PARCC

Partnership for Assessment of Readiness for College and Careers

Informational Guide to Grade 8 Math Summative Assessment

Overview

This guide has been prepared to provide specific information about the PARCC Summative Assessments. The PARCC Assessments are based upon Evidence-Centered Design (ECD). Evidence-Centered Design is a systematic approach to test development. The design work begins with developing **claims** (the inferences we want to draw about what students know and can do). Next, **evidence statements** are developed to describe the tangible things we could point to, highlight or underline in a student work product that would help us prove our claims. Then, **tasks** are designed to elicit this tangible evidence.

This guide provides information on the following for the Grade 8 Summative Assessments:

- PARCC Claims Structure
- PARCC Task Types
- PARCC Test Blueprint
- PARCC Evidence Statements and Tables◊
- PARCC Assessment Policies

◊The Evidence Tables in this document are formatted to assist educators in understanding the content of each summative assessment. Evidence Statements are grouped to indicate those assessable as Type I items, Type II items, and Type III items.

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Claims Structure: Grade 8

Master Claim: On-Track for college and career readiness. The degree to which a student is college and career ready (or "on-track" to being ready) in mathematics. The student solves grade-level /course-level problems in mathematics as set forth in the Standards for Mathematical Content with connections to the Standards for Mathematical Practice.

Sub-Claim A: Major Content[1] with Connections to Practices
The student solves problems involving the Major Content[1] for her grade/course with connections to the Standards for Mathematical Practice.

29 points

Sub-Claim B: Additional & Supporting Content[2] with Connections to Practices
The student solves problems involving the Additional and Supporting Content[2] for her grade/course with connections to the Standards for Mathematical Practice.

11 points

Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content[3] (expressing mathematical reasoning)
The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others, and/or attending to precision when making mathematical statements.

14 points

Sub-Claim D: Highlighted Practice MP.4 with Connections to Content (modeling/application)

The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), *engaging particularly in the Modeling practice*, and where helpful making sense of problems and persevering to solve them (MP. 1),reasoning abstractly and quantitatively (MP. 2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).

12 points

Total Exam Score Points: 66 points

[1] For the purposes of the PARCC Mathematics assessments, the Major Content in a grade/course is determined by that grade level's Major Clusters as identified in the *PARCC Model Content Frameworks v.3.0* for Mathematics. Note that tasks on PARCC assessments providing evidence for this claim will sometimes require the student to apply the knowledge, skills, and understandings from across several Major Clusters.

[2] The Additional and Supporting Content in a grade/course is determined by that grade level's Additional and Supporting Clusters as identified in the *PARCC Model Content Frameworks v.3.0* for Mathematics.

[3] For Grades 3-8, Sub-Claim C includes only Major Content.

Overview of PARCC Mathematics Task Types

Task Type	Description	Reporting Categories	Scoring Method	Mathematical Practice(s)
Type I	conceptual understanding, fluency, and application	**Sub-Claim A:** Solve problems involving the major content for the grade level **Sub-Claim B:** Solve problems involving the additional and supporting content for the grade level	computer-scored only	can involve any or all practices
Type II	written arguments/ justifications, critique of reasoning, or precision in mathematical statements	**Sub-Claim C:** Express mathematical reasoning by constructing mathematical arguments and critiques	computer- and hand-scored tasks	primarily MP.3 and MP.6, but may also involve any of the other practices
Type III	modeling/application in a real-world context or scenario	**Sub-Claim D:** solve real-world problems engaging particularly in the modeling practice	computer- and hand-scored tasks	primarily MP.4, but may also involve any of the other practices

Grade 8 High Level Blueprint

Summative Assessment *			
	Task Type/ Point Value	Number of Tasks	Total Points
Number and Point Values for each Task Type	Type I 1 Point	22	22
	Type I 2 Point	5	10
	Type I 4 Point	2	8
	Type II 3 Point	2	6
	Type II 4 Point	2	8
	Type III 3 Point	2	6
	Type III 6 Point	1	6
	Total	**36**	**66**
Percentage of Assessment Points by Task Type	Type I	(40/66) 61%	
	Type II	(14/66) 21%	
	Type III	(12/66) 18%	

*The assessment will also include embedded field-test items which will not count towards a student's score.

