organize data. Build data visualizations. <i>Ask questions</i> to consider a given data set with up to two variables. (MP 1, 5)	1—Partially measurable / well specified

Data Science (D)	4.D.3	Analyze data and data visualizations. <i>Evaluate conjectures</i> about how different sampling processes or data visualizations might influence interpretation of data. (MP 6, 8)	1—Partially measurable / well specified
Data Science (D)	4.D.4	Interpret data and data visualizations to answer investigative questions. <i>Construct and justify arguments</i> about the data. Discuss ways that the sampling process and sample size may affect how people draw conclusions from data. Identify ways to refine investigative questions, data collection, visualization, or analysis. (MP 3)	1—Partially measurable / well specified

Measureability		Instructional Focus		Clarity & Accessibility	
Measurability Issue	Measurability Notes	Instructional	Instructional	Clarity &	Clarity & Accessibility

Multiple expectations

Represent verbal statements a separate PE.

Major work

1—Partially clear and accessible

Insufficient guidance to understand PE

Multiple expectations

This standard includes two separate, distinct PEs.

Major work

2—Clear and accessible

Too vague

Unclear if students will use properties, justify, or both.

Major work

2—Clear and accessible

Multiple expectations

This standard includes two separate, distinct PEs.

Major work

2—Clear and accessible

Too broad	"Make and test conjectures about the relationship" is not specific	Supporting work	2—Clear and accessible
Too broad	"Describe and represent" and "make and test conjectures" are more open-ended.	Additional work	2—Clear and accessible
		Major work	2—Clear and accessible
		Major work	2—Clear and accessible
		Major work	2—Clear and accessible

		Major work	2—Clear and accessible	
Poorly specified	"Flexibly" and "efficiently" are subjective and undefined, making them difficult to assess consistently without explicit criteria.	Major work	1—Partially clear and accessible	Insufficient guidance to understand PE
		Major work	2—Clear and accessible	
		Major work	2—Clear and accessible	
Multiple expectations	This standard includes two separate, distinct PEs.	Major work	2—Clear and accessible	

		Major work	2—Clear and accessible	
		Major work	2—Clear and accessible	
Multiple expectations	This standard includes two separate, distinct PEs.	Major work	1—Partially clear and accessible	Insufficient guidance to understand PE
Poorly specified; Multiple expectations	"Build and use models to extend understanding " is ambiguous, as it isn't clear whether students will be expected to build models with the	Major work	1—Partially clear and accessible	Vague/ambiguous language
		Major work	1—Partially clear and accessible	Other

2—Clear and accessible

Major work

2—Clear and accessible

Major work

The PEs in this standard are all tightly related.

2—Clear and accessible

Major work

Multiple expectations

While these PEs are related, they need to be assessed using different types of tasks/items and should not be combined into one "Describe these structures and their

1—Partially clear and accessible

Additional work

Too vague

relationships" doesn't describe a level of precision needed.

Vague/ambiguous language

2—Clear and accessible

Additional work

Lacks performance expectation

"Understand that an angle is measured with reference to a circle" is not measurable.

Non-observable verb "Attend to
precision and
reasonableness" not
measurable. Additional work

2—Clear and
accessible

Non-observable verb "Understand" not
observable. Additional work

1—Partially
clear and
accessible

Vague/ambiguous language

Additional work

2—Clear and
accessible

Supporting work

2—Clear and
accessible

Non-observable verb "Use tools
strategically" is
not measurable Supporting work

1—Partially
clear and
accessible

Vague/ambiguous
language; Insufficient
guidance to understand
PE

Too vague	"Evaluate conjectures"	Supporting work	1—Partially clear and accessible	Vague/ambiguous language
Poorly specified	"construct and justify arguments about the data" is not specified enough	Supporting work	1—Partially clear and accessible	Vague/ambiguous language

ty	DOK		Mathematical Rigor		Deve
Clarity & Accessibility	DOK Level (1–	DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental
The language in the first sentence reads awkwardly. Both PEs could use examples to clarify what the PE is.	2		Conceptual Understanding; Procedural Skill / Fluency		2—Developmentally appropriate
	3		Conceptual Understanding; Applications		2—Developmentally appropriate
	3		Procedural Skill / Fluency; Conceptual Understanding		2—Developmentally appropriate
	3		Conceptual Understanding; Applications		2—Developmentally appropriate

3	Procedural Skill / Fluency; Conceptual Understanding	2—Developmentally appropriate
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3	Procedural Skill / Fluency; Conceptual Understanding	2—Developmentally appropriate
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2	Procedural Skill / Fluency; Conceptual Understanding	2—Developmentally appropriate
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2	Procedural Skill / Fluency	2—Developmentally appropriate
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2	Procedural Skill / Fluency	2—Developmentally appropriate
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	3	Conceptual Understanding	2—Developmentally appropriate
The terms “flexibly, accurately, and efficiently” are somewhat abstract and open to interpretation without clear definitions or examples.	2	Conceptual Understanding; Applications	2—Developmentally appropriate
	2	Conceptual Understanding	2—Developmentally appropriate
	2	Conceptual Understanding	2—Developmentally appropriate
	2	Conceptual Understanding	2—Developmentally appropriate

	3	Conceptual Understanding; Procedural Skill / Fluency	2—Developmentally appropriate
	3	Conceptual Understanding	2—Developmentally appropriate
Solve problems...in real world contexts and equations" is slightly ambiguous—are students solving word problems and equations, or solving word problems by writing equations? Students selecting/ developing models with the intention of extending their understanding is not developmentally appropriate. We suspect that this is not the	2	Applications; Procedural Skill / Fluency	2—Developmentally appropriate
	3	Applications; Procedural Skill / Fluency	2—Developmentally appropriate
"Build and use models" is somewhat vague and probably unnecessarily wordy. The PE is clearer without it.	2	Procedural Skill / Fluency	2—Developmentally appropriate

	3	Conceptual Understanding	2—Developmentally appropriate
	2	Conceptual Understanding; Procedural Skill / Fluency	2—Developmentally appropriate
	2	Conceptual Understanding; Applications	2—Developmentally appropriate
Minor clarity issues with "describe these structures." Consider using "geometric elements."	2	Procedural Skill / Fluency	2—Developmentally appropriate
	2	Procedural Skill / Fluency	2—Developmentally appropriate

	2	Conceptual Understanding	2—Developmentally appropriate
"additive nature" a bit vague. Consider this: Use angle addition (adjacent angles sum to the whole) to find and justify unknown angle measures in diagrams using addition and	2	Conceptual Understanding	2—Developmentally appropriate
	3	Conceptual Understanding; Procedural Skill / Fluency	2—Developmentally appropriate
	4	Applications	2—Developmentally appropriate
"Ask questions to consider a given data set with up to two variables" is both vague and does not provide enough guidance to understand the PE.	3	Applications	2—Developmentally appropriate

Consider giving examples of "data visualizations".

3

Conceptual Understanding; Applications

2—Developmentally appropriate

Consider giving examples of "data visualizations." Also not clear what is meant by "investigative questions" without examples.

3

Conceptual Understanding; Applications

2—Developmentally appropriate

Developmental Appropriateness		Integration of Appropriate Mathematical Practice		
Developmental	Developmental	Math Practice	Math Practice	Identify Better Aligned

2—All named practices integrated

2—All named practices appropriate

2—All named practices integrated

2—All named practices appropriate

2—All named practices integrated

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2—All named practices integrated

2—All named practices appropriate

2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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MP7

2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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1—Any named practices integrated	2—All named practices appropriate
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1—Any named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate	MP7
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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1—Any named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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MP1

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Mathematical Practice

The link to MP 6 seems
very weak. "Attend to the
reasonableness of
answer."

Consider instead
integrating MP 7 as
students try to
understand the
relationship between
multiplication and
division.

MP 2 is not well
integrated since students
aren't the ones adding or
removing the contexts in
this standard

MP 2 is not well
integrated since students
aren't the ones adding or
removing the contexts in
this standard

Consider MP 7. Students
focus on structure of
shapes while comparing
and classifying them.

MP 8 doesn't ask students
to evaluate conjectures –
just to make conjectures
and then evaluate results
of solutions.

Consider adding MP 1: "As
students build capacity
to ask probing questions,
they engage in more
meaningful discourse
about the mathematics."

Domain	Standard ID	Standard Text	Measurability Score (0–
Operations and	5.OA.1	<i>Use structures, patterns, and relationships to</i>	2—Measurable & well
Operations and	5.OA.2	<i>Add context to make sense of numerical</i>	1—Partially measurable
Operations and	5.OA.3	Generate two numerical patterns using two given	1—Partially measurable
Number and Operations	5.NBT.1	<i>Describe the structure of place value by</i>	2—Measurable & well
Number and Operations	5.NBT.2	<i>Represent powers of 10 with whole-number</i>	2—Measurable & well
Number and Operations in Base Ten (NBT)	5.NBT.3	<i>Describe and represent decimals to the thousandths place using models, base-ten numerals, number names, and expanded forms. (MP 7)</i>	2—Measurable & well specified
Number and Operations	5.NBT.4	Compare two decimal numbers and <i>represent</i> the	2—Measurable & well
Number and Operations	5.NBT.5	Apply knowledge of place value structure to	2—Measurable & well
Number and Operations	5.NBT.6	Use efficient numerical strategies based on	1—Partially measurable
Number and Operations	5.NBT.7	Use efficient numerical strategies based on	1—Partially measurable
Number and Operations in Base Ten (NBT)	5.NBT.8	<i>Build and use models to find sums and differences of decimals to hundredths in real- world contexts and equations. Use the models to represent and describe the structure of adding tenths with tenths and hundredths with hundredths. (MP 2, 4, 7)</i>	2—Measurable & well specified
Number and Operations	5.NBT.9	<i>Build and use models to find products of</i>	2—Measurable & well
Number and Operations	5.NBT.10	<i>Build and use models to find quotients of</i>	2—Measurable & well
Number and	5.NF.1	Add and subtract fractions with unlike	2—Measurable & well
Number and	5.NF.2	Interpret a fraction as division (a/b is the	2—Measurable & well
Number and	5.NF.3	<i>Build and use models, including area models, to</i>	1—Partially measurable
Number and	5.NF.4	Interpret multiplication as scaling. <i>Construct,</i>	2—Measurable & well
Number and	5.NF.5	<i>Build and use models that extend understanding</i>	0—Not measurable or
Measurement and	5.MG.1	Recognize volume as an attribute of solid	1—Partially measurable
Measurement and	5.MG.2	<i>Build and use models to make sense of and apply</i>	2—Measurable & well

Measurement and Geometry (MG)	5. MG. 3	<i>Build and use a model</i> of the coordinate plane to represent real-world problems. Understand the numbers in the coordinate pair indicate distance from the origin in the direction of the horizontal and vertical axes. Graph points in the first quadrant of the coordinate plane. Interpret coordinate values based on a given context. (MP 2, 4)	1—Partially measurable / well specified
Measurement and Geometry (MG)	5. MG. 4	<i>Describe and represent structure, patterns, and relationships</i> when classifying quadrilaterals in a hierarchy based on attributes. (MP 7)	2—Measurable & well specified
Data Science (D)	5. D. 1	Determine a topic question and <i>ask investigative questions</i> that will lead to collecting, analyzing, and interpreting data with up to four variables. <i>Ask questions</i> to identify potential sources of bias in data collection, representation, and interpretation. (MP 1)	2—Measurable & well specified
Data Science (D)	5. D. 2	<i>Select and use tools strategically</i> , to collect	1—Partially measurable
Data Science (D)	5. D. 3	Analyze data sets with up to four variables and	2—Measurable & well
Data Science (D)	5. D. 4	Interpret data and data visualizations to	2—Measurable & well

Measureability		Instructional Focus		Clarity & Accessibility	
Measurability Issue	Measurability Notes	Instructional	Instructional	Clarity &	Clarity & Accessibility
Multiple Too broad	These are two While this could be	Additional work		2—Clear and	
		Additional work		2—Clear and	
		Additional work		2—Clear and	
		Additional work		2—Clear and	
		Major work		2—Clear and	
Non-observable Too vague	"flexibly and use efficient		Major work	2—Clear and accessible	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		1—Partially	Vague/ambiguous language
		Major work		1—Partially	Vague/ambiguous language
Multiple	Solve problems		Major work	2—Clear and accessible	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
Multiple Too vague; Non-	I see three PEs in "Recognize volume	Major work		1—Partially	Vague/ambiguous language
		Major work		1—Partially	Vague/ambiguous language
		Major work		2—Clear and	
		Major work		2—Clear and	

Multiple expectations; Non-observable verb	"Understand" not an observable verb. "			
	Seems building a model and then graphing on the coordinate plane could be different PEs.	Additional work	2—Clear and accessible	
		Additional work	2—Clear and accessible	
		Supporting work	1—Partially clear and accessible	Vague/ambiguous language; Unclear grammar/typo(s)
Too vague	Use tools	Supporting work	2—Clear and	
		Supporting work	2—Clear and	
		Supporting work	1—Partially	Vague/ambiguous language

ty	DOK		Mathematical Rigor		Deve
Clarity & Accessibility	DOK Level (1–	DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental
The terms “flexibly, ”efficient numerical	2		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	3		Procedural Skill /		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
			Procedural Skill /		
	2		Fluency; Conceptual Understanding		2—Developmentally appropriate
	2		Procedural Skill /		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
"Interpret" is vague. "extend understanding	2		Procedural Skill /		2—Developmentally
	3		Conceptual Understanding; Applications		2—Developmentally appropriate
	3		Conceptual		2—Developmentally
	3		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	3		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	3		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Conceptual		2—Developmentally

Note that the standard is missing a period after "plane".	2		Conceptual Understanding; Applications	2—Developmentally appropriate
	3		Conceptual Understanding	2—Developmentally appropriate
It is not clear what is meant by "investigative questions". Examples would help. Note: representation is misspelled.	4		Applications	2—Developmentally appropriate
	4		Conceptual	2—Developmentally
	3		Conceptual	2—Developmentally
It is not clear what is	3	The type of task	Conceptual	2—Developmentally

Developmental Appropriateness		Integration of Appropriate Mathematical Practice		
Developmental	Developmental	Math Practice	Math Practice	Identify Better Aligned
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices integrated	2—All named practices appropriate	MP4
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices integrated	2—All named practices appropriate	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	MP7
		2—All named practices	2—All named	

2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named

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Mathematical Practice

Using models enhances
student learning while
providing students with
multiple ways to
represent and understand

Students describe and

Domain	Standard ID	Standard Text	Measureability	
			Measurability	Measurability Issue
Algebra (A)	6. A. 1	<i>Use structure</i> to write and evaluate numerical	1—Partially	Too vague
Algebra (A)	6. A. 2	<i>Describe and represent patterns and structures</i>	2—Measurable &	
Algebra (A)	6. A. 3	Use properties of operations <i>as tools</i> to generate equivalent expressions. Use properties of operations and understanding of arithmetic to <i>justify</i> why two expressions are equivalent. (MP 3, 5)	1—Partially measurable / well specified	Non-observable verb
Algebra (A)	6. A. 4	Use substitution to reason about whether a	2—Measurable &	
Algebra (A)	6. A. 5	<i>Describe, represent</i> and solve real-world and	2—Measurable &	
Algebra (A)	6. A. 6	Create equations to <i>model</i> relationships between	2—Measurable &	
Number Systems (NS)	6. NS. 1	Extend prior understanding of multiplication and division to divide fractions by fractions. <i>Build and use visual fraction models</i> to make sense of and solve problems dividing fractions by fractions. <i>Add and remove context with</i> problems involving division of fractions by fractions and interpret the quotients. (MP 2, 4)	1—Partially measurable / well specified	Non-observable verb
Number Systems (NS)	6. NS. 2	Describe and represent structures and patterns	1—Partially	Too vague; Poorly Non-observable
Number Systems (NS)	6. NS. 3	<i>Attend to precision and reasonableness</i> when	0—Not	
Number Systems (NS)	6. NS. 4	Find the greatest common factor between two	2—Measurable &	
Number Systems (NS)	6. NS. 5	Use positive and negative numbers together to	2—Measurable &	
Number Systems (NS)	6. NS. 6	<i>Build and use models</i> to show positive and	2—Measurable &	
Number Systems (NS)	6. NS. 7	<i>Build and use models</i> to develop the definition	1—Partially	Poorly specified
Ratio and	6. RP. 1	<i>Clearly communicate</i> understanding of ratio	1—Partially	Lacks performance
Ratio and	6. RP. 2	<i>Clearly communicate</i> understanding of the	1—Partially	Other
Ratio and	6. RP. 3	<i>Build and use models</i> including tables, double	2—Measurable &	
Ratio and	6. RP. 4	Use ratio and rate reasoning <i>as a tool</i> to make	1—Partially	Lacks performance
Ratio and	6. RP. 5	Use ratio reasoning <i>as a tool</i> to convert	2—Measurable &	
Geometry (G)	6. G. 1	Find the area of right triangles, other	2—Measurable &	

Geometry (G)	6.G.2	<i>Build and use nets</i> to represent 3-dimensional figures composed of rectangles and triangles. <i>Use nets as tools</i> to find the surface area of the figure. (MP 4, 5)	2—Measurable & well specified
Geometry (G)	6.G.3	<i>Select and use tools appropriately</i> to solve	2—Measurable &
Geometry (G)	6.G.4	Construct polygons on the coordinate plane	2—Measurable &
Data Science (D)	6.D.1	<i>Formulate statistical investigative questions</i>	2—Measurable &
Data Science (D)	6.D.2	<i>Select and use tools appropriately and strategically</i> to generate, collect, and organize data. <i>Ask questions</i> about how the data were collected and whether the data are useful to answer the statistical question of interest. (MP 1, 5)	2—Measurable & well specified
Data Science (D)	6.D.3	Create <i>precise and reasonable</i> visual	2—Measurable &
Data Science (D)	6.D.4	<i>Construct, justify, and communicate</i> answers to	1—Partially Non-observable verb

Measurability Notes	Instructional Focus		Clarity & Accessibility		
	Instructional	Instructional	Clarity &	Clarity & Accessibility	Clarity & Accessibility
It's not clear what Use properties of operations and understanding as tools...how would you measure that? You can iustifv whv	Major work		1—Partially	Vague/ambiguous language	Similar to the
	Major work		1—Partially	Vague/ambiguous language	The standard includes a
	Major work		2—Clear and accessible		
	Major work		2—Clear and		
	Major work		2—Clear and		
Extend prior understanding is not observable.	Major work		2—Clear and accessible		
	Major work				
	Major work				
	Major work				
	Major work				
flexibly and What it means to	Major work		1—Partially	Vague/ambiguous language	The terms "flexibly,
	Major work		1—Partially	Vague/ambiguous	Again the terms
	Major work		2—Clear and		
	Major work		2—Clear and		
	Major work		2—Clear and		
"work with..." There are many "too narrow in	Major work		1—Partially	Vague/ambiguous	...to develop the
	Major work		2—Clear and		
	Major work		2—Clear and		
	Major work		2—Clear and		
	Major work		2—Clear and		
Use as a tool	Major work		2—Clear and		
	Supporting work		2—Clear and		
	Supporting work		2—Clear and		

Supporting work

2—Clear and
accessible

Supporting work
Supporting work
Additional work

2—Clear and
2—Clear and
1—Partially

Vague/ambiguous language It is not clear what is

Additional work

2—Clear and
accessible

"Consider" is not
Additional work
Additional work

2—Clear and
1—Partially

Vague/ambiguous language It is not clear what is

DOK		Mathematical Rigor		Developmental Appropriateness	
DOK Level (1-3)	DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental	Developmental
2		Procedural Skill /		2—Developmentally	
2		Conceptual		2—Developmentally	
		Conceptual			
2		Understanding;		2—Developmentally	
		Procedural Skill /		appropriate	
		Fluency			
2		Conceptual		2—Developmentally	
2		Procedural Skill /		2—Developmentally	
2		Applications		2—Developmentally	
		Conceptual			
2		Understanding;		2—Developmentally	
		Applications		appropriate	
2		Procedural Skill /		2—Developmentally	
2		Procedural Skill /		2—Developmentally	
2		Procedural Skill /		2—Developmentally	
2		Procedural Skill /		2—Developmentally	
3		Conceptual		2—Developmentally	
3		Conceptual		2—Developmentally	
2		Conceptual		2—Developmentally	
2		Conceptual		2—Developmentally	
3		Conceptual		2—Developmentally	
3		Applications		2—Developmentally	
2		Procedural Skill /		2—Developmentally	
2		Procedural Skill /		2—Developmentally	