Evidence Statement Keys

Evidence statements describe the knowledge and skills that an assessment item/task elicits from students. These are derived directly from the New Jersey Student Learning Standards for Mathematics (the standards), and they highlight the advances of the standards, especially around their focused coherent nature. The evidence statement keys for grades 3 through 8 will begin with the grade number. High school evidence statement keys will begin with "HS" or with the label for a conceptual category. Together, the five different types of evidence statements described below provide the foundation for ensuring that PARCC assesses the full range and depth of the standards which can be downloaded from http://www.state.nj.us/education/cccs/2016/math/standards.pdf

An Evidence Statement might:

1. **Use exact standard language** – For example:

   - 8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$. This example uses the exact language as standard 8.EE.1

2. **Be derived by focusing on specific parts of a standard** – For example: 8.F.5-1 and 8.F.5-2 were derived from splitting standard 8.F.5:

   - 8.F.5-1 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).
   - 8.F.5-2 Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

   Together these two evidence statements are standard 8.F.5:

   Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or 2 decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

3. **Be integrative (Int) –** Integrative evidence statements allow for the testing of more than one of the standards on a single item/task without going beyond the standards to create new requirements. An integrative evidence statement might be integrated across all content within a grade/course, all standards in a high school conceptual category, all standards in a domain, or all standards in a cluster. For example:

   - **Grade/Course – 4.Int.2**[§] (Integrated across Grade 4)
   - **Conceptual Category – F.Int.1**[§] (Integrated across the Functions Conceptual Category)
   - **Domain – 4.NBT.Int.1**[§] (Integrated across the Number and Operations in Base Ten Domain)
   - **Cluster** – **3.NF.A.Int.1**[§] (Integrated across the Number and Operations – Fractions Domain, Cluster A)

4. **Focus on mathematical reasoning–** A reasoning evidence statement (keyed with C) will state the type of reasoning that an item/task will require and the content scope from the standard that the item/task will require the student to reason about. For example:

- 3.C.2§ -- Base explanations/reasoning on the relationship between addition and subtraction or the relationship between multiplication and division.
  - Content Scope: Knowledge and skills are articulated in 3.OA.6
- 7.C.6.1§ – Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.
  - Content Scope: Knowledge and skills are articulated in 7.RP.2

Note: When the focus of the evidence statement is on reasoning, the evidence statement may also require the student to reason about securely held knowledge from a previous grade.

5. **Focus on mathematical modeling –** A modeling evidence statement (keyed with D) will state the type of modeling that an item/task will require and the content scope from the standard that the item/task will require the student to model about. For example:

- 4.D.2§ – Solve multi-step contextual problems with degree of difficulty appropriate to Grade 4 requiring application of knowledge and skills articulated in 3.OA.A, 3.OA.8,3.NBT, and/or 3.MD.

  Note: The example 4.D.2 is of an evidence statement in which an item/task aligned to the evidence statement will require the student to model on grade level, using securely held knowledge from a previous grade.

- HS.D.5§ - Given an equation or system of equations, reason about the number or nature of the solutions.
  - Content scope: A-REI.11, involving any of the function types measured in the standards.

§ The numbers at the end of the integrated, modeling and reasoning Evidence Statement keys are added for assessment clarification and tracking purposes. For example, 4.Int.2 is the second integrated Evidence Statement in Grade 4.

Grade 8 Evidence Statements
Listing by Type I, Type II, and Type III

The PARCC Evidence Statements for Grade 8 Mathematics are provided starting on the next page. The list has been organized to indicate whether items designed are aligned to an Evidence Statement used for Type I items, Type II items (reasoning), or Type III items (modeling).

Evidence Statements are presented in the order shown below and are color coded:

Peach – Evidence Statement is applicable to Type I items.

Lavender – Evidence Statement is applicable to Type II items.

Aqua – Evidence Statement is applicable to Type III items.