2	Procedural Skill / Fluency; Conceptual Understanding	2—Developmentally appropriate
2	Applications;	2—Developmentally
2	Applications;	2—Developmentally
3	Applications	2—Developmentally
4	Applications	2—Developmentally appropriate
3	Conceptual	2—Developmentally
3	Conceptual	2—Developmentally

ss	Integration of Appropriate Mathematical Practices		
	Developmental	Math Practice	Identify Better Aligned
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices integrated	2—All named practices appropriate
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices integrated	2—All named practices appropriate
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		0—No practices	2—All named
		2—All named practices	1—Any named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named

MP3

2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named

2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
2—All named practices	2—All named

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Mathematical Practice

MP 3 includes communicating

Domain	Standard ID	Standard Text	Measurability
Algebra (A)	7.A.1	Apply properties of operations as tools to add,	2—Measurable &
Algebra (A)	7.A.2	Use <i>algebraic tools</i> to solve equations and	2—Measurable &
Algebra (A)	7.A.3	Given a context, construct equations and	2—Measurable &
Algebra (A)	7.A.4	<i>Build and use models</i> including tables, graphs, and equations to represent and understand the relationship between independent and dependent variables. (MP 4)	1—Partially measurable / well specified
The Number System (NS)	7.NS.1	<i>Describe and represent structures, patterns and relationships</i> to define rational numbers and make connections between fraction, decimal and percent representations. of a rational number. Flexibly use the various representations of rational numbers while <i>attending to precision</i> . (MP 6, 7)	1—Partially measurable / well specified
The Number System	7.NS.2	<i>Build and use models</i> including a horizontal or	2—Measurable &
The Number System	7.NS.3	Extend previous understanding of multiplication	1—Partially
The Number System	7.NS.4	<i>Flexibly, accurately, and efficiently</i> add,	1—Partially
Ratio and Proportional Relationships (RP)	7.RP.1	Calculate unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities. Apply unit rate as a tool to <i>make and evaluate conjectures</i> about proportional relationships (MP 8)	1—Partially measurable / well specified
Ratio and	7.RP.2	Understand percent of a quantity as a rate per	1—Partially
Ratio and	7.RP.3	<i>Build and use models</i> including tables, graphs,	2—Measurable &
Ratio and	7.RP.4	<i>Recognize structures and patterns</i> when	2—Measurable &
Ratio and	7.RP.5	<i>Build and use models</i> (tables, graphs,	2—Measurable &
Ratio and	7.RP.6	Use proportional relationships <i>as a tool</i> to	2—Measurable &

Ratio and	7.RP.7	<i>Interpret</i> the meaning of a point (x,y) on the	1—Partially
Geometry (G)	7.G.1	<i>Select and use tools appropriately and strategically</i> (e.g., a compass, straightedge, dynamic geometry software) to draw and accurately describe scaled geometrical figures.	1—Partially measurable / well specified
Geometry (G)	7.G.2	<i>Utilize the underlying structure</i> of scale drawings to understand scale factor and solve real world and mathematical problems. (MP 5, 7)	
Geometry (G)	7.G.3	<i>Select and use tools appropriately and</i>	2—Measurable &
Geometry (G)	7.G.4	<i>Flexibly, accurately and efficiently solve real-world and mathematical problems</i> involving perimeter and area of circles, triangles, quadrilaterals and polygons as well as surface area of right prisms. (MP 2, 6)	1—Partially measurable / well specified
Geometry (G)	7.G.5	<i>Describe and use the relationship</i> between the	2—Measurable &
Geometry (G)	7.D.1	<i>Describe and represent structures, patterns,</i>	2—Measurable &
Data Science (D)	7.D.2	<i>Formulate statistical investigative questions</i>	2—Measurable &
Data Science (D)	7.D.3	Generate, collect, and organize randomly	1—Partially
Data Science (D)	7.D.4	Create <i>precise and reasonable</i> visual	2—Measurable &
Data Science (D)	7.D.5	<i>Construct, justify, and communicate</i> answers to	2—Measurable &
Data Science (D)	7.D.6	<i>Communicate clear understanding</i> that the	2—Measurable &
Data Science (D)	7.D.7	Estimate the probability of a chance event by observing its long-run relative frequency.	
Data Science (D)	7.D.8	Given the probability, predict and <i>evaluate the reasonableness</i> of approximate relative frequencies. (MP 8)	2—Measurable & well specified
Data Science (D)	7.D.7	<i>Build and use probability models</i> such as	2—Measurable &
Data Science (D)	7.D.8	<i>Build a probability model and use it</i> to find	2—Measurable &

Measureability		Instructional Focus		Clarity & Accessibility	
Measurability Issue	Measurability Notes	Instructional	Instructional	Clarity &	Clarity & Accessibility
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
Too vague	Use of the word understand.	Major work		2—Clear and accessible	
Multiple expectations; Too vague	"Flexibly use" is not measurable.	Major work		1—Partially clear and accessible	Vague/ambiguous language; Poorly specified
Too vague	Extend previous	Major work		2—Clear and	
Too vague; Poorly	What it means to	Major work		2—Clear and	
		Major work		1—Partially	Vague/ambiguous
Multiple expectations; Non-observable verb	"Apply unit rate as a tool" vague.	Major work		2—Clear and accessible	
Non-observable verb	"Understand" is an	Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	

Too vague	"connect"	Major work	2—Clear and	
Non-observable verb	if "understand" is meant as part of the student expectation in the 2nd sentence, then "utilize the underlying structure of scale drawings to understand" is non-	Supporting work	2—Clear and accessible	
		Supporting work	2—Clear and	
Too vague	flexibly and efficiently	Supporting work	2—Clear and accessible	
Too vague	"using tools	Supporting work	2—Clear and	Vague/ambiguous language
		Supporting work	2—Clear and	
		Supporting work	1—Partially	
		Supporting work	2—Clear and	
		Supporting work	2—Clear and	
		Supporting work	2—Clear and	
		Supporting work	2—Clear and	
		Supporting work	1—Partially clear and accessible	Vague/ambiguous language
		Supporting work	2—Clear and	
		Supporting work	2—Clear and	

ty	DOK		Mathematical Rigor		Deve
Clarity & Accessibility	DOK Level (1–	DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental
	2		Procedural Skill /		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Applications		2—Developmentally
	2		Conceptual Understanding		2—Developmentally appropriate
	2		Conceptual Understanding		2—Developmentally appropriate
	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Procedural Skill / Fluency; Conceptual Understanding		2—Developmentally appropriate
	2		Conceptual		2—Developmentally
	3		Procedural Skill /		2—Developmentally
	3		Conceptual		2—Developmentally
	3		Conceptual		2—Developmentally
	3		Conceptual		2—Developmentally
	2		Applications		2—Developmentally

	2	Conceptual	2—Developmentally
	2	Procedural Skill / Fluency; Applications	2—Developmentally appropriate
	3	Conceptual	2—Developmentally
	2	Procedural Skill / Fluency; Applications	2—Developmentally appropriate
It is not clear what is	2	Conceptual	2—Developmentally
	2	Procedural Skill /	2—Developmentally
	3	Applications	2—Developmentally
	3	Conceptual	2—Developmentally
It is not clear what is	2	Procedural Skill /	2—Developmentally
	3	Conceptual	2—Developmentally
	3	Conceptual	2—Developmentally
"long-run relative frequency. "	2	Conceptual Understanding; Applications	2—Developmentally appropriate
	2	Conceptual	2—Developmentally
	2	Procedural Skill /	2—Developmentally

Developmental Appropriateness		Integration of Appropriate Mathematical Practice		
Developmental	Developmental	Math Practice	Math Practice	Identify Better Aligned
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices integrated	2—All named practices appropriate	
		2—All named practices integrated	2—All named practices appropriate	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices integrated	2—All named practices appropriate	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	

2—All named practices	2—All named	
2—All named practices integrated	2—All named practices appropriate	
2—All named practices	2—All named	
1—Any named practices integrated	2—All named practices appropriate	MP7
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices 0—No practices	2—All named 0—No practices	MP6
2—All named practices integrated	2—All named practices appropriate	
2—All named practices	2—All named	
2—All named practices	2—All named	

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Mathematical Practice

Does MP 7 work better
here than MP 6?" Describe
and represent
structures. "

Perhaps MP6: Students

Domain	Standard ID	Standard Text	Measurability
Algebra (A)	8.A.1	<i>Use structure and patterns</i> to develop and apply	2—Measurable &
Algebra (A)	8.A.2	<i>Use structure and patterns</i> of operations to	1—Partially
Algebra (A)	8.A.3	<i>Use algebraic tools strategically</i> to represent	2—Measurable &
Algebra (A)	8.A.4	<i>Represent the structure and patterns</i> of numbers	2—Measurable &
Algebra (A)	8.A.5	<i>Apply structures, properties and patterns</i> of	2—Measurable &
Algebra (A)	8.A.6	<i>Represent patterns</i> by graphing proportional	2—Measurable &
Algebra (A)	8.A.7	Represent and compare linear relationships	2—Measurable &
Algebra (A)	8.A.8	<i>Use structures, patterns and properties</i> of	1—Partially
Algebra (A)	8.A.9	<i>Build and use graphic models</i> to analyze and	2—Measurable &
The Number System (NS)	8.NS.1	<i>Describe and represent structures and patterns</i>	1—Partially
The Number System (NS)	8.NS.2	Find rational approximations of irrational	2—Measurable &
The Number System (NS)	8.NS.3	Estimate the value of expressions containing	2—Measurable &
		<i>Justify</i> why sums and products of rational numbers are rational, that the sum of a rational number and an irrational number is irrational, and that the product of a nonzero rational number and an irrational number is irrational. <i>Build and use models</i> to connect to physical situations. (MP 3, 4)	1—Partially measurable / well specified
Functions (F)	8.F.1	<i>Construct and communicate clear arguments</i> as to	2—Measurable &
Functions (F)	8.F.2	Given a <i>representation</i> (verbal description,	2—Measurable &
Functions (F)	8.F.3	Construct a function to <i>model</i> a linear	2—Measurable &
Functions (F)	8.F.4	Given a graph of two quantities (linear and non-	2—Measurable &
Functions (F)	8.F.5	Use multiple representations (tables, graphs,	2—Measurable &

Geometry (G)	8.G.1	Use rigid transformations to establish a definition of congruent figures. <i>Justify</i> that two shapes are congruent through the use of rigid transformations. <i>Make and evaluate conjectures</i> about attributes of, rotations, reflections, and translations with and without coordinates. (MP 3, 8)	1—Partially measurable / well specified
Geometry (G)	8.G.2	Use transformations (dilation, translation,	1—Partially
Geometry (G)	8.G.3	<i>Ask questions to determine</i> the difference between congruence and similarity in terms of transformations. <i>Clearly communicate</i> the distinction between congruent and similar figures. (MP 1, 3)	1—Partially measurable / well specified
Geometry (G)	8.G.4	<i>Create and communicate informal arguments</i> that establish angle relationships for parallel lines cut by a transversal and angle relationships for triangles, including the angle sum and exterior angle. (MP 3)	2—Measurable & well specified
Geometry (G)	8.G.5	Use the Pythagorean theorem when solving problems with right triangles and finding distance between two coordinate points. <i>Use geometric structures and numerical patterns</i> to understand and explain proofs of the Pythagorean Theorem. (MP 7)	1—Partially measurable / well specified
Geometry (G)	8.G.6	Solve real-world and mathematical problems <i>with</i>	2—Measurable &

Data Science (D)	8.D.1	<i>Ask questions</i> about bivariate data sets (quantitative and categorical) to investigate patterns of associations between two quantities. (MP 1)	1—Partially measurable / well specified
Data Science (D)	8.D.2	<i>Select and use tools appropriately and</i>	1—Partially
Data Science (D)	8.D.3	Explore, describe and compare variability in	1—Partially
Data Science (D)	8.D.4	<i>Describe, represent and explain patterns</i> of	2—Measurable &
Data Science (D)	8.D.5	Answer investigative questions by interpreting	2—Measurable &
Data Science (D)	8.D.6	Explore, describe and compare variability in	1—Partially
Data Science (D)	8.D.7	<i>Construct, analyze, and communicate clear and</i>	1—Partially

Measureability		Instructional Focus		Clarity & Accessibility	
Measurability Issue	Measurability Notes	Instructional	Instructional	Clarity &	Clarity & Accessibility
Non-observable verb	Use structure and	Major work		2—Clear and	Vague/ambiguous
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		1—Partially	
		Major work		2—Clear and	
		Major work		2—Clear and	
Multiple	Use structure and	Major work		2—Clear and	Vague/ambiguous language
Poorly specified	Key parts of the	Major work		2—Clear and	
		Supporting work		1—Partially	
		Supporting work		2—Clear and	
Multiple expectations	This standard includes multiple expectations that must be assessed via different performances.	Supporting work		2—Clear and	Insufficient guidance to understand PE; Other
				clear and	
				accessible	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	
		Major work		2—Clear and	

Too broad	Some components are too broad and high-inference, particularly: "make and evaluate conjectures about attributes of rotations, reflections, and translations" (unclear what counts as	Major work	2—Clear and accessible
Too vague; Poorly	The standard The standard includes some clear expectations:	Major work	2—Clear and
Too vague	Students must communicate the distinction between congruent and	Major work	2—Clear and accessible
		Major work	2—Clear and accessible
Poorly specified	unobservable, measurable parts: Use the Pythagorean Theorem to solve right-triangle problems Find distance between two coordinate points → These are fully performance-based	Major work	2—Clear and accessible
		Additional work	2—Clear and

Too vague; Poorly specified	key components are high-inference and loosely defined: "ask questions" is not specified in terms of quantity, quality, or type of questions	Supporting work	1—Partially clear and accessible	Vague/ambiguous language
Too vague	select and use	Supporting work	2—Clear and	
Too vague	Explore not	Supporting work	2—Clear and	
		Supporting work	2—Clear and	
		Supporting work	1—Partially	Vague/ambiguous language
Non-observable verb	Explore not	Supporting work	2—Clear and	
Too vague	analyze too vague	Supporting work	1—Partially	Vague/ambiguous language

ty	DOK		Mathematical Rigor		Deve
Clarity & Accessibility	DOK Level (1–	DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental
The language is dense	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	3		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
Phrases like “describe	2		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Procedural Skill /		2—Developmentally
	2		Procedural Skill /		2—Developmentally
The standard is dense and combines multiple distinct expectations (proof/justification, properties of number systems, and modeling applications) in a single statement. While the mathematical					
	3		Conceptual Understanding		2—Developmentally appropriate
	2		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	2		Conceptual		2—Developmentally
	3		Conceptual		2—Developmentally

3	Conceptual Understanding	2—Developmentally appropriate
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3	Conceptual	2—Developmentally
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2	Conceptual Understanding	2—Developmentally appropriate
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2	Conceptual Understanding	2—Developmentally appropriate
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3	Conceptual Understanding; Applications	2—Developmentally appropriate
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2	Applications	2—Developmentally
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the phrasing is fairly abstract and relies heavily on broad constructs such as "ask questions," "investigate patterns," and "associations between two quantities," without	2	Applications	2—Developmentally appropriate
	3	Applications	2—Developmentally
	2	Procedural Skill /	2—Developmentally
	2	Conceptual	2—Developmentally
It is not clear what is	3	Conceptual	2—Developmentally
	2	Procedural Skill /	2—Developmentally
It is not clear what is	3	Conceptual	2—Developmentally

Developmental Appropriateness		Integration of Appropriate Mathematical Practice		
Developmental	Developmental	Math Practice	Math Practice	Identify Better Aligned
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		1—Any named practices	2—All named	MP4; MP5
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		1—Any named practices	2—All named	MP3
		2—All named practices	2—All named	
		integrated	practices appropriate	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	
		2—All named practices	2—All named	

2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
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2—All named practices integrated	2—All named practices appropriate
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[illegible]

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Mathematical Practice

Consider adding MP5

Add MP3

			Measureab	
Domain	Standard ID	Standard Text	Measurability	Measurability Issue
Algebra (A)	S1.A.1	<i>Use the structure</i> of linear expressions and	2—Measurable &	
Algebra (A)	S1.A.2	<i>Build symbolic models</i> of linear equations and	2—Measurable &	
Algebra (A)	S1.A.3	Use algebraic properties of equality <i>as tools</i>	2—Measurable &	
Algebra (A)	S1.A.4	Solve linear equations and inequalities <i>using</i>	2—Measurable &	
Algebra (A)	S1.A.5	Solve systems of linear equations <i>using</i>	2—Measurable &	
Algebra (A)	S1.A.6	Interpret whether a solution of a system of	2—Measurable &	
Algebra (A)	S1.A.7	<i>Build and use graphic models</i> to analyze and	2—Measurable &	
Algebra (A)	S1.A.8	<i>Build and use graphic models</i> to show the	2—Measurable &	
Functions (F)	S1.F.1	<i>Construct and communicate clear arguments</i> to	2—Measurable &	
Functions (F)	S1.F.2	<i>Understand the structure</i> of function notation,	1—Partially	Non-observable verb
Functions (F)	S1.F.3	Evaluate functions for inputs in their domains	2—Measurable &	
Functions (F)	S1.F.4	<i>Build and use</i> explicit and recursive equations	2—Measurable &	
Functions (F)	S1.F.5	Understand and interpret the features of a	1—Partially	Non-observable verb
Functions (F)	S1.F.6	<i>Build representations</i> that show key features of	1—Partially	Too vague
Functions (F)	S1.F.7	Compare and contrast the properties of linear	2—Measurable &	
Functions (F)	S1.F.8	<i>Build</i> a function that models linear or	1—Partially	Multiple
Functions (F)	S1.F.9	<i>Construct arguments</i> that <i>use the structures and</i>	2—Measurable &	
Functions (F)	S1.F.10	<i>Use structures and patterns</i> to identify the	1—Partially	Multiple
Functions (F)	S1.F.11	<i>Communicate clear and reasonable arguments</i> to	1—Partially	Multiple
Geometry (G)	S1.G.1	<i>Describe and represent the underlying structure</i>	2—Measurable &	
Geometry (G)	S1.G.2	<i>Construct and clearly communicate definitions</i>	1—Partially	Too vague
Geometry (G)	S1.G.3	<i>Select and use tools to strategically perform</i>	0—Not	Too vague; Non-
		<i>Construct and communicate clear and reasonable arguments</i> about reflection and rotational symmetries of parallelograms and regular polygons. Use reflections and rotations to informally <i>justify</i> attributes of parallelograms including rhombus, rectangles and squares. (MP 3)	0—Not measurable / well specified	Too vague; Poorly specified
Geometry (G)	S1.G.4			
Geometry (G)	S1.G.5	Precisely construct geometric objects including	1—Partially	Poorly specified
Geometry (G)	S1.G.6	<i>Construct, justify and communicate clear</i>	2—Measurable &	
Geometry (G)	S1.G.7	<i>Justify</i> whether or not a quadrilateral has the	2—Measurable &	
Data Science	S1.D.1	<i>Ask statistical questions</i> to investigate	1—Partially	Too vague; Multiple
Data Science	S1.D.2	<i>Select the appropriate statistical tools</i> to	1—Partially	Multiple

Data Science	S1.D.3	Compare two or more distributions with	1—Partially	Multiple
Data Science	S1.D.4	Analyze data to explore the association between	1—Partially	Multiple
Data Science	S1.D.5	Analyze and use statistical evidence to	0—Not	Poorly specified;
Data Science	S1.D.6	<i>Justify</i> statistical reasoning to evaluate	1—Partially	Multiple
Extended Topics				
Matrices (M)	S1.M.1	Add, subtract, and multiply matrices of	2—Measurable &	
Matrices (M)	S1.M.2	Use matrices to represent and manipulate data	1—Partially	Multiple
Matrices (M)	S1.M.3	<i>Communicate</i> understanding that, unlike	2—Measurable &	
Matrices (M)	S1.M.4	Communicate understanding that the zero and	2—Measurable &	
Matrices (M)	S1.M.5	Use 2x2 matrices to <i>model</i> transformations of	2—Measurable &	
Matrices (M)	S1.M.6	<i>Model</i> a system of linear equations as a single-	2—Measurable &	
Matrices (M)	S1.M.7	Solve systems of linear equations up to three	2—Measurable &	
Matrices (M)	S1.M.8	Find the inverse of a matrix if it exists <i>using</i>	2—Measurable &	

Measurability	Instructional Focus		Clarity & Accessibility	
Measurability Notes	Instructional	Instructional	Clarity &	Clarity & Accessibility
The multiple expectations in	Widely applicable		2—Clear and	
	Widely applicable		1—Partially	Mathematical
	Widely applicable		2—Clear and	
	Widely applicable		1—Partially	Mathematical
	Widely applicable		2—Clear and	
	Widely applicable		1—Partially	Unclear grammar/typo(s)
	Widely applicable		2—Clear and	
Understand is a non-observable	Widely applicable		2—Clear and	
	Widely applicable		2—Clear and	
	Widely applicable		2—Clear and	
"Understand" is a non-observable	Widely applicable		2—Clear and	
The measurability issues here	Widely applicable		0—Not clear and	Vague/ambiguous
These are really distinct PEs	Widely applicable		2—Clear and	
	Widely applicable		2—Clear and	
Use and explore are non-Specifying the relation of the	Widely applicable		2—Clear and	
	Widely applicable		1—Partially	Vague/ambiguous
	Widely applicable		2—Clear and	
It is not clear what is meant by "Select and use tools to clear and reasonable is subjective; it isn't clear how proficiency would be judged. Also, what arguments would students be making about reflection and rotational symmetries of polygons? The PE is not specified. Finally, what It is not clear what tools	Widely applicable	As written,	1—Partially	Vague/ambiguous
	Widely applicable		0—Not clear and	Insufficient guidance to
Also, what arguments would students be making about reflection and rotational symmetries of polygons? The PE is not specified. Finally, what It is not clear what tools	Widely applicable		0—Not clear and	Vague/ambiguous
	prerequisite		accessible	language; Insufficient guidance to understand PE
	Widely applicable		1—Partially	Insufficient guidance to
"Ask statistical questions to "Select the appropriate	Widely applicable		2—Clear and	
	Widely applicable		2—Clear and	
	Widely applicable		1—Partially	Insufficient guidance to
	Widely applicable		1—Partially	Unclear grammar/typo(s)

Recognize is a non-observable	Widely applicable	2—Clear and	
"to explore the association" is	Widely applicable	2—Clear and	
"Analyze and use statistical	Widely applicable	1—Partially	Vague/ambiguous
"justify statistical reasoning"	Widely applicable	2—Clear and	
"Make sense" is not observable;	Appropriate	2—Clear and	
	Appropriate	1—Partially	Unclear grammar/typo(s)
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	

ty	DOK		Mathematical Rigor	
	Clarity & Accessibility	DOK Level (1-	DOK Notes	Mathematical Rigor Mathematical Rigor
		2	interpret their meaning in	Conceptual interpreting
	"Build symbolic models	2	Solving problems with equations	Conceptual Some <i>could</i> be
		2		Conceptual A student could
	"Communicate clear	3	"Justify" bumps it to 3 but	Applications;
		3	"Justify" bumps it to 3 but	Applications;
	"Interpret whether a	2		Applications; Second part could
		2	routine	Applications;
		2	routine	Applications;
		3		Conceptual
		2	Because this standard uses a non-	Conceptual
		2		Conceptual
		2		Conceptual
		2		Conceptual
	The first PE is	2		Procedural Skill /
		2		Conceptual
		2		Procedural Skill /
		3		Conceptual
		2		Conceptual
	"Communicate clear and	3		Conceptual
		2		Procedural Skill /
	Related to the	2		Procedural Skill /
	Related to the	2		Procedural Skill /
	Related to the			
	measurability issue,			
	the language in the	3		Conceptual
	standard is vague and			Understanding;
	lacks specificity,			Applications
	making the PEs unclear.			
	Again, the poor	2		Applications
		3		Applications
		3		Applications
	Related to the	3		Applications;
	The second sentence is	3		Applications

	3		Conceptual
	3		Conceptual
Related to the	3		Applications
	3		Conceptual
	2		Procedural Skill /
The text "by connecting	2		Procedural Skill /
	2	Because this standard uses a non-	Conceptual
	2	Because this standard uses a non-	Conceptual
	2		Procedural Skill /
	2		Procedural Skill /
	2		Procedural Skill /
	2		Conceptual

Developmental Appropriateness			Integration of Approaches	
Developmental	Developmental	Developmental	Math Practice	Math Practice
2—Developmentally			2—All named practices	2—All named
2—Developmentally			1—Any named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			0—No practices	2—All named
2—Developmentally			1—Any named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			1—Any named practices	1—Any named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			0—No practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally appropriate			2—All named practices integrated	2—All named practices appropriate
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
2—Developmentally			2—All named practices	2—All named
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2—All named practices
1—Any named practices
0—No practices
0—No practices
2—All named practices
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2—All named practices

2—All named
2—All named
0—No practices
0—No practices
2—All named
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2—All named

ppropriate Mathematical Practices

Identify Better Aligned

Mathematical Practice

MP5	MP3 not integrated
MP4	This seems more like the
MP4	
MP5	
MP5	
MP5	
	The reason MP7 is not fully
	The second part of the
MP7	"MP 2 – Specifically says
MP1	Communicating a definition

MP4



It is not clear whether MP2
The standard does not address
The standard does not address

Domain	Standard ID	Standard Text	Measureability	
			Measurability	Measurability Issue
Algebra (A)	S2.A.1	<i>Use the structure</i> of quadratic and exponential	2—Measurable &	
Algebra (A)	S2.A.2	Use addition, subtraction and multiplication to	2—Measurable &	
Algebra (A)	S2.A.3	<i>Build symbolic models</i> of linear and quadratic equations and inequalities, and use them to solve problems in and out of context. (MP 3, 4)	2—Measurable & well specified	
Algebra (A)	S2.A.4	<i>Select and use algebraic and technologic tools</i>	2—Measurable &	
Algebra (A)	S2.A.5	<i>Select and use algebraic and technologic tools</i>	2—Measurable &	
Number System (NS)	S2.NS.1	Extend <i>understanding of the structure</i> of	0—Not	Non-observable
Number System (NS)	S2.NS.2	Use the properties of exponents <i>as tools to</i>	2—Measurable &	
Number System (NS)	S2.NS.3	Use the Fundamental Theorem of Algebra to	2—Measurable &	
Number System (NS)	S2.NS.4	<i>Build and use models</i> to solve quadratic	2—Measurable &	
Functions (F)	S2.F.1	Understand and interpret the features of a	1—Partially	Non-observable verb
Functions (F)	S2.F.2	Determine the average rate of change of a function over a closed interval while attending to precision and reasonableness. Connect the average rate of change with <i>context</i> appropriately. (MP 2, 6)	2—Measurable & well specified	
Functions (F)	S2.F.3	<i>Build graphic representations</i> that show key	1—Partially	Too vague
Functions (F)	S2.F.4	Compare and contrast the properties of	2—Measurable &	

Functions (F)	S2.F.5	<i>Select and use algebraic tools</i> to create different but equivalent forms of functions that highlight different properties of the function. <i>Contextualize and decontextualize</i> these functions to interpret these properties. (MP 2, 5)	1—Partially measurable / well specified	Multiple expectations; Poorly specified
Functions (F)	S2.F.6	<i>Build a function that models</i> a quadratic	1—Partially	Too vague
Functions (F)	S2.F.7	Identify the effect on the graph when replacing	1—Partially	Too vague; Poorly
Functions (F)	S2.F.8	<i>Communicate clear and reasonable arguments</i> to	1—Partially	Multiple
Geometry (G)	S2.G.1	<i>Construct, justify and communicate clear and reasonable arguments</i> to prove geometric theorems. Support refinement of reasoning <i>by asking questions</i> . Develop flexibility in creating logical arguments and proofs of various formats, including: narrative paragraphs, flow diagrams, two-column format, and diagrams without words. (MP 1, 3) Proofs should focus on: a. theorems about lines and angles; vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	1—Partially measurable / well specified	Non-observable verb

Geometry (G)	S2.G.1 (b)	b. theorems about triangles; measures of interior angles of a triangle sum to 180° ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.		
Geometry (G)	S2.G.1 (c)	c. theorems about parallelograms; opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.		
Geometry (G)	S2.G.2	<i>Describe and represent the underlying structures and properties that define dilations and similar shapes. Use the structures and properties of dilation and similarity to solve problems. (MP 7)</i>	2—Measurable & well specified	
Geometry (G)	S2.G.3	<i>Build and use models</i> that include congruence	1—Partially	Poorly specified
Geometry (G)	S2.G.4	<i>Describe and represent</i> side ratios in right	1—Partially	Poorly specified
Geometry (G)	S2.G.5	<i>Verify, justify and communicate</i> the	2—Measurable &	
Geometry (G)	S2.G.6	Flexibly, accurately, and efficiently use	2—Measurable &	
Geometry (G)	S2.G.7	<i>Construct, justify and communicate a clear and</i>	1—Partially	Poorly specified
Geometry (G)	S2.G.8	<i>Describe and represent structures and patterns</i>	2—Measurable &	
Geometry (G)	S2.G.9	<i>Describe and represent</i> , using similarity, the	0—Not	Too vague; Poorly
Geometry (G)	S2.G.10	<i>Use structures and patterns</i> to work with	1—Partially	Too vague; Poorly
Geometry (G)	S2.G.11	<i>Attend to precision and reasonableness</i> with	0—Not	Too vague; Poorly
Geometry (G)	S2.G.12	<i>Attend to precision and reasonableness</i> while using volume formulas for cylinders, pyramids, cones, and spheres to solve problems. (MP 6)	2—Measurable & well specified	
Data Science (D)	S2.D.1	<i>Ask statistical questions</i> to investigate	1—Partially	Non-observable

Data Science (D)	S2.D.2	<i>Select the appropriate statistical tools to</i>	1—Partially	Multiple
Data Science (D)	S2.D.3	Analyze data to explore the association between	1—Partially	Multiple
Data Science (D)	S2.D.4	Use the statistical evidence to evaluate	1—Partially	Multiple
Extended Topics				
Vectors	S2.V.1	Recognize vector quantities as having both	1—Partially	Non-observable verb
Vectors	S2.V.2	Find and <i>represent</i> the components of a vector	2—Measurable &	
Vectors	S2.V.3	Add and subtract vectors and multiply a vector	1—Partially	Too vague
Vectors	S2.V.4	Multiply a vector (regarded as a matrix with	1—Partially	Too vague; Poorly
Vectors	S2.V.5	Solve <i>real world and mathematical problems</i>	2—Measurable &	
Number System	S2.NS.5	Find the conjugate of a complex number; use	2—Measurable &	
Number System	S2.NS.6	<i>Represent</i> complex numbers on the complex plane	2—Measurable &	
Number System	S2.NS.7	<i>Represent</i> addition, subtraction, and	2—Measurable &	
Geometry	S2.G.13	<i>Derive</i> the equation of a parabola given a focus	2—Measurable &	
Geometry	S2.G.14	<i>Derive</i> the equations of ellipses and hyperbolas	2—Measurable &	

Measurability Notes	Instructional Focus		Clarity & Accessibility		
	Instructional	Instructional	Clarity &	Clarity & Accessibility	Clarity & Accessibility
	Widely applicable		2—Clear and		
	Widely applicable		2—Clear and		
	Widely applicable		2—Clear and		
	prerequisite		accessible		
	Widely applicable		2—Clear and		
	Widely applicable		2—Clear and		
"Understanding" is	Widely applicable		1—Partially	Insufficient guidance to	Because the standard is
	Widely applicable		2—Clear and		
	Appropriate		2—Clear and		
	Appropriate		2—Clear and		
"Understand" is a	Widely applicable		1—Partially	Insufficient guidance to	Related to the
	Widely applicable		2—Clear and		
	prerequisite		accessible		
	Widely applicable		2—Clear and		
	prerequisite		accessible		
	Widely applicable		2—Clear and		
	Widely applicable		2—Clear and		
The measurability	Widely applicable		0—Not clear and	Vague/ambiguous	The first PE is
	Widely applicable		2—Clear and		

Given the focus of this standard, the particular "algebraic tools" or techniques need to be specified. Otherwise the PE will not be clear to teachers, assessors, etc.	Widely applicable prerequisite	1—Partially clear and accessible	Insufficient guidance to understand PE	Because the algebraic tools are not specified, the PEs are not clear.
The relationship	Widely applicable	2—Clear and		
Measurability	Widely applicable	1—Partially	Vague/ambiguous	The second sentence is
Specifying the	Widely applicable	1—Partially	Vague/ambiguous	"Communicate clear and
"develop flexibility" is not an observable behavior; what would be the evidence of this?	Widely applicable prerequisite	2—Clear and accessible		
	Widely applicable prerequisite			

Widely applicable
prerequisite

Widely applicable
prerequisite

Widely applicable
prerequisite

2—Clear and
accessible

The first sentence	Widely applicable	1—Partially	Insufficient guidance to Vague/ambiguous	Because the first
"Describe and	Widely applicable	1—Partially		Because the first
	Widely applicable	2—Clear and		
	Widely applicable	2—Clear and		
"Connect the	Widely applicable	1—Partially	Vague/ambiguous	Because the second
	Widely applicable	2—Clear and		
The measurability	Widely applicable	1—Partially	Vague/ambiguous	The phrase "describe
"Work with" is	Widely applicable	1—Partially	Vague/ambiguous	Because "use structures
"Attend to	Widely applicable	1—Partially	Vague/ambiguous	Because "Attend to
	Widely applicable prerequisite	2—Clear and accessible		
The verb	Widely applicable	2—Clear and		

"Select the	Widely applicable	2—Clear and
This standard	Widely applicable	2—Clear and
What is the	Widely applicable	2—Clear and



"Recognize" is not	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
The second sentence	Appropriate	1—Partially	Vague/ambiguous language The second sentence is
"Work with" is	Appropriate	1—Partially	Unclear grammar/typo(s); The text "by connecting
	Appropriate	2—Clear and	
The 2 expectations	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	
	Appropriate	2—Clear and	

DOK		Mathematical Rigor		Deve
DOK Level (1–	DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental
2		Procedural Skill /		2—Developmentally
2		Procedural Skill /		2—Developmentally
		Procedural Skill /		
2		Fluency; Conceptual Understanding; Applications		2—Developmentally appropriate
2		Procedural Skill /		2—Developmentally
2		Procedural Skill /		2—Developmentally
2		Procedural Skill /		2—Developmentally
2		Procedural Skill /		2—Developmentally
3		Conceptual		2—Developmentally
2		Conceptual		2—Developmentally
2		Conceptual		2—Developmentally
		Procedural Skill /		
2		Fluency; Conceptual Understanding; Applications		2—Developmentally appropriate
2		Procedural Skill /		2—Developmentally
2		Conceptual		2—Developmentally

2	Procedural Skill / Fluency; Conceptual Understanding	2—Developmentally appropriate
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3	Conceptual	2—Developmentally
3	Conceptual	2—Developmentally
3	Procedural Skill /	2—Developmentally

3	Applications; Conceptual Understanding	2—Developmentally appropriate
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2—Developmentally
appropriate

		2—Developmentally appropriate
		2—Developmentally appropriate
2	Conceptual Understanding; Procedural Skill / Fluency	2—Developmentally appropriate
3	Conceptual	2—Developmentally
2	Conceptual	2—Developmentally
3	Conceptual	2—Developmentally
2	Procedural Skill /	2—Developmentally
3	Conceptual	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Conceptual	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill / Fluency	2—Developmentally appropriate
3	Conceptual	2—Developmentally

4	Conceptual	2—Developmentally
2	Conceptual	2—Developmentally
3	Conceptual	2—Developmentally



2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Conceptual	2—Developmentally
3	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally
2	Procedural Skill /	2—Developmentally

Developmental Appropriateness		Integration of Appropriate Mathematical Practices		
Developmental	Developmental	Math Practice	Math Practice	Identify Better Aligned
		1—Any named practices 0—No practices	1—Any named 0—No practices	MP7
		1—Any named practices integrated	1—Any named practices appropriate	
		2—All named practices 2—All named practices 0—No practices	2—All named 2—All named 0—No practices	MP7
	For all of these,	2—All named practices	2—All named	
	For all of these,	2—All named practices	2—All named	MP7
		2—All named practices	2—All named	
		1—Any named practices integrated	1—Any named practices appropriate	
		2—All named practices 2—All named practices	2—All named 2—All named	

2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named

2—All named practices integrated	2—All named practices appropriate
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2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named
1—Any named practices	1—Any named
2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named

2—All named practices integrated	2—All named practices appropriate
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2—All named practices	2—All named
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2—All named practices	2—All named
2—All named practices	2—All named
1—Any named practices	2—All named



For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	0—No practices	2—All named	MP5
For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	0—No practices	2—All named	MP7
For all of these,	0—No practices	2—All named	MP7

ctices

Mathematical Practice Integration

Notes

MP2 not integrated; this standard
Does not address modeling at all.

MP3 not integrated; does not
address justification or
communicating an argument.

MP2 is not integrated. The standard
mentions contextual problems, but
does not require students to make
sense of mathematics by adding or
removing a context.

MP2 is not integrated. The standard
MP 3 talks about communicating

MP8 is not quite there yet.