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Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	8.NS.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion, which repeats eventually into a rational number.	i) Tasks do not have a context. ii) An equal number of tasks require students to write a fraction a/b as a repeating decimal, or write a repeating decimal as a fraction. iii) For tasks that involve writing a repeating decimal as a fraction, the given decimal should include no more than two repeating decimals without non-repeating digits after the decimal point (i.e. 2.16666…, 0.23232323…).	MP.7 MP.8	No
B	8.NS.2	Use rational approximations of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g. π^2). *For example, by truncating the decimal expansion of* $\sqrt{2}$*, show that* $\sqrt{2}$ *is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*	i) Tasks do not have a context.	MP.5 MP.7 MP.8	No
A	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 1/3^3 = 1/27$	i) Tasks do not have a context. ii) Tasks focus on the properties and equivalence, not on simplification. iii) Half of the expressions involve one property; half of the expressions involves two or three properties. iv) Tasks should involve a single common base or a potential common base, such as, a task that includes 3, 9 and 27.	MP.7	No
A	8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2=p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	i) Tasks may or may not have a context. ii) Students are not required to simplify expressions such as $\sqrt{8}$ to $2\sqrt{2}$. Students are required to express the square roots of 1, 4, 9, 16, 25, 36, 49, 64, 81 and 100; and the cube roots of 1, 8, 27, and 64.	MP.7	No
A	8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as* 3×10^8 *and the population of the world as* 7×10^9*, and determine that the world population is more than 20 times larger.*	-	MP.4	No
A	8.EE.4-1	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.	i) Tasks have "thin context"[2] or no context. ii) Rules or conventions for significant figures are not assessed. iii) Some of the tasks involve both decimal and scientific notation.	MP.6 MP.7 MP.8	No
A	8.EE.4-2	Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	i) Tasks have "thin context"[2]. ii) Tasks require students to recognize 3.7E-2 (or 3.7e-2) from technology as 3.7×10^{-2}.	MP.6 MP.7 MP.8	Yes or No
A	8.EE.5-1	Graph proportional relationships, interpreting the unit rate as the slope of the graph.	i) Tasks may or may not contain context.	MP.1 MP.5	Yes

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.EE.5-2	Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.*	i) Tasks may or may not contain context.	MP.7	Yes
A	8.EE.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.	i) Tasks do not have a context. ii) Given a non-vertical line in the coordinate plane, tasks might for example require students to choose two pairs of points and record the rise, run, and slope relative to each pair and verify that they are the same. iii) For the explain aspect of 8.EE.6, see 8.C.5.1. iv) Tasks may assess simple graphing of lines from a linear equation in slope-intercept form.	MP.2 MP.7	Yes
A	8.EE.7b	Solve linear equations in one variable. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms	i) Tasks do not have a context.	MP.6 MP.7	No
A	8.EE.8a	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersections of their graphs, because points of intersection satisfy both equations simultaneously.	i) Tasks do not have a context.	MP.2 MP.5 MP.6 MP.7	No
A	8.EE.8b-1	Analyze and solve pairs of simultaneous linear equations. b. Solve systems of two linear equations in two variables algebraically.	i) An equal number of tasks have: • a zero coefficient, e.g., as in the system $-s + (3/4)t = 2$, $t = 6$, or; • non-zero whole-number coefficients, and whole-number solutions, or; • non-zero whole-number coefficients, and at least one fraction among the solutions, or; • non-zero integer coefficients (with at least one coefficient negative), or; • non-zero rational coefficients (with at least one coefficient negative and at least one coefficient a non-integer).	MP.1 MP.6 MP.7	No
A	8.EE.8b-2	Analyze and solve pairs of simultaneous linear equations. b. Estimate solutions [to systems of two linear equations in two variables] by graphing the equations.	i) An equal number of tasks have: • a zero coefficient, e.g., as in the system $-s + (3/4)t = 2$, $t = 6$, or; • non-zero whole-number coefficients, and whole-number solutions, or; • non-zero whole-number coefficients, and at least one fraction among the solutions, or; • non-zero integer coefficients (with at least one coefficient negative), or; • non-zero rational coefficients (with at least one coefficient negative and at least one coefficient a non-integer).	MP.5 MP.6 MP.7	No