MP2 is not integrated. The standard

MP3 is not integrated; does not	Code S2.G.12 is also used to
MP3 is not integrated; does not	Code S2.G.13 is also used to

			Measurability Score (0-2)	Measurability Issue Flag
Domain	Standard ID	Standard Text		
Algebra (A)	S3.A.1	Interpret polynomial expressions given in	2—measurable & well	
Algebra (A)	S3.A.2	create equations and inequalities that one	2—measurable & well	
Algebra (A)	S3.A.3	For exponential models, express as a	2—measurable & well	
Algebra (A)	S3.A.4	solve a quadratic in the form $ax^2+bx+c=0$	2—measurable & well	
Functions (F)	S3.F.1	Understand the interpretation of	1—artificially	Non-observable
Functions (F)	S3.F.2	build a model of periodic phenomena	0—unmeasurable by	“multipre”
Functions (F)	S3.F.3	understand and interpret key features	not paratified	expectations: Non-
Functions (F)	S3.F.4	build graphical representations of a	2—measurable & well	Non-observable verb
Functions (F)	S3.F.5	function and the graph when	1—artificially	multiple
Functions (F)	S3.F.6	recognize the attributes of inverse	2—measurable & well	expectations:
Functions (F)	S3.F.7	determine which function type (polynomial,	2—measurable & well	
Functions (F)	S3.F.8	exponential, logarithmic, or trigonometric)	2—measurable & well	
Geometry (G)	S3.G.1	use geometric shapes, their measures, and	1—artificially	
Geometry (G)	S3.G.2	apply concepts of density based on area	2—measurable & well	Poorly specified
Geometry (G)	S3.G.3	analyze two dimensional figures (MP4)	1—artificially	Poorly specified
Data Science	S3.D.1	Describe and represent structures and	not paratified	Poorly specified
Data Science	S3.D.2	build and use probability models including	2—measurable & well	
Data Science	S3.D.3	use multiple representations as tools to	1—artificially	multiple
Data Science	S3.D.4	use the mean and standard deviation to	not paratified	expectations: Non-
Data Science	S3.D.5	formulate statistical investigative	2—measurable & well	expectations: Non-
Data Science	S3.D.6	select appropriate statistical tools to	1—artificially	multiple
Data Science	S3.D.7	analyze data to predict and reasonable	not paratified	expectations: Non-
Data Science	S3.D.8	use statistical evidence from the analyses	not paratified	Poorly specified
		to evaluate results and answer questions	measurable / well	multiple
Intermediate Algebra Pathway Standards				
Algebra (A)	CS3.A.5	Create equations and inequalities in one	2—measurable & well	
Algebra (A)	CS3.A.6	For exponential models, express as a	2—measurable & well	
Algebra (A)	CS3.A.7	Understand the inverse relationship	1—artificially	Non-observable verb
Algebra (A)	CS3.A.10	between add, subtract, and multiply and divide	2—measurable & well	
Algebra (A)	CS3.A.11	completely zeros of polynomial functions	2—measurable & well	
Algebra (A)	CS3.A.12	expand and simplify polynomial sums, and	2—measurable & well	
Algebra (A)	CS3.A.13	productive compound inequalities in one	2—measurable & well	
		variable, including absolute value	specified	

Number System	CS3. NS. 2	using the fundamental theorem of Algebra,	$\mathbb{C}$ -measurable & well	
Number System	CS3. NS. 3	find solutions for polynomial equations that are	$\mathbb{C}$ -measurable & well	
Functions (F)	CS3. F. 9	understand and interpret the features of	1- $\mathbb{R}$ -differentiable	Non-observable verb
Functions (F)	CS3. F. 10	build and use models of periodic phenomena	not $\mathbb{R}$ -measurable for	multiple
Functions (F)	CS3. F. 11	with data and interpret key features of	not 1- $\mathbb{R}$ -differentiable	expectations. Non-
Functions (F)	CS3. F. 12	build graphical representations that show	$\mathbb{C}$ -measurable & well	Non-observable verb
Functions (F)	CS3. F. 13	identify the effect on the graph when	1- $\mathbb{R}$ -differentiable	multiple
Functions (F)	Extension	build a new function from a composition of	$\mathbb{C}$ -measurable & well	expectations.
Functions (F)	CS3. F. 16	verify by composition that one function is	$\mathbb{C}$ -measurable & well	
Geometry/Trigo	CS3. G. 4	the standard and apply the Law of Sines and	1- $\mathbb{R}$ -differentiable	Non-observable verb
Geometry/Trigo	CS3. G. 5	use special triangles as tools to	not $\mathbb{R}$ -measurable	multiple
Geometry (C)		construct the unit circle with degrees and	measurable / well	expectations

Measureability	Instructional Focus		Clarity & Accessibility
Measurability Notes	Instructional Focus	Instructional Focus Notes	
	Widely applicable		Accessibly
	Widely applicable		Accessibly
	Widely applicable		Accessibly
	Widely applicable		Accessibly
understand is a non-observable verb. Consider instead	Widely applicable		1-partially
simply removing the word since it seems that correctly	appropriate		1-partially
understand is a non-observable verb. Consider instead	Widely applicable		Accessibly
simply removing the word since it seems that correctly	Widely applicable		Accessibly
Attend to precision of language and notation while	appropriate		1-partially
constructing arguments and carefully evaluate whether	appropriate		Accessibly
	Widely applicable		Accessibly
	appropriate		1-partially
ASK targeted questions is poorly specified and high	appropriate		1-partially
inference; assessors must use their own judgment to	appropriate		1-partially
Attend to precision and reasonableness while using	appropriate		1-partially
valued for precision and reasonableness when summarizing	appropriate		1-partially
categorical data in two-way frequency models" is poorly	appropriate		Accessibly
understand is a non-observable verb. If the goal is to	appropriate		1-partially
the first two are closely related and makes sense	appropriate		Accessibly
to have them in the same standard. The third is a	appropriate		Accessibly
understand is a non-observable verb. Consider either	Widely applicable		1-partially
attend to precision and reasonableness when summarizing	appropriate		1-partially
and or this standard could be "our analysis is" as a	appropriate		Accessibly
* Use statistical evidence from the analyses to evaluate	supporting work		Accessibly
	Widely applicable		1-partially
	Widely applicable		Accessibly
understand is a non-observable verb. Consider removing	Widely applicable		Accessibly
the first sentence and rewriting the second to be	Widely applicable		Accessibly
	Widely applicable		Accessibly
	Widely applicable		1-partially
	Widely applicable		Accessibly
	prerequisite		Accessibly

understand is a non-observable verb. Consider instead simply removing the word, since it seems that correctly

Attend to precision of language and notation while constructing arguments and carefully evaluate whether

Understand is a non-observable verb. Consider removing the two PLS described here are both significant enough that they should be assessed via different tasks.

widely applicable

widely applicable

widely applicable

Appropriate

wider applicable

widely applicable

Appropriate

Appropriate^{work}

wider applicable

Appropriate

Appropriate¹⁷

supporting work

4—Clear and

Lectionaire

1. Introduction

1. Radically radically

Clear and

உருக்கியது

1. Introduction

4 Clear and

உருக்கியது

accountable

Clarity & Accessibility		DOK	
Clarity & Accessibility Issue Flag	Clarity & Accessibility Notes	DOK Level (1-4)	DOK Notes
Vague/ambiguous language	understand and interpret the features of ... functions related to the novel assessment specificity under the measurability criteria. it is unclear what kind of	1)	the type of task could
		2	the type of task could
		2	the type of task could
		2	potentially be DOK 3
		2	
Insufficient guidance to understand DE	the mathematical meaning of the second sentence is unclear and difficult to parse; though the meaning of	3	the type of task could
		2	potentially be DOK 3
		3	the type of task could
Unclear grammar/typo(s) Vague/ambiguous language	current grammar is unclear; consider justifying the fact targeted as learning inference, requiring the evaluator or the phrase concepts or density with which appears in the clause. At least to predict and a reasonable	2	the type of task could
		2	the intent of this standard
		2	the type of task could
		3	the type of task could
		2	the type of task could
Insufficient guidance to understand DE	There is something unclear and difficult to parse about the sentence "Describe and represent structures and	2	the type of task could
		2	potentially be DOK 4
		3	
Unclear grammar/typo(s)	the clause use multiple representations as tools to describe and represent structure to build understanding	2	depending on what the
		3	the type of task could
		2	the type of task could
Insufficient guidance to understand DE other; unclear grammar/typo(s)	understand and apply best practices for designing sample surveys, experiments, and observational studies" summarize and organizing collected data to answer an	3	the type of task could
		3	potentially be DOK 4
		3	giving the benefit of the
		3	the type of task could
		3	potentially be DOK 4
Unclear grammar/typo(s)	Model a context is not technically incorrect, but may cause more confusion than language like, for example	2	the type of task could
		3	potentially be DOK 3
		2	
		3	
		2	
Vague/ambiguous language	the word simply in mathematics is ambiguous and should be avoided in benchmark/standard documents	2	
		2	
		2	

vague/ambiguous
language: Insufficient
Vague/ambiguous language

understand and interpret the features of ... functions
by applying and removing context" unclear in
related to the note about poor specificity under the
measurability criteria. it is unclear what kind of

insufficient guidance to
understand DF

The mathematical meaning of the second sentence is
unclear and difficult to parse; though the meaning of

2
2
3
2
3
2
3
2
2
2
2
2

the type of task could
potentially be DOK 2

the type of task could
potentially be DOK 2

the type of task could
potentially be DOK 2

the type of task could
potentially be DOK 2

Mathematical Rigor		Developmental Appropriateness	
Mathematical Rigor	Mathematical Rigor	Developmental Appropriateness (0-2)	Developmental Appropriateness
Conceptual	Notes	Appropriateness Score	Appropriateness Notes
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Conceptual		2—developmentally	
Understanding		2—developmentally	
Understanding		2—developmentally	
Understanding		2—developmentally	
Procedural Skill /		2—developmentally	
Conceptual		2—developmentally	
Understanding		2—developmentally	
Understanding		2—developmentally	
Applications		2—developmentally	
Applications		2—developmentally	
Procedural Skill /		2—developmentally	
Conceptual		2—developmentally	
Understanding		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Conceptual		2—developmentally	
Understanding		2—developmentally	
Procedural Skill /		2—developmentally	
Conceptual		2—developmentally	
Understanding		appropriate	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Procedural Skill /		2—developmentally	
Fluency		appropriate	

Procedural Skill /	↳ developmentally
Procedural Skill /	↳ overoptimally
Conceptual	↳ overoptimally
Understanding	↳ overoptimally
Conceptual	↳ overoptimally
Understanding	↳ overoptimally
Procedural Skill /	↳ overoptimally
Procedural Skill /	↳ overoptimally
Procedural Skill /	↳ overoptimally
Procedural Skill /	↳ overoptimally
Procedural Skill /	↳ overoptimally
Fluency:	appropriate

Integration of Appropriate Mathematical Practices			
main practice	main practice	Identify better Aligned	mathematical practice
Integration	Appropriateness	MP Connection (if any and	Integration Notes
2-All named practices	2-All named practices		
0-no practices	2-All named practices	MP4; MP7	Looks like this was a typo and
0-no practices	2-All named practices	MP4; MP5	while MP 4 could be appropriate
2-All named practices	2-All named practices		for this standard its language
2-All named practices	2-All named practices	MP3; MP7	
2-All named practices	2-All named practices		
2-All named practices	2-All named practices	MP3; MP7	
2-All named practices	2-All named practices	MP7	
1-Any named practices	2-All named practices	MP7	MP 5 is a reasonable match for
2-All named practices	2-All named practices		this standard but the language
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
0-no practices	2-All named practices		
2-All named practices	2-All named practices	MP7; MP4	It is difficult to say whether
2-All named practices	2-All named practices	MP5	MP 2 is appropriately integrated
0-no practices	2-All named practices		
2-All named practices	2-All named practices	MP3	MP 4 can align well with this
2-All named practices	2-All named practices	MP6; MP7	content but the clarity and
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
integrated	practices appropriate		
0-no practices	2-All named practices		
1-Any named practices	2-All named practices	MP4; MP8	Looks like this was a typo and
2-All named practices	2-All named practices	MP7; MP5	while MP 4 could be appropriate
2-All named practices	2-All named practices		for this standard its language
2-All named practices	2-All named practices	MP7	
2-All named practices	2-All named practices		
2-All named practices	2-All named practices		
2-All named practices	2-All named practices	MP3; MP7	
integrated	practices appropriate		

2—All named practices	2—All named	MP7	
2—All integrated practices	practices appropriate		
2—All integrated practices	2—All named	MP3; MP7	
2—All integrated practices	practices appropriate		
2—All integrated practices	2—All named	MP3; MP7	
2—All integrated practices	practices appropriate	MP7	
1—Any integrated practices	2—All named	MP7	MP 5 is a reasonable match for this standard but the language
2—All integrated practices	practices appropriate		
0—No practices	0—No practices		Modeling is not addressed in the language or content of this
2—All integrated practices	2—All named	MP3; MP7	
2—All integrated practices	practices appropriate		
integrated	practices appropriate	MP3	

[illegible]

Standard is listed twice in the standards		Intermediate
PDF Standard is listed twice in the standards	Memo	Algebra
PDF Standard is listed twice in the standards	Memo	Intermediate
PDF Standard is listed twice in the standards	Memo	Algebra
PDF Standard is listed twice in the standards	Memo	Intermediate
PDF Standard is listed twice in the standards	Memo	Algebra
Standard is listed twice in the standards		Intermediate
PDF Standard is listed twice in the standards	Memo	Algebra
PDF sheet This instance seems to have a		Algebra

Domain	Standard ID	Standard Text	Measurability Score (0–	Measurability Issue
Algebra (A)	S3.A.1	<i>Interpret</i> polynomial expressions given in	2—Measurable & well	
Algebra (A)	S3.A.2	Create equations and inequalities in one	2—Measurable & well	
Algebra (A)	S3.A.3	For exponential models, express as a	2—Measurable & well	
Algebra (A)	S3.A.4	Solve an equation of the form $f(x)=c$ for a	2—Measurable & well	
Functions (F)	S3.F.1	Understand and interpret the features of	1—Partially	Non-observable
Functions (F)	S3.F.2	<i>Build and use models</i> of periodic phenomena	0—Not measurable or	Multiple
Functions (F)	S3.F.3	Understand and interpret key features	1—Partially	Non-observable verb
Functions (F)	S3.F.4	<i>Build graphical representations</i> that show	2—Measurable & well	
Functions (F)	S3.F.5	Identify the effect on the graph when	1—Partially	Multiple
Functions (F)	S3.F.6	<i>Use the attributes of inverse</i>	2—Measurable & well	
Functions (F)	S3.F.7	Determine which function type (polynomial,	2—Measurable & well	
Functions (F)	S3.F.8	<i>Justify</i> that a quantity increasing	2—Measurable & well	
Geometry (G)	S3.G.1	Use geometric shapes, their measures, and	1—Partially	Poorly specified
Geometry (G)	S3.G.2	Apply concepts of density based on area	2—Measurable & well	
Geometry (G)	S3.G.3	<i>Attend to precision and reasonableness</i>	1—Partially	Poorly specified
Data Science	S3.D.1	<i>Describe and represent structures and</i>	1—Partially	Poorly specified
Data Science	S3.D.2	<i>Build and use probability models</i> including	2—Measurable & well	
Data Science	S3.D.3	<i>Use multiple representations as tools to</i>	1—Partially	Multiple
Data Science	S3.D.4	Use the mean and standard deviation of a	1—Partially	Multiple
Data Science	S3.D.5	<i>Formulate statistical investigative</i>	2—Measurable & well	
Data Science	S3.D.6	<i>Select appropriate statistical tools to</i>	1—Partially	Multiple
Data Science	S3.D.7	<i>Attend to precision and reasonableness</i>	1—Partially	Poorly specified
Data Science	S3.D.8	Use statistical evidence from the analyses	1—Partially	Multiple
Intermediate Algebra Standards				
Algebra (A)	CS3.A.5	Create equations and inequalities in one	2—Measurable & well	
Algebra (A)	CS3.A.6	For exponential models, express as a	2—Measurable & well	
Algebra (A)	CS3.A.7	Understand the inverse relationship	1—Partially	Non-observable verb
Algebra (A)	CS3.A.10	Add, subtract, multiply and divide	2—Measurable & well	
Algebra (A)	CS3.A.11	Identify zeros of polynomial functions	2—Measurable & well	
Algebra (A)	CS3.A.12	Expand and simplify polynomial sums,	2—Measurable & well	
Algebra (A)	CS3.A.13	Solve compound inequalities in one	2—Measurable & well	
Number System	CS3.NS.2	Using the Fundamental Theorem of Algebra,	2—Measurable & well	
Number System	CS3.NS.3	Find solutions for polynomials that are	2—Measurable & well	

Functions (F)	CS3.F.9	Understand and interpret the features of	1—Partially	Non-observable verb
Functions (F)	CS3.F.10	<i>Build and use models</i> of periodic phenomena	0—Not measurable or	Multiple
Functions (F)	CS3.F.11	Understand and interpret key features	1—Partially	Non-observable verb
Functions (F)	CS3.F.12	<i>Build graphical representations</i> that show	2—Measurable & well	
Functions (F)	CS3.F.13	Identify the effect on the graph when	1—Partially	Multiple
Functions (F)	CS3.F.15	<i>Build</i> a new function from a composition of	2—Measurable & well	
Functions (F)	CS3.F.16	<i>Verify</i> by composition that one function is	2—Measurable & well	
Geometry/Trigo	CS3.G.4	Understand and apply the Law of Sines and	1—Partially	Non-observable verb
Geometry/Trigo	CS3.G.5	<i>Use special triangles as tools</i> to	1—Partially	Multiple

Calculus Pathway Standards

Algebra (A)	CS3.A.8	<i>Model</i> arithmetic and geometric series,	2—Measurable & well	
Algebra (A)	CS3.A.9	<i>Build and use expressions</i> including sigma	2—Measurable & well	
Number System	CS3.NS.1	<i>Represent</i> addition, subtraction, and	2—Measurable & well	
Functions (F)	CS3.F.14	Define a curve parametrically, and <i>create</i>	1—Partially	Multiple
Functions (F)	CS3.F.17	Use inverse trigonometric functions to	2—Measurable & well	
Geometry/Trigo	CS3.G.6	<i>Prove</i> the addition and subtraction	2—Measurable & well	

Measureability	Instructional Focus	
Measurability Notes	Instructional	Clarity &
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider instead	Widely applicable	1—Partially
This standard includes two distinct PEs that are	Appropriate	1—Partially
"Understand" is a non-observable verb. Consider instead	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Attend to precision of language and notation while	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
	Appropriate	1—Partially
"Ask targeted questions" is poorly specified and high	Appropriate	1—Partially
	Appropriate	1—Partially
"Attend to precision and reasonableness while using	Appropriate	1—Partially
"Attend to precision and reasonableness when summarizing	Appropriate	1—Partially
	Appropriate	2—Clear and
"Understand" is a non-observable verb. If the goal is to	Appropriate	1—Partially
The first two PEs are closely related and it makes sense	Appropriate	2—Clear and
	Appropriate	2—Clear and
"Understand" is a non-observable verb. Consider either	Widely applicable	1—Partially
"Attend to precision and reasonableness when summarizing	Appropriate	1—Partially
This standard contains four distinct PEs:	Appropriate	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider removing	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and

"Understand" is a non-observable verb. Consider instead	Widely applicable	1—Partially
This standard includes two distinct PEs that are	Appropriate	1—Partially
"Understand" is a non-observable verb. Consider instead	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Attend to precision of language and notation while	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider removing	Appropriate	2—Clear and
The two PEs described here are both significant enough	Appropriate	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
This standard includes two distinct PEs (define a curve	Appropriate	2—Clear and
	Appropriate	2—Clear and
	Appropriate	2—Clear and

Clarity & Accessibility		DOK	
Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1–	DOK Notes
		2	The type of task could
		2	The type of task could
		2	The type of task could
		2	
Vague/ambiguous	"Understand and interpret the features of ... functions	3	
Vague/ambiguous language	Related to the note about poor specificity under the	2	The type of task could
		3	
		2	The type of task could
Insufficient guidance to	The mathematical meaning of the second sentence is	3	
		2	The type of task could
		2	The type of task could
Unclear grammar/typo(s)	Current grammar is unclear; consider "Justify the fact	2	The intent of this standard
Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	3	The type of task could
Unclear grammar/typo(s)	The phrase "concepts of density" (which also appears in	2	The type of task could
Insufficient guidance to	The clause "Attend to precision and reasonableness	2	The type of task could
Unclear grammar/typo(s)	There is something unclear and difficult to parse about	3	The type of task could
		2	
Unclear grammar/typo(s)	The clause "Use multiple representations as tools to	3	
		2	Depending on what the
		3	The type of task could
Insufficient guidance to	"Understand and apply best practices for designing	3	The type of task could
Other; Unclear	"Attend to precision and reasonableness when	3	Giving the benefit of the
		3	The type of task could
Unclear grammar/typo(s)	See notes about the phrase "model a context" for	2	The type of task could
		3	
		2	
		3	
		2	
Vague/ambiguous language	See notes about the word "simplify" in mathematics for	2	
		2	
		2	
		2	

Vague/ambiguous	"Understand and interpret the features of ... functions	3	
Vague/ambiguous language	Related to the note about poor specificity under the	2	The type of task could
		3	
		2	The type of task could
Insufficient guidance to	The mathematical meaning of the second sentence is	3	
		2	The type of task could
		2	
		2	
		2	The type of task could
		2	The type of task could
		2	The type of task could
		2	
		2	
		3	
		3	

[illegible]

Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally

[illegible]

Integration of Appropriate Mathematical Practices			
Math Practice	Math Practice	Identify Better Aligned	Mathematical Practice
2—All named practices	2—All named		
0—No practices	2—All named	MP4; MP7	Looks like this was a typo and
0—No practices	2—All named	MP4; MP5	While MP 2 could be appropriate
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
1—Any named practices	2—All named	MP7	MP 3 is a reasonable match for
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	0—No practices	MP7; MP4	It is difficult to say whether
2—All named practices	2—All named	MP5	
2—All named practices	2—All named		
0—No practices	2—All named	MP3	MP 7 can align well with this
2—All named practices	2—All named	MP6; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	2—All named	MP4; MP8	Looks like this was a typo and
1—Any named practices	1—Any named	MP7; MP5	While MP 2 could be appropriate
2—All named practices	2—All named		
2—All named practices	2—All named	MP7	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
2—All named practices	2—All named		