Grade 8 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.EE.8b-3	Analyze and solve pairs of simultaneous linear equations. b. Solve simple cases [of systems of two linear equations in two variables] by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.*	i) Tasks have whole number or integer coefficients, one coefficient in either or both equations possibly zero. ii) Equal number of tasks involve: • inconsistent systems, where the inconsistency is plausibly visible by inspection as in the italicized example, or; • degenerate systems (infinitely many solutions), where the degeneracy is plausibly visible by inspection, as for example in 3x + 3y = 1, 6x + 6y = 2, or; • systems with a unique solution and one coefficient zero, where the solution is plausibly visible by inspection, as for example in y = 1, 3x + y = 1. iii) Tasks assess solving by inspection.	MP.7	No
A	8.EE.8c	Analyze and solve pairs of simultaneous linear equations. c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	i) Tasks may have three equations, but students are only required to analyze two equations at a time.	MP.1 MP.5 MP.6 MP.7	Yes
A	8.EE.C.Int.1	Solve word problems leading to linear equations in one variable whose solutions require expanding expressions using the distributive property and collecting like terms.	i) Most tasks involve contextual real-world word problems.	MP.4 MP.6 MP.7	Yes
A	8.F.1-1	Understand that a function is a rule that assigns to each input exactly one output.	i) Tasks do not involve the coordinate plane or the "vertical line test." ii) Some of functions in tasks are non-numerical. iii) Tasks should involve clearly defined inputs and outputs.	MP.2	No
A	8.F.1-2	[Understand that] the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	i) Functions are limited to those with inputs and outputs in the real numbers. ii) Most of the tasks require students to graph functions in the coordinate plane or read inputs and outputs from the graph of a function in the coordinate plane. iii) Some of the tasks require students to tell whether a set of points in the plane represents a function. iv) Tasks should involve clearly defined inputs and outputs.	MP.2 MP.5	No
A	8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greatest rate of change.*	i) Tasks have "thin context"[2] or no context. ii) Equations can be presented in forms other than y = mx + b, for example, 2x + 2y = 7.	MP.2 MP.5	Yes

Grade 8 Evidence Statements

Type I **Type II** **Type III**

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.F.3-1	Interpret the equation, y=mx + b as defining a linear function, whose graph is a straight line.	i) Tasks have "thin context" [2] or no context. ii) Equations can be presented in forms other than y = mx + b, for example, 2x + 2y =7.	MP.2 MP.7	No
A	8.F.3-2	Give examples of functions that are not linear and prove that they are not linear.	i) Tasks have "thin context" [2] or no context. ii) Tasks may require students to give examples of equations that are non-linear or pairs of points to show a function is non-linear. iii) Students are not required to produce a formal proof. For this aspect of 8.F.3, see 8.C.3.1.	MP.7	No
B	8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph.	i) Tasks may or may not have a context.	MP.2 MP.4	Yes
B	8.F.5-1	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).	i) Tasks may or may not have a context.	MP.2 MP.5	No
B	8.F.5-2	Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	i) Tasks may or may not have a context.	MP.2 MP.5 MP.7	No
A	8.G.1a	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length.	i) Tasks do not have a context.	MP.3 MP.5 MP.8	No
A	8.G.1b	Verify experimentally the properties of rotations, reflections, and translations: b. Angles are taken to angles of the same measure.	i) Tasks do not have a context.	MP.3 MP.5 MP.8	No
A	8.G.1c	Verify experimentally the properties of rotations, reflections, and translations: c. Parallel lines are taken to parallel lines.	i) Tasks do not have a context.	MP.3 MP.5 MP.8	No
A	8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	i) Tasks do not have a context. ii) Figures may be drawn in the coordinate plane, but do not include the use of coordinates. iii) Tasks require students to make connections between congruence and transformations.	MP.2 MP.7	No

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
A	8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	i) Tasks have "thin context" [2] no context. ii) Tasks require the use of coordinates in the coordinate plane. iii) For items involving dilations, tasks must state the center of dilation. iv) Centers of dilation can be the origin, the center of the original shape or the vertices of the original shape.	MP.2 MP.3 MP.5	No
A	8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	i) Tasks do not have a context. ii) Figures may be drawn in the coordinate plane, but do not include the use of coordinates. iii) Tasks require students to make connections between similarity and transformations.	MP.2 MP.7	No
A	8.G.7-1	Apply the Pythagorean Theorem in a simple planar case.	i) Tasks have "thin context" [2] or no context. ii) An equal number of tasks require the answer to be given as a whole number or as an irrational number written to approximately three decimal places.	-	Yes
A	8.G.7-2	Apply the Pythagorean Theorem in a simple three-dimensional case.	i) Tasks have "thin context" [2] or no context. ii) An equal number of tasks require the answer to be given as a whole number or as an irrational number written to approximately three decimal places.	-	Yes
A	8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	-	-	Yes
B	8.G.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	-	MP.1 MP.5	Yes
B	8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	-	MP.3 MP.5 MP.7	No