MP3

MP 3 is appropriate. Modeling is

MP3

[illegible]

Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards				Memo		Calculus
Standard is listed twice in the standards						Calculus
Standard is listed twice in the standards						Calculus

Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus
Code CS3.F.16 is also used to code this	Memo	Calculus
Code CS3.F.17 is also used to code this	Memo	Calculus
Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus



Included in memo counts.	Memo	Calculus
Included in memo counts.	Memo	Calculus
Included in memo counts.	Memo	Calculus
Included in memo counts.	Memo	Calculus
Code CS3.F.17 is listed twice in the	Memo	Calculus
Included in memo counts.	Memo	Calculus

Domain	Standard ID	Standard Text	Measurability Score (0–	Measurability Issue
Algebra	S3.A.1	<i>Interpret</i> polynomial expressions given in	2—Measurable & well	
Algebra	S3.A.2	Create equations and inequalities in one	2—Measurable & well	
Algebra	S3.A.3	For exponential models, express as a	2—Measurable & well	
Algebra	S3.A.4	Solve an equation of the form $f(x)=c$ for a	2—Measurable & well	
Functions	S3.F.1	Understand and interpret the features of	1—Partially	Non-observable
Functions	S3.F.2	<i>Build and use models</i> of periodic phenomena	0—Not measurable or	Multiple
Functions	S3.F.3	Understand and interpret key features	1—Partially	Non-observable verb
Functions	S3.F.4	<i>Build graphical representations</i> that show	2—Measurable & well	
Functions	S3.F.5	Identify the effect on the graph when	1—Partially	Multiple
Functions	S3.F.6	<i>Use the attributes of inverse</i>	2—Measurable & well	
Functions	S3.F.7	Determine which function type (polynomial,	2—Measurable & well	
Functions	S3.F.8	<i>Justify</i> that a quantity increasing	2—Measurable & well	
Geometry	S3.G.1	Use geometric shapes, their measures, and	1—Partially	Poorly specified
Geometry	S3.G.2	Apply concepts of density based on area	2—Measurable & well	
Geometry	S3.G.3	<i>Attend to precision and reasonableness</i>	1—Partially	Poorly specified
Data	S3.D.1	<i>Describe and represent structures and</i>	1—Partially	Poorly specified
Data	S3.D.2	<i>Build and use probability models</i> including	2—Measurable & well	
Data	S3.D.3	<i>Use multiple representations as tools to</i>	1—Partially	Multiple
Data	S3.D.4	Use the mean and standard deviation of a	1—Partially	Multiple
Data	S3.D.5	<i>Formulate statistical investigative</i>	2—Measurable & well	
Data	S3.D.6	<i>Select appropriate statistical tools</i> to	1—Partially	Multiple
Data	S3.D.7	<i>Attend to precision and reasonableness</i>	1—Partially	Poorly specified
Data	S3.D.8	Use statistical evidence from the analyses	1—Partially	Multiple
Data Science Pathway Standards				
Data	DS3.D.9	<i>Represent</i> categorical and quantitative	1—Partially	Poorly specified
Data	DS3.D.10	Describe univariate displays of large sets	1—Partially	Poorly specified
Data	DS3.D.11	<i>Describe and represent relationships</i>	2—Measurable & well	
Data	DS3.D.12	<i>Build and use models</i> to describe	2—Measurable & well	
Data	DS3.D.13	<i>Describe the relationship</i> between the	2—Measurable & well	
Data	DS3.D.14	Use the central limit theorem to <i>represent</i>	2—Measurable & well	
Data	DS3.D.15	<i>Use statistical tools</i> to validate the	1—Partially	Multiple
Data	DS3.D.16	<i>Evaluate results</i> reached from data	0—Not measurable or	Too broad; Too
Data	DS3.D.17	Determine the appropriate scope of	1—Partially	Poorly specified;

Data	DS3.D.18	Understand the role of random assignment	1—Partially	Non-observable verb
Data	DS3.D.19	<i>Construct reasonable arguments</i> regarding	1—Partially	Too broad; Poorly
Data	DS3.D.20	<i>Use precision in practices</i> for handling	0—Not measurable or	Too vague; Too

Measureability	Instructional Focus	
Measurability Notes	Instructional	Instructional Clarity &
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider instead	Widely applicable	1—Partially
This standard includes two distinct PEs that are	Appropriate	1—Partially
"Understand" is a non-observable verb. Consider instead	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Attend to precision of language and notation while	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
	Appropriate	1—Partially
"Ask targeted questions" is poorly specified and high	Appropriate	1—Partially
	Appropriate	1—Partially
"Attend to precision and reasonableness while using	Appropriate	1—Partially
"Attend to precision and reasonableness when summarizing	Appropriate	1—Partially
	Appropriate	2—Clear and
"Understand" is a non-observable verb. If the goal is to	Appropriate	1—Partially
The first two PEs are closely related and it makes sense	Appropriate	2—Clear and
	Appropriate	2—Clear and
"Understand" is a non-observable verb. Consider either	Widely applicable	1—Partially
"Attend to precision and reasonableness when summarizing	Appropriate	1—Partially
This standard contains four distinct PEs:	Appropriate	2—Clear and
The clause "Attend to precision in data processing by	Appropriate	1—Partially
"Ask targeted questions" is poorly specified and high	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
	Appropriate	2—Clear and
This standard includes two distinct PEs:	Appropriate	1—Partially
This standard is so broad that it's not clear what the	Appropriate	0—Not clear and
This standard could refer to a wide range of statistical	Appropriate	1—Partially

"Understanding the role of random assignment...and	Appropriate	2—Clear and
Especially because data science standards are less	Appropriate	1—Partially
"Use precision in practices for handling large sets of	Appropriate	0—Not clear and

Clarity & Accessibility		DOK	
Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1–	DOK Notes
		2	The type of task could
		2	The type of task could
		2	The type of task could
		2	
Vague/ambiguous	"Understand and interpret the features of ... functions	3	
Vague/ambiguous language	Related to the note about poor specificity under the	2	The type of task could
		3	
		2	The type of task could
Insufficient guidance to	The mathematical meaning of the second sentence is	3	
		2	The type of task could
		2	The type of task could
Unclear grammar/typo(s)	Current grammar is unclear; consider "Justify the fact	2	The intent of this standard
Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	3	The type of task could
Unclear grammar/typo(s)	The phrase "concepts of density" (which also appears in	2	The type of task could
Insufficient guidance to	The clause "Attend to precision and reasonableness	2	The type of task could
Unclear grammar/typo(s)	There is something unclear and difficult to parse about	3	The type of task could
		2	
Unclear grammar/typo(s)	The clause "Use multiple representations as tools to	3	
		2	Depending on what the
		3	The type of task could
Insufficient guidance to	"Understand and apply best practices for designing	3	The type of task could
Other; Unclear	"Attend to precision and reasonableness when	3	Giving the benefit of the
		3	The type of task could
Insufficient guidance to	See note under measurability -- the issues with the	2	Because of the specificity
Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	2	
		2	The type of task could
Unclear grammar/typo(s)	There is something unclear about the construction of of	3	
		3	
		2	The type of task could
Other	The clarity issue here is related to the measurability	3	
Insufficient guidance to	Similar to the issue described under measurability, it	3	The type of task could
Jargon; Vague/ambiguous	The sentence "Contextualize the implications through	3	

Insufficient guidance to	See the note under measurability -- the issues with the	2	
Vague/ambiguous	See note under measurability -- the issues with the	3	
		3	The type of task could

Mathematical Rigor		Developmental Appropriateness		
Mathematical Rigor	Mathematical Rigor	Developmental	Developmental	Developmental
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Applications	2—Developmentally		
	Applications	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Applications	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		

Conceptual
Conceptual
Applications

2—Developmentally
2—Developmentally
2—Developmentally

Integration of Appropriate Mathematical Practices			
Math Practice	Math Practice	Identify Better Aligned	Mathematical Practice
2—All named practices	2—All named		
0—No practices	2—All named	MP4; MP7	Looks like this was a typo and
0—No practices	2—All named	MP4; MP5	While MP 2 could be appropriate
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
1—Any named practices	2—All named	MP7	MP 3 is a reasonable match for
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	0—No practices	MP7; MP4	It is difficult to say whether
2—All named practices	2—All named	MP5	
2—All named practices	2—All named		
0—No practices	2—All named	MP3	MP 7 can align well with this
2—All named practices	2—All named	MP6; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	0—No practices		Language in the standard does
2—All named practices	2—All named	MP5	The phrase "using technology"
2—All named practices	2—All named	MP4	
2—All named practices	2—All named		
2—All named practices	2—All named	MP6	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	0—No practices		It is difficult to say whether

2—All named practices	2—All named
2—All named practices	2—All named
0—No practices	0—No practices

It is possible that MP6 could be

[illegible][illegible]

Included in memo counts.	Memo	Data Science
Included in memo counts.	Memo	Data Science
Included in memo counts.	Memo	Data Science

Domain	Standard ID	Standard Text	Measurability Score (0–	Measurability Issue
Algebra (A)	S3.A.1	<i>Interpret</i> polynomial expressions given in	2—Measurable & well	
Algebra (A)	S3.A.2	Create equations and inequalities in one	2—Measurable & well	
Algebra (A)	S3.A.3	For exponential models, express as a	2—Measurable & well	
Algebra (A)	S3.A.4	Solve an equation of the form $f(x)=c$ for a	2—Measurable & well	
Functions (F)	S3.F.1	Understand and interpret the features of	1—Partially	Non-observable
Functions (F)	S3.F.2	<i>Build and use models</i> of periodic phenomena	0—Not measurable or	Multiple
Functions (F)	S3.F.3	Understand and interpret key features	1—Partially	Non-observable verb
Functions (F)	S3.F.4	<i>Build graphical representations</i> that show	2—Measurable & well	
Functions (F)	S3.F.5	Identify the effect on the graph when	1—Partially	Multiple
Functions (F)	S3.F.6	<i>Use the attributes of inverse</i>	2—Measurable & well	
Functions (F)	S3.F.7	Determine which function type (polynomial,	2—Measurable & well	
Functions (F)	S3.F.8	<i>Justify</i> that a quantity increasing	2—Measurable & well	
Geometry (G)	S3.G.1	Use geometric shapes, their measures, and	1—Partially	Poorly specified
Geometry (G)	S3.G.2	Apply concepts of density based on area	2—Measurable & well	
Geometry (G)	S3.G.3	<i>Attend to precision and reasonableness</i>	1—Partially	Poorly specified
Data Science	S3.D.1	<i>Describe and represent structures and</i>	1—Partially	Poorly specified
Data Science	S3.D.2	<i>Build and use probability models</i> including	2—Measurable & well	
Data Science	S3.D.3	<i>Use multiple representations as tools to</i>	1—Partially	Multiple
Data Science	S3.D.4	Use the mean and standard deviation of a	1—Partially	Multiple
Data Science	S3.D.5	<i>Formulate statistical investigative</i>	2—Measurable & well	
Data Science	S3.D.6	<i>Select appropriate statistical tools to</i>	1—Partially	Multiple
Data Science	S3.D.7	<i>Attend to precision and reasonableness</i>	1—Partially	Poorly specified
Data Science	S3.D.8	Use statistical evidence from the analyses	1—Partially	Multiple
Algebra (A)	CS3.A.5	Create equations and inequalities in one	2—Measurable & well	
Algebra (A)	CS3.A.6	For exponential models, express as a	2—Measurable & well	
Algebra (A)	CS3.A.7	Understand the inverse relationship	1—Partially	Non-observable verb
Algebra (A)	CS3.A.10	Add, subtract, multiply and divide	2—Measurable & well	
Algebra (A)	CS3.A.11	Identify zeros of polynomial functions	2—Measurable & well	
Algebra (A)	CS3.A.12	Expand and simplify polynomial sums,	2—Measurable & well	
Algebra (A)	CS3.A.13	Solve compound inequalities in one	2—Measurable & well	
Number System	CS3.NS.2	Using the Fundamental Theorem of Algebra,	2—Measurable & well	
Number System	CS3.NS.3	Find solutions for polynomials that are	2—Measurable & well	
Functions (F)	CS3.F.9	Understand and interpret the features of	1—Partially	Non-observable verb
Functions (F)	CS3.F.10	<i>Build and use models</i> of periodic phenomena	0—Not measurable or	Multiple

Functions (F)	CS3.F.11	Understand and interpret key features	1—Partially	Non-observable verb
Functions (F)	CS3.F.12	<i>Build graphical representations</i> that show	2—Measurable & well	
Functions (F)	CS3.F.13	Identify the effect on the graph when	1—Partially	Multiple
Functions (F)	CS3.F.16	<i>Build</i> a new function from a composition of	2—Measurable & well	
Functions (F)	CS3.F.17	Verify by composition that one function is	2—Measurable & well	
Geometry/Trigo	CS3.G.4	Understand and apply the Law of Sines and	1—Partially	Non-observable verb
Geometry/Trigo	CS3.G.5	<i>Use special triangles as tools</i> to	1—Partially	Multiple
Algebra (A)	CS3.A.5	Create equations and inequalities in one	2—Measurable & well	
Algebra (A)	CS3.A.8	<i>Model</i> arithmetic and geometric series,	2—Measurable & well	
Algebra (A)	CS3.A.9	<i>Build and use expressions</i> including sigma	2—Measurable & well	
Number System	CS3.NS.1	<i>Represent</i> addition, subtraction, and	2—Measurable & well	
Functions (F)	CS3.F.14	Define a curve parametrically, and <i>create</i>	1—Partially	Multiple
Geometry/Trigo	CS3.G.6	<i>Prove</i> the addition and subtraction	2—Measurable & well	
Algebra (A)	CS3.A.6	For exponential models, express as a	2—Measurable & well	
Algebra (A)	CS3.A.7	Understand the inverse relationship	1—Partially	Non-observable verb
Algebra (A)	CS3.A.10	Add, subtract, multiply and divide	2—Measurable & well	
Algebra (A)	CS3.A.11	Identify zeros of polynomial functions	2—Measurable & well	
Algebra (A)	CS3.A.12	Expand and simplify polynomial sums,	2—Measurable & well	
Algebra (A)	CS3.A.13	Solve compound inequalities in one	2—Measurable & well	
Number System	CS3.NS.2	Using the Fundamental Theorem of Algebra,	2—Measurable & well	
Number System	CS3.NS.3	Find solutions for polynomials that are	2—Measurable & well	
Functions (F)	CS3.F.9	Understand and interpret the features of	1—Partially	Non-observable verb
Functions (F)	CS3.F.10	<i>Build and use models</i> of periodic phenomena	0—Not measurable or	Multiple
Functions (F)	CS3.F.11	Understand and interpret key features	1—Partially	Non-observable verb
Functions (F)	CS3.F.12	<i>Build graphical representations</i> that show	2—Measurable & well	
Functions (F)	CS3.F.13	Identify the effect on the graph when	1—Partially	Multiple
Functions (F)	CS3.F.15	<i>Build</i> a new function from a composition of	2—Measurable & well	
Functions (F)	CS3.F.16	<i>Verify</i> by composition that one function is	2—Measurable & well	
Functions (F)	CS3.F.17	Use inverse trigonometric functions to	2—Measurable & well	
Geometry/Trigo	CS3.G.4	Understand and apply the Law of Sines and	1—Partially	Non-observable verb
Geometry/Trigo	CS3.G.5	<i>Use special triangles as tools</i> to	1—Partially	Multiple
Data Science	DS3.D.9	<i>Represent</i> categorical and quantitative	1—Partially	Poorly specified
Data Science	DS3.D.10	Describe univariate displays of large sets	1—Partially	Poorly specified
Data Science	DS3.D.11	<i>Describe and represent relationships</i>	2—Measurable & well	
Data Science	DS3.D.12	<i>Build and use models</i> to describe	2—Measurable & well	
Data Science	DS3.D.13	<i>Describe the relationship</i> between the	2—Measurable & well	

Data Science	DS3.D.14	Use the central limit theorem to <i>represent</i>	2—Measurable & well	
Data Science	DS3.D.15	<i>Use statistical tools</i> to validate the	1—Partially	Multiple
Data Science	DS3.D.16	<i>Evaluate results</i> reached from data	0—Not measurable or	Too broad; Too
Data Science	DS3.D.17	Determine the appropriate scope of	1—Partially	Poorly specified;
Data Science	DS3.D.18	Understand the role of random assignment	1—Partially	Non-observable verb
Data Science	DS3.D.19	<i>Construct reasonable arguments</i> regarding	1—Partially	Too broad; Poorly
Data Science	DS3.D.20	<i>Use precision in practices</i> for handling	0—Not measurable or	Too vague; Too

Measureability	Instructional Focus	
Measurability Notes	Instructional	Instructional Clarity &
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider instead	Widely applicable	1—Partially
This standard includes two distinct PEs that are	Appropriate	1—Partially
"Understand" is a non-observable verb. Consider instead	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Attend to precision of language and notation while	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
	Appropriate	1—Partially
"Ask targeted questions" is poorly specified and high	Appropriate	1—Partially
	Appropriate	1—Partially
"Attend to precision and reasonableness while using	Appropriate	1—Partially
"Attend to precision and reasonableness when summarizing	Appropriate	1—Partially
	Appropriate	2—Clear and
"Understand" is a non-observable verb. If the goal is to	Appropriate	1—Partially
The first two PEs are closely related and it makes sense	Appropriate	2—Clear and
	Appropriate	2—Clear and
"Understand" is a non-observable verb. Consider either	Widely applicable	1—Partially
"Attend to precision and reasonableness when summarizing	Appropriate	1—Partially
This standard contains four distinct PEs:	Appropriate	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider removing	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider instead	Widely applicable	1—Partially
This standard includes two distinct PEs that are	Appropriate	1—Partially

"Understand" is a non-observable verb. Consider instead	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Attend to precision of language and notation while	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider removing	Appropriate	2—Clear and
The two PEs described here are both significant enough	Appropriate	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
This standard includes two distinct PEs (define a curve	Appropriate	2—Clear and
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider removing	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Understand" is a non-observable verb. Consider instead	Widely applicable	1—Partially
This standard includes two distinct PEs that are	Appropriate	1—Partially
"Understand" is a non-observable verb. Consider instead	Widely applicable	2—Clear and
	Widely applicable	2—Clear and
"Attend to precision of language and notation while	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	2—Clear and
	Appropriate	2—Clear and
"Understand" is a non-observable verb. Consider removing	Appropriate	2—Clear and
The two PEs described here are both significant enough	Appropriate	2—Clear and
The clause "Attend to precision in data processing by	Appropriate	1—Partially
"Ask targeted questions" is poorly specified and high	Appropriate	1—Partially
	Appropriate	2—Clear and
	Widely applicable	1—Partially
	Widely applicable	2—Clear and

This standard includes two distinct PEs:
This standard is so broad that it's not clear what the
This standard could refer to a wide range of statistical
"Understanding the role of random assignment...and
Especially because data science standards are less
"Use precision in practices for handling large sets of

Appropriate
Appropriate
Appropriate
Appropriate
Appropriate
Appropriate
Appropriate

2—Clear and
1—Partially
0—Not clear and
1—Partially
2—Clear and
1—Partially
0—Not clear and

Clarity & Accessibility		DOK	
Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1-	DOK Notes
		2	The type of task could
		2	The type of task could
		2	The type of task could
		2	
Vague/ambiguous	"Understand and interpret the features of ... functions	3	
Vague/ambiguous language	Related to the note about poor specificity under the	2	The type of task could
		3	
		2	The type of task could
Insufficient guidance to	The mathematical meaning of the second sentence is	3	
		2	The type of task could
		2	The type of task could
Unclear grammar/typo(s)	Current grammar is unclear; consider "Justify the fact	2	The intent of this standard
Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	3	The type of task could
Unclear grammar/typo(s)	The phrase "concepts of density" (which also appears in	2	The type of task could
Insufficient guidance to	The clause "Attend to precision and reasonableness	2	The type of task could
Unclear grammar/typo(s)	There is something unclear and difficult to parse about	3	The type of task could
		2	
Unclear grammar/typo(s)	The clause "Use multiple representations as tools to	3	
		2	Depending on what the
		3	The type of task could
Insufficient guidance to	"Understand and apply best practices for designing	3	The type of task could
Other; Unclear	"Attend to precision and reasonableness when	3	Giving the benefit of the
		3	The type of task could
Unclear grammar/typo(s)	"Model a context" is not technically incorrect, but may	2	The type of task could
		3	
		2	
		3	
		2	
Vague/ambiguous language	The word "simplify" in mathematics is ambiguous and	2	
		2	
		2	
		2	
Vague/ambiguous	"Understand and interpret the features of ... functions	3	
Vague/ambiguous language	Related to the note about poor specificity under the	2	The type of task could