Grade 8 Evidence Statements

Type I Type II Type III

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
B	8.SP.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	-	MP.2 MP.5 MP.7	No
B	8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	-	MP.2 MP.4 MP.6 MP.7	Yes
B	8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	i) An equal number of tasks require students to : • Answer basic comprehension questions about a two-way table, or; • To compute marginal sums or marginal percentages, or; • To interpret patterns or association.	MP.2 MP.4 MP.5 MP.7	Yes

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	8.C.1.1	Base reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: Knowledge and skills articulated in 8.EE.6	i) Tasks require students to derive the equation y=mx for a line through the origin and the equation *y*=m*x*+b for a line intersecting the vertical axis at b.	MP.2 MP.3 MP.7 MP.8	Yes
C	8.C.1.2	Base reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: Knowledge and skills articulated in 8.EE.8a	-	MP.2 MP.3 MP.5 MP.6 MP.7	Yes
C	8.C.2	Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any). Content Scope: Knowledge and skills articulated in 8.EE.7a, 8.EE.7b, 8.EE.8b	i) Tasks may have three equations, but students are only required to analyze two equations at a time.	MP.3 MP.6	Yes
C	8.C.3.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.F.3-2	i) Tasks require students to justify whether a given function is linear or nonlinear.	MP.3 MP.6	Yes
C	8.C.3.2	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.G.2, 8.G.4	-	MP.3 MP.5 MP.6	Yes
C	8.C.3.3	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.G.5	-	MP.3 MP.5 MP.6	Yes
C	8.C.4.1	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 8.EE.8c	-	MP.1 MP.2 MP.3 MP.6 MP.7	Yes

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
C	8.C.5.1	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.EE.6	-	MP.2 MP.3 MP.5	Yes
C	8.C.5.2	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.G.2, 8.G.4	-	MP.2 MP.3 MP.5	Yes
C	8.C.5.3	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.G.B	i) Some of tasks require students to use the converse of the Pythagorean Theorem.	MP.2 MP.3 MP.5	Yes
C	8.C.6	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 7.RP.A, 7.NS.A, 7.EE.A.	i) Some of the tasks may use scaffolding[1].	MP.3 MP.6	Yes

Sub-Claim	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to MPs	Calculator
D	8.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 8, requiring application of knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	8.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to grade 8, requiring application of knowledge and skills articulated in 7.RP.A, 7.NS.3, 7.EE, 7.G, and 7.SP.B.	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	8.D.3	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature). Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements.	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes
D	8.D.4	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity. Content Scope: Knowledge and skills articulated in Type I, Sub-Claim A Evidence Statements .	i) Some of the tasks may use scaffolding[1].	MP.1 MP.2 MP.4 MP.5 MP.7	Yes

[1] Scaffolding in a task provides the student with an entry point into a pathway for solving a problem. In unscaffolded tasks, the student determines his/her own pathway and process. Both scaffolded and unscaffolded tasks will be included in reasoning and modeling items.

[2] "Thin context" is a sentence or phrase that establishes a concrete referent for the quantity/quantities in the problem, in such a way as to provide meaningful avenues for mathematical intuition to operate, yet without requiring any sort of further analysis of the context. For example, a task could provide a reason for the use of scientific notation such as, "The number represents the distance between two planets."

Grade 8 Assessment Policies

Calculators:

- PARCC mathematics assessments allow a scientific calculator in Grade 8.
- For students who meet the guidelines in the *PARCC Accessibility Features and Accommodations Manual* for a calculation device, this accommodation allows a calculation device to be used on the non- calculator section of any PARCC mathematics assessment. The student will need a hand-held calculator because an online calculator will not be available. If a student needs a specific calculator (e.g., large key, talking), the student can also bring his or her own, provided it is specified in his or her approved IEP or 504 Plan and meets the same guidelines.

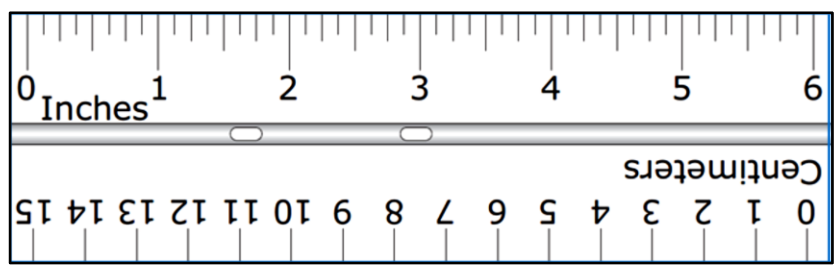
Additionally, schools must adhere to the following additional guidance regarding calculators:

- No calculators with Computer Algebra System (CAS) features are allowed.
- No tablet, laptop (or PDA), or phone-based calculators are allowed during PARCC assessments.
- Students are not allowed to share calculators within a testing session.
- Test administrators must confirm that memory on all calculators has been cleared before and after the testing sessions.
- Calculators with "QWERTY" keyboards are **not** permitted.
- If schools or districts permit students to bring their own hand-held calculators for PARCC assessment purposes, test administrators must confirm that the calculators meet PARCC requirements as defined above.

Rulers:

- Rulers are used on the Grade 8 PARCC Assessments.
- For computer-based assessments, the grade-appropriate ruler is provided through the computer-based platform.
- For paper-based assessments, rulers are included in the PARCC-provided materials that are shipped to schools/districts.
- Schools are **not** allowed to provide their own rulers for Grade 8 PARCC assessments.

Grade 8 ruler provided on the PARCC paper-based mathematics assessments (not actual size):



Scratch Paper (required):

- Blank scratch paper (graph, lined or un-lined paper) is intended for use by students to take notes and work through items during testing. If graph paper is used during instruction, it is recommended that schools provide graph paper as scratch paper for mathematics units. At least one sheet of scratch paper per unit must be provided to each student. Any work on scratch paper will **not** be scored.

Allowable Geometry Tools:

- A protractor, tracing paper, reflection tools, straight edge, and compass are allowable materials for the grade 8 assessments.
- If schools allow students to bring their own tools, they must be given to the school test coordinator or test administrator prior to testing to ensure that the tools are appropriate for testing (e.g., tools do not have any writing on them).

Mathematics Reference Sheet:

- Students in grade 8 will be provided a reference sheet with the information shown below. Notice that the names of the measurement formulas provided on the reference sheet only include the name of the figure or object to which the measurement formula(s) is applied. The intent of the Common Core State Standards in Mathematics at grade 8 is to know and apply the measurement formulas. In order for students to be able to choose the correct formula, they will need to know the formula.

Grade 8
Reference Sheet

1 inch = 2.54 centimeters	1 kilometer = 0.62 mile	1 cup = 8 fluid ounces	1 liter = 0.264 gallons
1 meter = 39.37 inches	1 pound = 16 ounces	1 pint = 2 cups	1 liter = 1000 cubic centimeters
1 mile = 5280 feet	1 pound = 0.454 kilograms	1 quart = 2 pints	
1 mile = 1760 yards	1 kilogram = 2.2 pounds	1 gallon = 4 quarts	
1 mile = 1.609 kilometers	1 ton = 2000 pounds	1 gallon = 3.785 liters	

Triangle	$A = \frac{1}{2}bh$	Cylinder	$V = \pi r^2 h$
Parallelogram	$A = bh$	Sphere	$V = \frac{4}{3}\pi r^3$
Circle	$A = \pi r^2$	Cone	$V = \frac{1}{3}\pi r^2 h$
Circle	$C = \pi d \text{ or } C = 2\pi r$	Pythagorean Theorem	$a^2 + b^2 = c^2$
General Prisms	$V = Bh$		

- Students in grade 8 will be required to know relative sizes of measurement units within one system of units. Therefore, the following requisite knowledge is necessary for the grade 8 assessments and is **not** provided in the reference sheet.

1 meter = 100 centimeters	1 foot = 12 inches
1 meter = 1000 millimeters	1 yard = 3 feet
1 kilometer = 1000 meters	1 day = 24 hours
1 kilogram = 1000 grams	1 minute = 60 seconds
1 liter = 1000 milliliters	1 hour = 60 minutes

The formulas for the area of a rectangle are also considered to be requisite knowledge because the intent of the Common Core State Standards in Mathematics for students in grade 8 is to have a conceptual understanding of area of rectangles.

Area of a Rectangle	$A = lw$ or $A = bh$