		3	
		2	The type of task could
Insufficient guidance to	The mathematical meaning of the second sentence is	3	
		2	The type of task could
		2	
		2	
		2	The type of task could
Unclear grammar/typo(s)	See notes about the phrase "model a context" for	2	The type of task could
		2	The type of task could
		2	The type of task could
		2	The type of task could
		2	
		2	
		3	
		3	
		2	
		3	
		2	
Vague/ambiguous language	See notes about the word "simplify" in mathematics for	2	
		2	
		2	
		2	
Vague/ambiguous	"Understand and interpret the features of ... functions	3	
Vague/ambiguous language	Related to the note about poor specificity under the	2	The type of task could
		3	
		2	The type of task could
Insufficient guidance to	The mathematical meaning of the second sentence is	3	
		2	The type of task could
		2	
		3	
		2	
		2	The type of task could
Insufficient guidance to	See note under measurability -- the issues with the	2	Because of the specificity
Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	2	
		2	The type of task could
Unclear grammar/typo(s)	There is something unclear about the construction of of	3	
		3	

		2	The type of task could
Other	The clarity issue here is related to the measurability	3	
Insufficient guidance to	Similar to the issue described under measurability, it	3	The type of task could
Jargon; Vague/ambiguous	The sentence "Contextualize the implications through	3	
		2	
Insufficient guidance to	See the note under measurability -- the issues with the	3	
Vague/ambiguous	See note under measurability -- the issues with the	3	The type of task could

Mathematical Rigor		Developmental Appropriateness		
Mathematical Rigor	Mathematical Rigor	Developmental	Developmental	Developmental
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Applications	2—Developmentally		
	Applications	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Procedural Skill /	2—Developmentally		
	Conceptual	2—Developmentally		
	Conceptual	2—Developmentally		

Conceptual	2—Developmentally
Conceptual	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Applications	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally

Procedural Skill /	2—Developmentally
Procedural Skill /	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Conceptual	2—Developmentally
Applications	2—Developmentally

Integration of Appropriate Mathematical Practices			
Math Practice	Math Practice	Identify Better Aligned	Mathematical Practice
2—All named practices	2—All named		
0—No practices	2—All named	MP4; MP7	Looks like this was a typo and
0—No practices	2—All named	MP4; MP5	While MP 2 could be appropriate
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
1—Any named practices	2—All named	MP7	MP 3 is a reasonable match for
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	0—No practices	MP7; MP4	It is difficult to say whether
2—All named practices	2—All named	MP5	
2—All named practices	2—All named		
0—No practices	2—All named	MP3	MP 7 can align well with this
2—All named practices	2—All named	MP6; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
0—No practices	2—All named	MP4; MP8	Looks like this was a typo and
1—Any named practices	1—Any named	MP7; MP5	While MP 2 could be appropriate
2—All named practices	2—All named		
2—All named practices	2—All named	MP7	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named		

2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
1—Any named practices	2—All named	MP7	MP 3 is a reasonable match for
2—All named practices	2—All named		
0—No practices	0—No practices	MP3; MP7	Modeling is not addressed in the
2—All named practices	2—All named		
2—All named practices	2—All named	MP3	
0—No practices	2—All named	MP4; MP8	Looks like this was a typo and
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named	MP3	
1—Any named practices	1—Any named	MP7; MP5	While MP 2 could be appropriate
2—All named practices	2—All named		
2—All named practices	2—All named	MP7	
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named		
2—All named practices	2—All named	MP3; MP7	
2—All named practices	2—All named	MP7	
1—Any named practices	2—All named	MP7	MP 3 is a reasonable match for
2—All named practices	2—All named		
0—No practices	1—Any named	MP7	MP 3 is appropriate. Modeling is
2—All named practices	2—All named		
2—All named practices	2—All named		
2—All named practices	2—All named	MP3	
0—No practices	0—No practices		Language in the standard does
2—All named practices	2—All named	MP5	The phrase "using technology"
2—All named practices	2—All named	MP4	
2—All named practices	2—All named		
2—All named practices	2—All named	MP6	

2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named
0—No practices	0—No practices
2—All named practices	2—All named
2—All named practices	2—All named
0—No practices	0—No practices

It is difficult to say whether

It is possible that MP6 could be

Notes	Memo	Part/Pathway
Included in memo counts.	Memo	Math for All
Included in memo counts.	Memo	Math for All
Included in memo counts.	Memo	Math for All
Included in memo counts.	Memo	Math for All
Included in memo counts.	Memo	Math for All
Included in memo counts.	Memo	Math for All
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Standard is listed twice in the standards	Memo	Intermediate
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Code CS3.F.15 is also used to code this		Intermediate
Code CS3.F.16 is also used to code this		Intermediate
Standard is listed twice in the standards	Memo	Intermediate
Standard is listed twice in the standards	Memo	Intermediate
Standard is listed twice in the standards		Calculus
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Standard is listed twice in the standards		Calculus
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Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus
Code CS3.F.16 is also used to code this	Memo	Calculus
Code CS3.F.17 is also used to code this	Memo	Calculus
Code CS3.F.17 is listed twice in the	Memo	Calculus
Standard is listed twice in the standards		Calculus
Standard is listed twice in the standards		Calculus
Included in memo counts.	Memo	Data Science
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Memo Data Science

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Memo Data Science

Domain	Standard ID	Standard ID	AGA Course	Standard Text	Measurability
Algebra (A)	S1. A. 1	A1. SSE. 1	A1	<i>Use the structure</i> of linear expressions and	2—Measurable &
Algebra (A)	S2. A. 1	A1. SSE. 2	A1	<i>Use the structure</i> of quadratic and exponential	2—Measurable &
Algebra (A)	S1. A. 2	A1. CE. 1	A1	<i>Build symbolic models</i> of linear equations and	2—Measurable &
Algebra (A)	S2. A. 3	A1. CE. 2	A1	<i>Build symbolic models</i> of linear and quadratic	2—Measurable &
Algebra (A)	S1. A. 3	A1. CE. 3	A1	Use algebraic properties of equality <i>as tools</i>	2—Measurable &
Algebra (A)	S1. A. 6	A1. CE. 4	A1	Interpret whether a solution of a system of	2—Measurable &
Algebra (A)	S2. A. 2	A1. CE. 5	A1	Use addition, subtraction and multiplication to	2—Measurable &
Algebra (A)	S1. A. 4	A1. REI. 1	A1	Solve linear equations and inequalities <i>using</i>	2—Measurable &
Algebra (A)	S1. A. 5	A1. REI. 2	A1	Solve systems of linear equations <i>using</i>	2—Measurable &
Algebra (A)	S1. A. 7	A1. REI. 3	A1	<i>Build and use graphic models</i> to analyze and	2—Measurable &
Algebra (A)	S1. A. 8	A1. REI. 4	A1	<i>Build and use graphic models</i> to show the	2—Measurable &
Algebra (A)	S2. A. 4	A1. REI. 5	A1	<i>Select and use algebraic and technologic tools</i>	2—Measurable &
Algebra (A)	S2. A. 5	A1. REI. 6	A1	<i>Select and use algebraic and technologic tools</i>	2—Measurable &
Number System	S2. NS. 1	A1. NS. 1	A1	Extend <i>understanding of the structure</i> of	0—Not
Number System	S2. NS. 2	A1. NS. 2	A1	Use the properties of exponents <i>as tools</i> to	2—Measurable &
Number System	S2. NS. 3	A1. NS. 3	A1	Use the Fundamental Theorem of Algebra to	2—Measurable &
Number System	S2. NS. 4	A1. NS. 4	A1	<i>Build and use models</i> to solve quadratic	2—Measurable &
Functions (F)	S1. F. 1	A1. IF. 1	A1	<i>Construct and communicate clear arguments</i> to	2—Measurable &
Functions (F)	S1. F. 2	A1. IF. 2	A1	<i>Understand the structure</i> of function notation,	1—Partially
Functions (F)	S1. F. 3	A1. IF. 3	A1	Evaluate functions for inputs in their domains	2—Measurable &
Functions (F)	S1. F. 4	A1. IF. 4	A1	<i>Build and use</i> explicit and recursive equations	2—Measurable &
Functions (F)	S1. F. 5	A1. IF. 5	A1	Understand and interpret the features of a	1—Partially
Functions (F)	S2. F. 5	A1. IF. 6	A1	<i>Select and use algebraic tools</i> to create	1—Partially
Functions (F)	S2. F. 2	A1. IF. 7	A1	Determine the average rate of change of a	2—Measurable &
Functions (F)	S2. F. 3	A1. IF. 8	A1	<i>Build graphic representations</i> that show key	1—Partially
Functions (F)	S2. F. 4	A1. IF. 9	A1	Compare and contrast the properties of	2—Measurable &
Functions (F)	S1. F. 8	A1. BF. 1	A1	<i>Build</i> a function that models linear or	1—Partially
Functions (F)	S2. F. 6	A1. BF. 2	A1	<i>Build</i> a function that <i>models</i> a quadratic	1—Partially
Functions (F)	S1. F. 9	A1. BF. 3	A1	<i>Construct arguments</i> that <i>use the structures and</i>	2—Measurable &
Functions (F)	S1. F. 10	A1. BF. 4	A1	<i>Use structures and patterns</i> to identify the	1—Partially
Functions (F)	S2. F. 7	A1. BF. 5	A1	Identify the effect on the graph when replacing	1—Partially
Functions (F)	S1. F. 11	A1. BF. 6	A1	<i>Communicate clear and reasonable arguments</i> to	1—Partially
Functions (F)	S2. F. 8	A1. BF. 7	A1	<i>Communicate clear and reasonable arguments</i> to	1—Partially

Extended Topics

Matrices	(M)	S1.M.1	A1.M.1	A1	Add, subtract, and multiply matrices of	2—Measurable &
Matrices	(M)	S1.M.2	A1.M.2	A1	Use matrices to represent and manipulate data	1—Partially
Matrices	(M)	S1.M.3	A1.M.3	A1	<i>Communicate</i> understanding that, unlike	2—Measurable &
Matrices	(M)	S1.M.4	A1.M.4	A1	Communicate understanding that the zero and	2—Measurable &
Matrices	(M)	S1.M.5	A1.M.5	A1	Use 2x2 matrices to <i>model</i> transformations of	2—Measurable &
Matrices	(M)	S1.M.6	A1.M.6	A1	<i>Model</i> a system of linear equations as a single-	2—Measurable &
Matrices	(M)	S1.M.7	A1.M.7	A1	Solve systems of linear equations up to three	2—Measurable &
Matrices	(M)	S1.M.8	A1.M.8	A1	Find the inverse of a matrix if it exists <i>using</i>	2—Measurable &

Measureability		Instructional Focus	
Measurability Issue	Measurability Notes	Instructional	Instructional
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
		Widely applicable	1—Partially
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
		Widely applicable	1—Partially
		Widely applicable	2—Clear and
	The multiple expectations in	Widely applicable	1—Partially
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
Non-observable	"Understanding" is non-	Widely applicable	1—Partially
		Widely applicable	2—Clear and
		Appropriate	2—Clear and
		Appropriate	2—Clear and
		Widely applicable	2—Clear and
Non-observable verb	Understand is a non-observable	Widely applicable	2—Clear and
		Widely applicable	2—Clear and
		Widely applicable	2—Clear and
Non-observable verb	"Understand" is a non-	Widely applicable	2—Clear and
Multiple	Given the focus of this	Widely applicable	1—Partially
		Widely applicable	2—Clear and
Too vague	The measurability issues here	Widely applicable	0—Not clear and
		Widely applicable	2—Clear and
Multiple	These are really distinct PEs	Widely applicable	2—Clear and
Too vague	The relationship between the	Widely applicable	2—Clear and
		Widely applicable	2—Clear and
Multiple	Explore are non-observable	Widely applicable	2—Clear and
Too vague; Poorly	Measurability issues here are	Widely applicable	1—Partially
Multiple	Specifying the relation of the	Widely applicable	1—Partially
Multiple	Specifying the relation of the	Widely applicable	1—Partially

[illegible]

Clarity & Accessibility		DOK	
Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1-	DOK Notes
		2	interpret their meaning in
		2	
Mathematical	"Build symbolic models of linear	2	Solving problems with
		2	
		2	
Unclear grammar/typo(s)	"Interpret whether a solution of a	2	
		2	
Mathematical	"Communicate clear arguments for	3	"Justify" bumps it to 3 but
		3	"Justify" bumps it to 3 but
		2	routine
		2	routine
		2	
		2	
Insufficient guidance to	Because the standard is poorly	2	
		2	
		3	
		2	
		3	
		2	Because this standard uses a
		2	
		2	
		2	
Insufficient guidance to	Because the algebraic tools are	2	
		2	
Vague/ambiguous	The first PE is unnecessarily	2	
		2	
		2	
		3	
		3	
		2	
Vague/ambiguous	The second sentence is extremely	3	
Vague/ambiguous	"Communicate clear and reasonable	3	
Vague/ambiguous	"Communicate clear and reasonable	3	



		2	
Unclear grammar/typo(s)	The text "by connecting it with	2	
		2	
		2	Because this standard uses a
		2	Because this standard uses a
		2	
		2	
		2	

Mathematical Rigor		Developmental Appropriateness		
Mathematical Rigor	Mathematical Rigor	Developmental	Developmental	Developmental
Conceptual	interpreting	2—Developmentally		
Procedural Skill /		2—Developmentally		
Conceptual	Some <i>could</i> be	2—Developmentally		
Procedural Skill /		2—Developmentally		
Conceptual	A student could	2—Developmentally		
Applications;	Second part could	2—Developmentally		
Procedural Skill /		2—Developmentally		
Applications;		2—Developmentally		
Applications;		2—Developmentally		
Applications;		2—Developmentally		
Applications;		2—Developmentally		
Procedural Skill /		2—Developmentally		
Procedural Skill /		2—Developmentally		
Procedural Skill /		2—Developmentally		
Procedural Skill /		2—Developmentally		
Conceptual		2—Developmentally		For all of these,
Conceptual		2—Developmentally		For all of these,
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Procedural Skill /		2—Developmentally		
Procedural Skill /		2—Developmentally		
Procedural Skill /		2—Developmentally		
Conceptual		2—Developmentally		
Procedural Skill /		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Conceptual		2—Developmentally		
Procedural Skill /		2—Developmentally		



Procedural Skill /	2—Developmentally	For all of these,
Procedural Skill /	2—Developmentally	For all of these,
Conceptual	2—Developmentally	For all of these,
Conceptual	2—Developmentally	For all of these,
Procedural Skill /	2—Developmentally	For all of these,
Procedural Skill /	2—Developmentally	For all of these,
Procedural Skill /	2—Developmentally	For all of these,
Conceptual	2—Developmentally	For all of these,

[illegible]

2—All named practices	2—All named
1—Any named practices	2—All named
0—No practices	0—No practices
0—No practices	0—No practices
2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named
2—All named practices	2—All named

It is not clear whether MP2 not integrated
The standard does not address MP3;
The standard does not address MP3;

Domain	Standard ID (int)	Standard ID (AGA)	AGA Course	Standard Text
Geometry (G)	S1. G. 1	G. CO. 1	G	<i>Describe and represent the underlying structure</i>
Geometry (G)	S1. G. 2	G. CO. 2	G	<i>Construct and clearly communicate definitions of the rigid transformations to show that these transformations are functions that take points in the plane as inputs and give corresponding points as outputs. (MP 3)</i>
Geometry (G)	S1. G. 3	G. CO. 3	G	<i>Select and use tools to strategically perform</i>
Geometry (G)	S1. G. 4	G. CO. 4	G	<i>Construct and communicate clear and reasonable</i>
Geometry (G)	S1. G. 5	G. CO. 5	G	<i>Precisely construct geometric objects including</i>
Geometry (G)	S1. G. 6	G. CO. 6	G	<i>Construct, justify and communicate clear</i>
Geometry (G)	S1. G. 7	G. CO. 7	G	<i>Justify whether or not a quadrilateral has the</i>
Geometry (G)	S2. G. 1	G. CO. 8	G	<i>Construct, justify and communicate clear and</i>
Geometry (G)	S2. G. 1 (a)	G. CO. 8 (a)	G	<i>a. theorems about lines and angles; vertical</i>
Geometry (G)	S2. G. 1 (b)	G. CO. 8 (b)	G	<i>b. theorems about triangles; measures of</i>
Geometry (G)	S2. G. 1 (c)	G. CO. 8 (c)	G	<i>c. theorems about parallelograms; opposite</i>
Geometry (G)	S2. G. 2	G. SRT. 1	G	<i>Describe and represent the underlying</i>
Geometry (G)	S2. G. 3	G. SRT. 2	G	<i>Build and use models that include congruence</i>
Geometry (G)	S2. G. 4	G. SRT. 3	G	<i>Describe and represent side ratios in right</i>
Geometry (G)	S2. G. 5	G. SRT. 4	G	<i>Verify, justify and communicate the</i>
Geometry (G)	S2. G. 6	G. SRT. 5	G	<i>Flexibly, accurately, and efficiently use</i>
Geometry (G)	S2. G. 7	G. C. 1	G	<i>Construct, justify and communicate a clear and reasonable argument that all circles are similar. Connect the underlying structures of similarity to relationships between angles, segments and arcs within circles. (MP 3, 7)</i>
Geometry (G)	S2. G. 8	G. C. 2	G	<i>Describe and represent structures and patterns</i>
Geometry (G)	S2. G. 9	G. C. 3	G	<i>Describe and represent, using similarity, the</i>
Geometry (G)	S2. G. 10	G. C. 4	G	<i>Use structures and patterns to work with</i>
Geometry (G)	S2. G. 11	G. GMD. 1	G	<i>Attend to precision and reasonableness with</i>
Geometry (G)	S3. G. 1	G. GMD. 2	G	<i>Use geometric shapes, their measures, and their</i>

Geometry (G)	S3. G. 2	G. GMD. 3	G	Apply concepts of density based on area and
Geometry (G)	S3. G. 3	G. GMD. 4	G	<i>Attend to precision and reasonableness</i> while
Data Science (D)	S1. D. 1	G. D. 1	G	<i>Ask statistical questions</i> to investigate
Data Science (D)	S1. D. 2	G. D. 2	G	<i>Select the appropriate statistical tools</i> to
Data Science (D)	S1. D. 3	G. D. 3	G	Compare two or more distributions with
Data Science (D)	S1. D. 4	G. D. 4	G	Analyze data to explore the association between
Data Science (D)	S1. D. 5	G. D. 5	G	Analyze and use statistical evidence to
Data Science (D)	S1. D. 6	G. D. 6	G	<i>Justify</i> statistical reasoning to evaluate
Data Science (D)	S2. D. 1	G. D. 7	G	<i>Ask statistical questions</i> to investigate
Data Science (D)	S2. D. 2	G. D. 8	G	<i>Select the appropriate statistical tools</i> to
Data Science (D)	S2. D. 3	G. D. 9	G	Analyze data to explore the association between
Data Science (D)	S2. D. 4	G. D. 10	G	Use the statistical evidence to evaluate
Extended Topics				
Vectors	S2. V. 1	G. V. 1	G	Recognize vector quantities as having both
Vectors	S2. V. 2	G. V. 2	G	Find and <i>represent</i> the components of a vector
Vectors	S2. V. 3	G. V. 3	G	Add and subtract vectors and multiply a vector
Vectors	S2. V. 4	G. V. 4	G	Multiply a vector (regarded as a matrix with
Vectors	S2. V. 5	G. V. 5	G	Solve <i>real world and mathematical problems</i>
Geometry	S2. G. 12	G. CS. 1	G	<i>Derive</i> the equation of a parabola given a focus
Geometry	S2. G. 13	G. CS. 2	G	<i>Derive</i> the equations of ellipses and hyperbolas

Measureability			Instructional Focus	
Measurability	Measurability Issue	Measurability Notes	Instructional	Instructional
2—Measurable &			Widely applicable	
1—Partially measurable / well specified	Too vague	It is not clear what is meant by "construct definitions of the rigid transformations"; while being able to describe and use the definitions makes sense, actually coming up with the definitions of rigid transformations is probably not appropriate work for S1.	Widely applicable prerequisite	As written, constructing the definitions of rigid transformations is not appropriate work, but we give the benefit of the
0—Not	Too vague; Non-	"Select and use tools to strategically	Widely applicable	
0—Not	Too vague; Poorly	"clear and reasonable" is subjective; it	Widely applicable	
1—Partially	Poorly specified	It is not clear what tools students are	Widely applicable	
2—Measurable &			Widely applicable	
2—Measurable &			Widely applicable	
1—Partially	Non-observable verb	"develop flexibility" is not an observable	Widely applicable	
			Widely applicable	
			Widely applicable	
			Widely applicable	
2—Measurable &			Widely applicable	
1—Partially	Poorly specified	The first sentence is not measurable due to	Widely applicable	
1—Partially	Poorly specified	"Describe and represent side ratios in right	Widely applicable	
2—Measurable &			Widely applicable	
2—Measurable &			Widely applicable	
1—Partially measurable / well specified	Poorly specified	"Connect the underlying structures of similarity to relationships between angles, segments and arcs within circles" is not clear enough to understand what is expected of students.	Widely applicable prerequisite	
2—Measurable &			Widely applicable	
0—Not	Too vague; Poorly	The measurability issues here are related to	Widely applicable	
1—Partially		"Work with" is vague and poorly specified.	Widely applicable	
0—Not	Too vague; Poorly	"Attend to precision and reasonableness" are	Widely applicable	
1—Partially	Poorly specified	"Ask targeted questions" is poorly specified	Appropriate	

2—Measurable &			Appropriate
1—Partially	Poorly specified	"Attend to precision and reasonableness while	Appropriate
1—Partially	Too vague; Multiple	"Ask statistical questions to investigate	Widely applicable
1—Partially	Multiple	"Select the appropriate statistical tools to	Widely applicable
1—Partially	Multiple	Recognize is a non-observable verb	Widely applicable
1—Partially	Multiple	"to explore the association" is non-	Widely applicable
0—Not	Poorly specified;	"Analyze and use statistical evidence to	Widely applicable
1—Partially	Multiple	"justify statistical reasoning" is very broad	Widely applicable
1—Partially	Non-observable	The verb "investigate" is difficult to	Widely applicable
1—Partially	Multiple	"Select the appropriate statistical tools to	Widely applicable
1—Partially	Multiple	This standard includes 3-4 distinct PEs which	Widely applicable
1—Partially	Multiple	What is the difference between "use	Widely applicable

1—Partially	Non-observable verb	"Recognize" is not measurable. Consider what	Appropriate
2—Measurable &			Appropriate
1—Partially	Too vague	The second sentence is vague and not clear.	Appropriate
1—Partially	Too vague; Poorly	"Work with" is vague and poorly specified.	Appropriate
2—Measurable &			Appropriate
2—Measurable &			Appropriate
2—Measurable &			Appropriate

Clarity & Accessibility			
Clarity & Accessibility	Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1-2)
2—Clear and			2
1—Partially clear and accessible	Vague/ambiguous language; Insufficient guidance to understand PE	Related to the measurability issue, it is not clear what is meant by "construct definitions of the rigid transformations," so it is hard to know what the PE is.	2
0—Not clear and	Insufficient guidance to	Related to the measurability issues, the PEs for this	2
0—Not clear and	Vague/ambiguous	Related to the measurability issue, the language in the	3
1—Partially	Insufficient guidance to	Again, the poor specificity of the standard makes it	2
2—Clear and			3
2—Clear and			3
2—Clear and			3
2—Clear and			3
2—Clear and			2
1—Partially	Insufficient guidance to	Because the first sentence is poorly specified, it is not	3
1—Partially	Vague/ambiguous	Because the first sentence is poorly specified, it is not	2
2—Clear and			3
2—Clear and			2
1—Partially clear and accessible	Vague/ambiguous language; Insufficient guidance to understand PE	Because the second sentence is poorly specified, it is not possible to tell what the PE is. We suspect that what is intended is something like "Using the similarity of all circles, identify and describe relationships between angles, segments and arcs within circles."	3
2—Clear and			2
1—Partially	Vague/ambiguous	The phrase "describe and represent" creates confusion here	2
1—Partially	Vague/ambiguous	Because "use structures and patterns" and "work with	2
1—Partially	Vague/ambiguous	Because "Attend to precision and reasonableness" is poorly	2
1—Partially	Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	3

1—Partially	Unclear grammar/typo(s)	The phrase "concepts of density" (which also appears in	2
1—Partially	Insufficient guidance to	The clause "Attend to precision and reasonableness while	2
1—Partially	Insufficient guidance to	Related to the measurability issue, more guidance is needed	3
1—Partially	Unclear grammar/typo(s)	The second sentence is unclear.	3
2—Clear and			3
2—Clear and			3
1—Partially	Vague/ambiguous	Related to the measurability issues, this standard is vague	3
2—Clear and			3
2—Clear and			3
2—Clear and			4
2—Clear and			2
2—Clear and			3
2—Clear and			2
2—Clear and			2
1—Partially	Vague/ambiguous language	The second sentence is vague and not clear.	2
1—Partially	Unclear grammar/typo(s);	The text "by connecting it with and without a context" is	2
2—Clear and			2
2—Clear and			2
2—Clear and			2

DOK	Mathematical Rigor		Developmental Appropriateness	
DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental	Developmental
	Procedural Skill /		2—Developmentally	
	Procedural Skill / Fluency; Conceptual Understanding		2—Developmentally appropriate	
	Procedural Skill / Conceptual		2—Developmentally 2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill / Conceptual		2—Developmentally 2—Developmentally	
			2—Developmentally	
	Procedural Skill / Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Conceptual Understanding		2—Developmentally appropriate	
	Procedural Skill /		2—Developmentally	
	Procedural Skill / Conceptual		2—Developmentally 2—Developmentally	
The type of task could	Procedural Skill / Applications		2—Developmentally 2—Developmentally	

The type of task could	Applications	2—Developmentally
The type of task could	Procedural Skill /	2—Developmentally
	Applications;	2—Developmentally
	Applications	2—Developmentally
	Conceptual	2—Developmentally
	Conceptual	2—Developmentally
	Applications	2—Developmentally
	Conceptual	2—Developmentally
	Conceptual	2—Developmentally
	Conceptual	2—Developmentally
	Conceptual	2—Developmentally
	Conceptual	2—Developmentally

[illegible]

ss	Integration of Appropriate Mathematical Practices		
	Developmental	Math Practice	Identify Better Aligned
		2—All named practices	2—All named
		0—No practices integrated	2—All named practices appropriate
			MP1
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		1—Any named practices	1—Any named
		2—All named practices integrated	2—All named practices appropriate
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named
		2—All named practices	2—All named

2—All named practices	2—All named	MP7; MP4
0—No practices	0—No practices	
2—All named practices	2—All named	MP4
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	
1—Any named practices	2—All named	

For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	2—All named practices	2—All named	
For all of these,	0—No practices	2—All named	MP5
For all of these,	0—No practices	2—All named	MP7
For all of these,	0—No practices	2—All named	MP7

Communicating a definition doesn't
communicate an argument.

MP2 is not integrated. The standard
MP 3 talks about communicating
reasoning and justifying a
mathematical statement, so the
practice is both appropriate to the
content and well-integrated.
MP 7 - While "connect the
underlying structures of

It is difficult to say whether MP 2	Included in memo counts.	Memo	Math for
	Included in memo counts.	Memo	Math for

MP8 is not quite there yet.

MP2 is not integrated. The standard	
MP3 is not integrated; does not	Code S2.G.13 is also used to
MP3 is not integrated; does not	Code S2.G.14 is also used to

Domain	Standard ID	Standard ID	AGA Course	Standard Text	Measurability Score (0–
Algebra (A)	S3.A.1	A2.A.1	A2	<i>Interpret</i> polynomial expressions given in	2—Measurable & well
Algebra (A)	S3.A.2	A2.A.2	A2	Create equations and inequalities in one	2—Measurable & well
Algebra (A)	S3.A.3	A2.A.3	A2	For exponential models, express as a	2—Measurable & well
Algebra (A)	S3.A.4	A2.A.4	A2	Solve an equation of the form $f(x)=c$ for a	2—Measurable & well
Functions (F)	S3.F.1	A2.F.1	A2	Understand and interpret the features of	1—Partially
Functions (F)	S3.F.2	A2.F.2	A2	<i>Build and use models</i> of periodic phenomena	0—Not measurable or
Functions (F)	S3.F.3	A2.F.3	A2	Understand and interpret key features	1—Partially
Functions (F)	S3.F.4	A2.F.4	A2	<i>Build graphical representations</i> that show	2—Measurable & well
Functions (F)	S3.F.5	A2.F.5	A2	Identify the effect on the graph when	1—Partially
Functions (F)	S3.F.6	A2.F.6	A2	<i>Use the attributes of inverse</i>	2—Measurable & well
Functions (F)	S3.F.7	A2.F.7	A2	Determine which function type (polynomial,	2—Measurable & well
Functions (F)	S3.F.8	A2.F.8	A2	<i>Justify</i> that a quantity increasing	2—Measurable & well
Data Science	S3.D.1	A2.D.1	A2	<i>Describe and represent structures and</i>	1—Partially
Data Science	S3.D.2	A2.D.2	A2	<i>Build and use probability models</i> including	2—Measurable & well
Data Science	S3.D.3	A2.D.3	A2	<i>Use multiple representations as tools to</i>	1—Partially
Data Science	S3.D.4	A2.D.4	A2	Use the mean and standard deviation of a	1—Partially
Data Science	S3.D.5	A2.D.5	A2	<i>Formulate statistical investigative</i>	2—Measurable & well
Data Science	S3.D.6	A2.D.6	A2	<i>Select appropriate statistical tools to</i>	1—Partially
Data Science	S3.D.7	A2.D.7	A2	<i>Attend to precision and reasonableness</i>	1—Partially
Data Science	S3.D.8	A2.D.8	A2	Use statistical evidence from the analyses	1—Partially
Intermediate Algebra Pathway Standards					
Algebra (A)	CS3.A.5	CA2.A.5	A2IA, A2C	Create equations and inequalities in one	2—Measurable & well
Algebra (A)	CS3.A.6	CA2.A.6	A2IA, A2C	For exponential models, express as a	2—Measurable & well
Algebra (A)	CS3.A.7	CA2.A.7	A2IA, A2C	Understand the inverse relationship	1—Partially
Algebra (A)	CS3.A.10	CA2.A.10	A2IA, A2C	Add, subtract, multiply and divide	2—Measurable & well
Algebra (A)	CS3.A.11	CA2.A.11	A2IA, A2C	Identify zeros of polynomial functions	2—Measurable & well
Algebra (A)	CS3.A.12	CA2.A.12	A2IA, A2C	Expand and simplify polynomial sums,	2—Measurable & well
Number System	CS3.NS.2	CA2.NS.2	A2IA, A2C	Using the Fundamental Theorem of Algebra,	2—Measurable & well
Number System	CS3.NS.3	CA2.NS.3	A2IA, A2C	Find solutions for polynomials that are	2—Measurable & well
Functions (F)	CS3.F.9	CA2.F.9	A2IA, A2C	Understand and interpret the features of	1—Partially
Functions (F)	CS3.F.10	CA2.F.10	A2IA, A2C	<i>Build and use models</i> of periodic phenomena	0—Not measurable or
Functions (F)	CS3.F.11	CA2.F.11	A2IA, A2C	Understand and interpret key features	1—Partially
Functions (F)	CS3.F.12	CA2.F.12	A2IA, A2C	<i>Build graphical representations</i> that show	2—Measurable & well

Functions (F)	CS3. F. 13	CA2. F. 13	A2IA, A2C	Identify the effect on the graph when	1—Partially
Functions (F)	CS3. F. 16	CA2. F. 16	A2IA, A2C	<i>Build a</i> new function from a composition of	2—Measurable & well
Functions (F)	CS3. F. 17	CA2. F. 17	A2IA, A2C	Verify by composition that one function is	2—Measurable & well
Geometry/Trig	CS3. G. 4	CA2. G. 1	A2IA, A2C	Understand and apply the Law of Sines and	1—Partially
Geometry/Trig	CS3. G. 5	CA2. G. 2	A2IA, A2C	<i>Use special triangles as tools</i> to	1—Partially

Measureability		Instructional Focus	
Measurability Issue	Measurability Notes	Instructional	Instructional
		Widely applicable	
		Widely applicable	
		Widely applicable	
		Widely applicable	
Non-observable	"Understand" is a non-observable verb. Consider instead	Widely applicable	
Multiple	This standard includes two distinct PEs that are	Appropriate	
Non-observable verb	"Understand" is a non-observable verb. Consider instead	Widely applicable	
		Widely applicable	
Multiple	"Attend to precision of language and notation while	Appropriate	
		Appropriate	
		Widely applicable	
		Appropriate	
Poorly specified	"Attend to precision and reasonableness when summarizing	Appropriate	
		Appropriate	
Multiple	"Understand" is a non-observable verb. If the goal is to	Appropriate	
Multiple	The first two PEs are closely related and it makes sense	Appropriate	
		Appropriate	
Multiple	"Understand" is a non-observable verb. Consider either	Widely applicable	
Poorly specified	"Attend to precision and reasonableness when summarizing	Appropriate	
Multiple	This standard contains four distinct PEs:	Appropriate	
		Widely applicable	
		Widely applicable	
Non-observable verb	"Understand" is a non-observable verb. Consider removing	Widely applicable	
		Widely applicable	
		Widely applicable	
		Widely applicable	
		Widely applicable	
		Widely applicable	
Non-observable verb	"Understand" is a non-observable verb. Consider instead	Widely applicable	
Multiple	This standard includes two distinct PEs that are	Appropriate	
Non-observable verb	"Understand" is a non-observable verb. Consider instead	Widely applicable	
		Widely applicable	

Multiple	"Attend to precision of language and notation while	Appropriate
		Appropriate
		Widely applicable
Non-observable verb	"Understand" is a non-observable verb. Consider removing	Appropriate
Multiple	The two PEs described here are both significant enough	Appropriate

Clarity & Accessibility			
Clarity &	Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1–
2—Clear and			2
2—Clear and			2
2—Clear and			2
2—Clear and			2
1—Partially	Vague/ambiguous	"Understand and interpret the features of ... functions	3
1—Partially	Vague/ambiguous language	Related to the note about poor specificity under the	2
2—Clear and			3
2—Clear and			2
1—Partially	Insufficient guidance to	The mathematical meaning of the second sentence is	3
2—Clear and			2
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	Current grammar is unclear; consider "Justify the fact	2
1—Partially	Unclear grammar/typo(s)	There is something unclear and difficult to parse about	3
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	The clause "Use multiple representations as tools to	3
2—Clear and			2
2—Clear and			3
1—Partially	Insufficient guidance to	"Understand and apply best practices for designing	3
1—Partially	Other; Unclear	"Attend to precision and reasonableness when	3
2—Clear and			3
1—Partially	Unclear grammar/typo(s)	"Model a context" is not technically incorrect, but may	2
2—Clear and			3
2—Clear and			2
2—Clear and			3
2—Clear and			2
1—Partially	Vague/ambiguous language	The word "simplify" in mathematics is ambiguous and	2
2—Clear and			2
2—Clear and			2
1—Partially	Vague/ambiguous	"Understand and interpret the features of ... functions	3
1—Partially	Vague/ambiguous language	Related to the note about poor specificity under the	2
2—Clear and			3
2—Clear and			2

1—Partially	Insufficient guidance to	The mathematical meaning of the second sentence is	3
2—Clear and			2
2—Clear and			2
2—Clear and			2
2—Clear and			2

DOK	Mathematical Rigor		Developmental Appropriateness	
DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental	Developmental
The type of task could	Conceptual		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The intent of this standard	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
Depending on what the	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
Giving the benefit of the	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	

	Procedural Skill /	2—Developmentally
The type of task could	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
The type of task could	Procedural Skill /	2—Developmentally

ss	Integration of Appropriate Mathematical Practices		
Developmental	Math Practice	Math Practice	Identify Better Aligned
	2—All named practices	2—All named	
	0—No practices	2—All named	MP4; MP7
	0—No practices	2—All named	MP4; MP5
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	MP7
	1—Any named practices	2—All named	MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP5
	2—All named practices	2—All named	
	0—No practices	2—All named	MP3
	2—All named practices	2—All named	MP6; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	0—No practices	2—All named	MP4; MP8
	1—Any named practices	1—Any named	MP7; MP5
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	MP7

1—Any named practices	2—All named	MP7
2—All named practices	2—All named	
0—No practices	0—No practices	MP3; MP7
2—All named practices	2—All named	
2—All named practices	2—All named	MP3

MP 3 is a reasonable match for	Standard is listed twice in the standards	Memo	Intermediate
	Code CS3.F.15 is also used to code this		Intermediate
Modeling is not addressed in the	Code CS3.F.16 is also used to code this		Intermediate
	Standard is listed twice in the standards	Memo	Intermediate
	Standard is listed twice in the standards	Memo	Intermediate

Domain	Standard ID	Standard ID	AGA Course	Standard Text	Measurability Score (0–
Algebra	S3. A. 1	A2. A. 1	A2	<i>Interpret</i> polynomial expressions given in	2—Measurable & well
Algebra	S3. A. 2	A2. A. 2	A2	Create equations and inequalities in one	2—Measurable & well
Algebra	S3. A. 3	A2. A. 3	A2	For exponential models, express as a	2—Measurable & well
Algebra	S3. A. 4	A2. A. 4	A2	Solve an equation of the form $f(x)=c$ for a	2—Measurable & well
Functions	S3. F. 1	A2. F. 1	A2	Understand and interpret the features of	1—Partially
Functions	S3. F. 2	A2. F. 2	A2	<i>Build and use models</i> of periodic phenomena	0—Not measurable or
Functions	S3. F. 3	A2. F. 3	A2	Understand and interpret key features	1—Partially
Functions	S3. F. 4	A2. F. 4	A2	<i>Build graphical representations</i> that show	2—Measurable & well
Functions	S3. F. 5	A2. F. 5	A2	Identify the effect on the graph when	1—Partially
Functions	S3. F. 6	A2. F. 6	A2	<i>Use the attributes of inverse</i>	2—Measurable & well
Functions	S3. F. 7	A2. F. 7	A2	Determine which function type (polynomial,	2—Measurable & well
Functions	S3. F. 8	A2. F. 8	A2	<i>Justify</i> that a quantity increasing	2—Measurable & well
Data	S3. D. 1	A2. D. 1	A2	<i>Describe and represent structures and</i>	1—Partially
Data	S3. D. 2	A2. D. 2	A2	<i>Build and use probability models</i> including	2—Measurable & well
Data	S3. D. 3	A2. D. 3	A2	<i>Use multiple representations as tools to</i>	1—Partially
Data	S3. D. 4	A2. D. 4	A2	Use the mean and standard deviation of a	1—Partially
Data	S3. D. 5	A2. D. 5	A2	<i>Formulate statistical investigative</i>	2—Measurable & well
Data	S3. D. 6	A2. D. 6	A2	<i>Select appropriate statistical tools</i> to	1—Partially
Data	S3. D. 7	A2. D. 7	A2	<i>Attend to precision and reasonableness</i>	1—Partially
Data	S3. D. 8	A2. D. 8	A2	Use statistical evidence from the analyses	1—Partially
Calculus Pathway Standards					
Algebra	CS3. A. 5	CA2. A. 5	A2C	Create equations and inequalities in one	2—Measurable & well
Algebra	CS3. A. 6	CA2. A. 6	A2C	For exponential models, express as a	2—Measurable & well
Algebra	CS3. A. 7	CA2. A. 7	A2C	Understand the inverse relationship	1—Partially
Algebra	CS3. A. 8	CA2. A. 8	A2C	<i>Model</i> arithmetic and geometric series,	2—Measurable & well
Algebra	CS3. A. 9	CA2. A. 9	A2C	<i>Build and use expressions</i> including sigma	2—Measurable & well

Algebra (A)	CS3. A. 10	CA2. A. 10	A2C	Add, subtract, multiply and divide polynomial and rational functions. <i>Justify</i> whether these operations result in new polynomial or rational functions. (MP 3)	2—Measurable & well specified
Algebra	CS3. A. 11	CA2. A. 11	A2C	Identify zeros of polynomial functions	2—Measurable & well
Algebra	CS3. A. 12	CA2. A. 12	A2C	Expand and simplify polynomial sums,	2—Measurable & well
Algebra	CS3. A. 13	CA2. A. 13	A2C	Solve compound inequalities in one	2—Measurable & well
Number	CS3. NS. 1	CA2. NS. 1	A2C	<i>Represent</i> addition, subtraction, and	2—Measurable & well
Number	CS3. NS. 2	CA2. NS. 2	A2C	Using the Fundamental Theorem of Algebra,	2—Measurable & well
Number	CS3. NS. 3	CA2. NS. 3	A2C	Find solutions for polynomials that are	2—Measurable & well
Functions	CS3. F. 9	CA2. F. 9	A2C	Understand and interpret the features of	1—Partially
Functions	CS3. F. 10	CA2. F. 10	A2C	<i>Build and use models</i> of periodic phenomena	0—Not measurable or
Functions	CS3. F. 11	CA2. F. 11	A2C	Understand and interpret key features	1—Partially
Functions	CS3. F. 12	CA2. F. 12	A2C	<i>Build graphical representations</i> that show	2—Measurable & well
Functions	CS3. F. 13	CA2. F. 13	A2C	Identify the effect on the graph when	1—Partially
Functions	CS3. F. 14	CA2. F. 14	A2C	Define a curve parametrically, and <i>create</i>	1—Partially
Functions	CS3. F. 15	CA2. F. 15	A2C	<i>Build</i> a new function from a composition of	2—Measurable & well
Functions	CS3. F. 16	CA2. F. 16	A2C	<i>Verify</i> by composition that one function is	2—Measurable & well
Functions	CS3. F. 17	CA2. F. 17	A2C	Use inverse trigonometric functions to	2—Measurable & well
Geometry/T	CS3. G. 4	CA2. G. 1	A2C	Understand and apply the Law of Sines and	1—Partially
Geometry/T	CS3. G. 5	CA2. G. 2	A2C	<i>Use special triangles as tools</i> to	1—Partially
Geometry/T	CS3. G. 6	CA2. G. 3	A2C	<i>Prove</i> the addition and subtraction	2—Measurable & well

Measureability		Instructional Focus	
Measurability Issue	Measurability Notes	Instructional	Instructional
		Widely applicable	
		Widely applicable	
		Widely applicable	
		Widely applicable	
Non-observable	"Understand" is a non-observable verb. Consider instead	Widely applicable	
Multiple	This standard includes two distinct PEs that are	Appropriate	
Non-observable verb	"Understand" is a non-observable verb. Consider instead	Widely applicable	
		Widely applicable	
Multiple	"Attend to precision of language and notation while	Appropriate	
		Appropriate	
		Widely applicable	
		Appropriate	
Poorly specified	"Attend to precision and reasonableness when summarizing	Appropriate	
		Appropriate	
Multiple	"Understand" is a non-observable verb. If the goal is to	Appropriate	
Multiple	The first two PEs are closely related and it makes sense	Appropriate	
		Appropriate	
Multiple	"Understand" is a non-observable verb. Consider either	Widely applicable	
Poorly specified	"Attend to precision and reasonableness when summarizing	Appropriate	
Multiple	This standard contains four distinct PEs:	Appropriate	
		Widely applicable	
		Widely applicable	
Non-observable verb	"Understand" is a non-observable verb. Consider removing	Widely applicable	
		Widely applicable	
		Widely applicable	

Widely applicable
prerequisite

Widely applicable
Widely applicable
Widely applicable
Widely applicable
Widely applicable
Widely applicable

Non-observable verb "Understand" is a non-observable verb. Consider instead
Multiple This standard includes two distinct PEs that are

Non-observable verb "Understand" is a non-observable verb. Consider instead
Multiple

Multiple "Attend to precision of language and notation while
Multiple This standard includes two distinct PEs (define a curve

Multiple
Widely applicable

Non-observable verb "Understand" is a non-observable verb. Consider removing
Multiple

Multiple The two PEs described here are both significant enough

Clarity & Accessibility			
Clarity &	Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1–
2—Clear and			2
2—Clear and			2
2—Clear and			2
2—Clear and			2
1—Partially	Vague/ambiguous	"Understand and interpret the features of ... functions	3
1—Partially	Vague/ambiguous language	Related to the note about poor specificity under the	2
2—Clear and			3
2—Clear and			2
1—Partially	Insufficient guidance to	The mathematical meaning of the second sentence is	3
2—Clear and			2
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	Current grammar is unclear; consider "Justify the fact	2
1—Partially	Unclear grammar/typo(s)	There is something unclear and difficult to parse about	3
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	The clause "Use multiple representations as tools to	3
2—Clear and			2
2—Clear and			3
1—Partially	Insufficient guidance to	"Understand and apply best practices for designing	3
1—Partially	Other; Unclear	"Attend to precision and reasonableness when	3
2—Clear and			3
1—Partially	Unclear grammar/typo(s)	See notes about the phrase "model a context" for	2
2—Clear and			3
2—Clear and			2
2—Clear and			2
2—Clear and			2

2—Clear and accessible			3
2—Clear and			2
1—Partially	Vague/ambiguous language	See notes about the word "simplify" in mathematics for	2
2—Clear and			2
2—Clear and			2
2—Clear and			2
2—Clear and			2
1—Partially	Vague/ambiguous	"Understand and interpret the features of ... functions	3
1—Partially	Vague/ambiguous language	Related to the note about poor specificity under the	2
2—Clear and			3
2—Clear and			2
1—Partially	Insufficient guidance to	The mathematical meaning of the second sentence is	3
2—Clear and			2
2—Clear and			2
2—Clear and			2
2—Clear and			3
2—Clear and			2
2—Clear and			2
2—Clear and			3

DOK	Mathematical Rigor		Developmental Appropriateness	
DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental	Developmental
The type of task could	Conceptual		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The intent of this standard	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
Depending on what the	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
Giving the benefit of the	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	

	Procedural Skill / Fluency; Conceptual Understanding	2—Developmentally appropriate
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Conceptual	2—Developmentally
The type of task could	Conceptual	2—Developmentally
	Conceptual	2—Developmentally
The type of task could	Conceptual	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
The type of task could	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally
The type of task could	Procedural Skill /	2—Developmentally
	Procedural Skill /	2—Developmentally

ss	Integration of Appropriate Mathematical Practices		
Developmental	Math Practice	Math Practice	Identify Better Aligned
	2—All named practices	2—All named	
	0—No practices	2—All named	MP4; MP7
	0—No practices	2—All named	MP4; MP5
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	MP7
	1—Any named practices	2—All named	MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP5
	2—All named practices	2—All named	
	0—No practices	2—All named	MP3
	2—All named practices	2—All named	MP6; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	0—No practices	2—All named	MP4; MP8
	1—Any named practices	1—Any named	MP7; MP5
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	

2—All named practices integrated	2—All named practices appropriate	MP7
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2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	MP3; MP7
2—All named practices	2—All named	
2—All named practices	2—All named	MP7
2—All named practices	2—All named	
2—All named practices	2—All named	MP3; MP7
2—All named practices	2—All named	
2—All named practices	2—All named	MP3; MP7
2—All named practices	2—All named	MP7
1—Any named practices	2—All named	MP7
2—All named practices	2—All named	
2—All named practices	2—All named	
0—No practices	1—Any named	MP7
2—All named practices	2—All named	
2—All named practices	2—All named	
2—All named practices	2—All named	MP3
2—All named practices	2—All named	MP3

ices

Mathematical Practice	Notes	Memo	Part/Pathway
Looks like this was a typo and While MP 2 could be appropriate	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
MP 3 is a reasonable match for	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
MP 7 can align well with this	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
Looks like this was a typo and While MP 2 could be appropriate	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Included in memo counts.	Memo	Calculus
	Included in memo counts.	Memo	Calculus

	Standard is listed twice in the standards PDF sheet.		Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards	Memo	Calculus
	Included in memo counts.	Memo	Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
MP 3 is a reasonable match for	Standard is listed twice in the standards		Calculus
	Included in memo counts.	Memo	Calculus
	Code CS3.F.16 is also used to code this	Memo	Calculus
MP 3 is appropriate. Modeling is	Code CS3.F.17 is also used to code this	Memo	Calculus
	Code CS3.F.17 is listed twice in the	Memo	Calculus
	Standard is listed twice in the standards		Calculus
	Standard is listed twice in the standards		Calculus
	Included in memo counts.	Memo	Calculus

Domain	Standard ID	Standard ID	AGA Course	Standard Text	Measurability Score (0–
Algebra	S3. A. 1	A2. A. 1	A2	<i>Interpret</i> polynomial expressions given in	2—Measurable & well
Algebra	S3. A. 2	A2. A. 2	A2	Create equations and inequalities in one	2—Measurable & well
Algebra	S3. A. 3	A2. A. 3	A2	For exponential models, express as a	2—Measurable & well
Algebra	S3. A. 4	A2. A. 4	A2	Solve an equation of the form $f(x)=c$ for a	2—Measurable & well
Functions	S3. F. 1	A2. F. 1	A2	Understand and interpret the features of	1—Partially
Functions	S3. F. 2	A2. F. 2	A2	<i>Build and use models</i> of periodic phenomena	0—Not measurable or
Functions	S3. F. 3	A2. F. 3	A2	Understand and interpret key features	1—Partially
Functions	S3. F. 4	A2. F. 4	A2	<i>Build graphical representations</i> that show	2—Measurable & well
Functions	S3. F. 5	A2. F. 5	A2	Identify the effect on the graph when	1—Partially
Functions	S3. F. 6	A2. F. 6	A2	<i>Use the attributes of inverse</i>	2—Measurable & well
Functions	S3. F. 7	A2. F. 7	A2	Determine which function type (polynomial,	2—Measurable & well
Functions	S3. F. 8	A2. F. 8	A2	<i>Justify</i> that a quantity increasing	2—Measurable & well
Data	S3. D. 1	A2. D. 1	A2	<i>Describe and represent structures and</i>	1—Partially
Data	S3. D. 2	A2. D. 2	A2	<i>Build and use probability models</i> including	2—Measurable & well
Data	S3. D. 3	A2. D. 3	A2	<i>Use multiple representations as tools to</i>	1—Partially
Data	S3. D. 4	A2. D. 4	A2	Use the mean and standard deviation of a	1—Partially
Data	S3. D. 5	A2. D. 5	A2	<i>Formulate statistical investigative</i>	2—Measurable & well
Data	S3. D. 6	A2. D. 6	A2	<i>Select appropriate statistical tools</i> to	1—Partially
Data	S3. D. 7	A2. D. 7	A2	<i>Attend to precision and reasonableness</i>	1—Partially
Data	S3. D. 8	A2. D. 8	A2	Use statistical evidence from the analyses	1—Partially
Data Science Pathway Standards					
Data	DS3. D. 9	DA2. D. 9	A2DS	<i>Represent</i> categorical and quantitative	1—Partially
Data	DS3. D. 10	DA2. D. 10	A2DS	Describe univariate displays of large sets	1—Partially
Data	DS3. D. 11	DA2. 11	A2DS	<i>Describe and represent relationships</i>	2—Measurable & well
Data	DS3. D. 12	DA2. 12	A2DS	<i>Build and use models</i> to describe	2—Measurable & well
Data	DS3. D. 13	DA2. 13	A2DS	<i>Describe the relationship</i> between the	2—Measurable & well
Data	DS3. D. 14	DA2. 14	A2DS	Use the central limit theorem to <i>represent</i>	2—Measurable & well
Data	DS3. D. 15	DA2. 15	A2DS	<i>Use statistical tools</i> to validate the	1—Partially
Data	DS3. D. 16	DA2. 16	A2DS	<i>Evaluate results</i> reached from data	0—Not measurable or
Data	DS3. D. 17	DA2. 17	A2DS	Determine the appropriate scope of	1—Partially
Data	DS3. D. 18	DA2. 18	A2DS	Understand the role of random assignment	1—Partially
Data	DS3. D. 19	DA2. 19	A2DS	<i>Construct reasonable arguments</i> regarding	1—Partially
Data	DS3. D. 20	DA2. 20	A2DS	<i>Use precision in practices</i> for handling	0—Not measurable or

Measureability		Instructional Focus	
Measurability Issue	Measurability Notes	Instructional	Instructional
		Widely applicable	
		Widely applicable	
		Widely applicable	
		Widely applicable	
Non-observable	"Understand" is a non-observable verb. Consider instead	Widely applicable	
Multiple	This standard includes two distinct PEs that are	Appropriate	
Non-observable verb	"Understand" is a non-observable verb. Consider instead	Widely applicable	
		Widely applicable	
Multiple	"Attend to precision of language and notation while	Appropriate	
		Appropriate	
		Widely applicable	
		Appropriate	
Poorly specified	"Attend to precision and reasonableness when summarizing	Appropriate	
		Appropriate	
Multiple	"Understand" is a non-observable verb. If the goal is to	Appropriate	
Multiple	The first two PEs are closely related and it makes sense	Appropriate	
		Appropriate	
Multiple	"Understand" is a non-observable verb. Consider either	Widely applicable	
Poorly specified	"Attend to precision and reasonableness when summarizing	Appropriate	
Multiple	This standard contains four distinct PEs:	Appropriate	
Poorly specified	The clause "Attend to precision in data processing by	Appropriate	
Poorly specified	"Ask targeted questions" is poorly specified and high	Appropriate	
		Appropriate	
		Widely applicable	
		Widely applicable	
		Appropriate	
Multiple	This standard includes two distinct PEs:	Appropriate	
Too broad; Too	This standard is so broad that it's not clear what the	Appropriate	
Poorly specified;	This standard could refer to a wide range of statistical	Appropriate	
Non-observable verb	"Understanding the role of random assignment...and	Appropriate	
Too broad; Poorly	Especially because data science standards are less	Appropriate	
Too vague; Too	"Use precision in practices for handling large sets of	Appropriate	

Clarity & Accessibility			
Clarity &	Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1–
2—Clear and			2
2—Clear and			2
2—Clear and			2
2—Clear and			2
1—Partially	Vague/ambiguous	"Understand and interpret the features of ... functions	3
1—Partially	Vague/ambiguous language	Related to the note about poor specificity under the	2
2—Clear and			3
2—Clear and			2
1—Partially	Insufficient guidance to	The mathematical meaning of the second sentence is	3
2—Clear and			2
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	Current grammar is unclear; consider "Justify the fact	2
1—Partially	Unclear grammar/typo(s)	There is something unclear and difficult to parse about	3
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	The clause "Use multiple representations as tools to	3
2—Clear and			2
2—Clear and			3
1—Partially	Insufficient guidance to	"Understand and apply best practices for designing	3
1—Partially	Other; Unclear	"Attend to precision and reasonableness when	3
2—Clear and			3
1—Partially	Insufficient guidance to	See note under measurability -- the issues with the	2
1—Partially	Vague/ambiguous language	"Targeted" is high inference, requiring the educator or	2
2—Clear and			2
1—Partially	Unclear grammar/typo(s)	There is something unclear about the construction of of	3
2—Clear and			3
2—Clear and			2
1—Partially	Other	The clarity issue here is related to the measurability	3
0—Not clear and	Insufficient guidance to	Similar to the issue described under measurability, it	3
1—Partially	Jargon; Vague/ambiguous	The sentence "Contextualize the implications through	3
2—Clear and			2
1—Partially	Insufficient guidance to	See the note under measurability -- the issues with the	3
0—Not clear and	Vague/ambiguous	See note under measurability -- the issues with the	3

DOK	Mathematical Rigor		Developmental Appropriateness	
DOK Notes	Mathematical Rigor	Mathematical Rigor	Developmental	Developmental
The type of task could	Conceptual		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The intent of this standard	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Procedural Skill /		2—Developmentally	
Depending on what the	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
Giving the benefit of the	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
Because of the specificity and	Applications		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Procedural Skill /		2—Developmentally	
	Procedural Skill /		2—Developmentally	
The type of task could	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
	Conceptual		2—Developmentally	
The type of task could	Applications		2—Developmentally	

ss	Integration of Appropriate Mathematical Practices		
Developmental	Math Practice	Math Practice	Identify Better Aligned
	2—All named practices	2—All named	
	0—No practices	2—All named	MP4; MP7
	0—No practices	2—All named	MP4; MP5
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP3; MP7
	2—All named practices	2—All named	MP7
	1—Any named practices	2—All named	MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP5
	2—All named practices	2—All named	
	0—No practices	2—All named	MP3
	2—All named practices	2—All named	MP6; MP7
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	0—No practices	0—No practices	
	2—All named practices	2—All named	MP5
	2—All named practices	2—All named	MP4
	2—All named practices	2—All named	
	2—All named practices	2—All named	MP6
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	0—No practices	0—No practices	
	2—All named practices	2—All named	
	2—All named practices	2—All named	
	0—No practices	0—No practices	

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Mathematical Practice	Notes	Memo	Part/Pathway
Looks like this was a typo and While MP 2 could be appropriate	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
MP 3 is a reasonable match for	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
MP 7 can align well with this	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
	Included in memo counts.	Memo	Math for All
Language in the standard does The phrase "using technology"	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
It is difficult to say whether	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
	Included in memo counts.	Memo	Data Science
It is possible that MP6 could be	Included in memo counts.	Memo	Data Science

Domain	Standard ID	Standard ID	AGA Course?	Standard Text	Measurability
Functions (F)	S1.F.6	Could not	Could not	<i>Build representations</i> that show key features of	1—Partially
Functions (F)	S1.F.7	Could not	Could not	Compare and contrast the properties of linear	2—Measurable &
Functions (F)	S2.F.1	Could not	Could not	Understand and interpret the features of a	1—Partially
Number System	S2.NS.5	Could not	Could not	Find the conjugate of a complex number; use	2—Measurable &
Number System	S2.NS.6	Could not	Could not	<i>Represent</i> complex numbers on the complex plane	2—Measurable &
Number System	S2.NS.7	Could not	Could not	<i>Represent</i> addition, subtraction, and	2—Measurable &

Note: Upon review, the three S2.NS standards are

Measureability		Instructional Focus		
Measurability Issue	Measurability Notes	Instructional	Instructional	Clarity &
Too vague	The measurability issues here	Widely applicable		0—Not clear and
		Widely applicable		2—Clear and
Non-observable verb	"Understand" is a non-	Widely applicable		1—Partially
	The 2 expectations are closely	Appropriate		2—Clear and
		Appropriate		2—Clear and
		Appropriate		2—Clear and

Clarity & Accessibility		DOK		Mathematical Rigor
Clarity & Accessibility	Clarity & Accessibility Notes	DOK Level (1–	DOK Notes	Mathematical Rigor
Vague/ambiguous	The first PE is unnecessarily	2		Procedural Skill /
		2		Conceptual
Insufficient guidance to	Related to the measurability	2		Conceptual
		2		Conceptual
		3		Procedural Skill /
		2		Procedural Skill /

cal Rigor	Developmental Appropriateness			
Mathematical Rigor	Developmental	Developmental	Developmental	Math Practice
	2—Developmentally			2—All named practices
	2—Developmentally			2—All named practices
	2—Developmentally			2—All named practices
	2—Developmentally		For all of these,	2—All named practices
	2—Developmentally		For all of these,	2—All named practices
	2—Developmentally		For all of these,	2—All named practices

Integration of Appropriate Mathematical Practices

Math Practice	Identify Better Aligned	Mathematical Practice Integration Notes
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2—All named		
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2—All named		
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2—All named		
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2—All named		
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2—All named		
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2—All named		
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